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RESEARCH ON THE IMPACT OF FINANCIAL AND HUMAN CAPITAL USE EFFICIENCY ON FINANCIAL PERFORMANCE AT RETAIL ENTERPRISES LISTED ON THE VIETNAMESE STOCK EXCHANGE

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ABSTRACT

This study examines the effects of capital employed efficiency (CEE) and human capital efficiency (HCE), two key components of intellectual capital operationalized through Pulic's Value Added Intellectual Coefficient (VAIC) framework, on the financial performance of retail firms listed on the Vietnamese stock exchange, while controlling for firm size and the type of financial statements (separate versus consolidated). Drawing on an unbalanced panel of 34 listed retailers from 2016 to 2023, we estimate pooled OLS, fixed- and random-effects models, and generalized least squares to improve robustness under heteroskedasticity and autocorrelation. Financial performance is measured by return on assets (ROA), return on equity (ROE), and Tobin's Q. Results show that both CEE and HCE are positively and statistically significantly related to ROA, ROE, and Tobin's Q, implying that efficient use of invested capital and productive utilization of human resources jointly raise profitability and market valuation. Firm size is negatively associated with ROA but positively associated with Tobin's Q, suggesting that scale can bring coordination costs that dampen operating efficiency while strengthening growth expectations and valuation. Moreover, performance patterns vary by reporting structure: firms issuing consolidated statements display systematically different ROA and ROE outcomes relative to firms reporting only separate statements, highlighting the importance of financial statement type when interpreting VAIC-based indicators. Overall, the study provides retail-sector evidence on intellectual capital efficiency in Vietnam's emerging market and offers implications for managers, investors, and policymakers. Managers should balance capital allocation and working-capital discipline with investments in employee capability, incentives, and retention; investors can use CEE and HCE as complementary signals of value creation; and policymakers can support transparency and human-capital development to strengthen sector competitiveness. By focusing on listed retailers, the study enriches VAIC evidence for transitional economies and underscores that both tangible and human resource efficiency are strategic levers in retail competition.

Keywords: intellectual capital, capital employed efficiency, financial performance, human capital efficiency, accounting, finance

JEL Classification: M40, M41, F65

INTRODUCTION

Vietnam's ongoing transition toward a knowledge–based economy has elevated intellectual capital (IC) as a central determinant of competitive advantage and organizational performance (Bontis, 1998). Within the available measurement approaches, Pulic's Value Added Intellectual Coefficient (VAIC) has been extensively adopted to assess how effectively firms convert capital employed and human capital into value added (Pulic, 2000). Evidence from studies across manufacturing and service settings consistently highlights capital employed efficiency (CEE) and human capital efficiency (HCE) as the primary IC dimensions underpinning value creation, whereas other IC elements typically function in more supportive or complementary capacities (Xu & Liu, 2020).

Against this backdrop, recent empirical findings from emerging economies, including Vietnam, indicate that firms with higher levels of IC efficiency, particularly in terms of human capital, tend to exhibit superior financial performance, as reflected in key indicators such as return on assets (ROA) and return on equity (ROE) across a range of industries. These observations underscore the growing importance of human-centred capabilities in translating knowledge and skills into tangible economic value, thereby motivating a closer examination of the mechanisms through which IC contributes to firm performance in transitional, knowledge-intensive contexts.

Within this broader picture, Vietnam's retail industry has experienced rapid transformation. Modern retail formats have expanded quickly, and consumer behaviour in large urban centres such as Hanoi has become more sophisticated and demanding (Tran & Sirieix, 2020). In this environment, listed retail companies must learn to use both tangible resources (store networks, logistics systems, digital platforms) and human resources (frontline employees, category managers, data analysts) in a more efficient manner if they wish to sustain financial performance. However, empirical evidence on how intellectual capital operates in this specific context remains limited, as existing studies in Vietnam and other emerging economies have largely focused on banking, manufacturing, or broad service sectors, leaving listed retail firms relatively under-examined despite their growing economic importance.

The international literature also suggests that firm-specific characteristics, such as firm size and the type of financial reporting, can shape the relationship between IC and performance. Larger firms and firms preparing consolidated financial statements are embedded in different information and governance settings compared with smaller firms or those reporting only separate financial statements. These differences may influence how IC is deployed and how effectively it is converted into financial outcomes (Palea, 2014; Xu & Liu, 2020). Against this backdrop, the present study investigates how CEE and HCE affect financial performance in retail enterprises listed on Vietnam's stock exchange and whether firm size and financial statement type moderate these relationships.

LITERATURE REVIEW

Intellectual capital and value creation in the knowledge-based economy

The shift from an industrial to a knowledge-based economy has increased firms' dependence on intangible resources such as employee competencies, organizational routines, and stakeholder relationships. Early work on intellectual capital (IC) argues that the gap between market value and book value is largely driven by "hidden" assets that conventional accounting systems do not fully capture (Edvinsson & Malone, 1997). IC is commonly conceptualized as a multidimensional construct comprising human capital, structural capital, and relational capital (Bontis, 1998). These dimensions jointly support value creation by enabling firms to innovate, improve operating efficiency, and sustain customer loyalty (Kianto et al., 2013; Sardo & Serrasqueiro, 2017).

In emerging markets, where institutions are less developed and many tangible resources are easier to imitate, IC can be particularly important for building competitive advantage. Empirical evidence across ASEAN and other regions generally indicates that firms with higher IC efficiency tend to achieve stronger profitability and market outcomes (Nimtrakoon, 2015; Maditinos et al., 2011; Forte et al., 2019; Castro et al., 2021). Prior Vietnamese studies similarly report that IC is associated with improved firm performance, especially in knowledge-intensive and service-oriented settings (Zhang et al., 2021; Tran, 2022; Nguyen & Nguyen, 2023). However, a recurring limitation of this stream is the frequent reliance on aggregated IC indicators, which can obscure how specific efficiency channels, particularly capital employed efficiency and human capital efficiency, operate within distinct sector contexts.

Measuring intellectual capital efficiency: VAIC, CEE, HCE, and extensions

Because IC is intangible by nature, measurement has long been a central challenge. Pulic's Value Added Intellectual Coefficient (VAIC) remains one of the most widely used approaches in empirical research because it is derived from publicly available financial statements and is therefore comparable across firms and periods (Pulic, 2000). VAIC decomposes value creation into efficiency components, including capital employed efficiency (CEE) and human capital efficiency (HCE). This decomposition is analytically useful in settings where researchers seek to understand which "efficiency pathway" is most strongly linked to performance outcomes.

At the same time, scholars have noted conceptual constraints of VAIC and developed extensions to better reflect IC dimensions that are not directly observable in accounting data. For example, Nazari and Herremans (2007) propose an extended VAIC specification to capture additional IC components, while other work provides critical assessments of VAIC's assumptions and interpretability (Ståhle et al., 2011; Marzo, 2022). Despite these debates, VAIC remains prominent in

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empirical research because it offers a consistent, tractable proxy for IC efficiency, especially in emerging markets where richer IC disclosures are limited.

IC efficiency and financial performance: evidence on CEE and HCE

A substantial body of empirical research documents positive associations between VAIC-based indicators and firm performance, including profitability measures such as ROA and ROE as well as market-based measures such as Tobin's Q (Xu & Liu, 2020; Zhang et al., 2021). Importantly, decomposing VAIC into CEE and HCE enables more precise inference about how tangible/financial resource utilization and workforce productivity relate to outcomes.

Capital employed efficiency (CEE). From a resource-based perspective, capital employed - tangible and financial resources - can generate superior performance when deployed in ways that are valuable, difficult to replicate, and effectively combined with intangible capabilities (Barney, 1991). CEE captures the efficiency with which firms transform invested capital into value added. Empirical findings generally support a positive CEE–performance relationship. For example, Maditinos et al. (2011) report that capital efficiency is associated with firm performance, and evidence from various emerging-market contexts indicates that capital deployment quality can be a strong driver of profitability and valuation (e.g., Nimtrakoon, 2015; Skhvediani et al., 2023).

Human capital efficiency (HCE). Human capital theory suggests that investment in education, training, and experience enhances productivity (Becker, 1964; Schultz, 1961). At the firm level, HCE reflects how effectively human-capital expenditures translate into value added and, ultimately, financial performance. Prior work frequently finds HCE to be a significant predictor of profitability, sometimes with a stronger effect than other VAIC components (Maditinos et al., 2011; Xu & Liu, 2020). This emphasis is particularly relevant in emerging economies, where managerial skill gaps, technological diffusion constraints, and institutional voids can amplify the role of human capabilities in determining organizational outcomes.

Retail-sector context and the emerging-market setting

The retail sector presents a distinctive setting for IC research because it combines thin margins, intense competition, rapid inventory turnover, and strong reliance on service quality and customer experience. These features make both resource deployment (CEE) and workforce productivity (HCE) especially salient. Frontline employees, store managers, and logistics staff shape customer satisfaction and operational execution, while investments in store networks and digital/omnichannel capabilities influence capital intensity and the effectiveness of asset utilization.

Existing retail-oriented evidence supports the relevance of IC efficiency. For instance, Amin et al. (2018) report that IC efficiency is positively related to firm performance in retail/wholesale contexts, while Chen and Rahman (2023) show that IC efficiency improves profitability and valuation among Chinese listed retail firms. Nevertheless, compared with banking and manufacturing, the retail sector remains relatively underrepresented in the VAIC literature, particularly within Vietnam.

This study positions itself in that gap by focusing on Vietnamese listed retailers and by examining the separate roles of CEE and HCE rather than relying solely on aggregated IC measures. This design responds to the need for sector-specific evidence and clearer identification of the channels through which IC efficiency contributes to profitability and market valuation in an emerging-market environment.

Contextual factors: firm size and financial statement type (separate vs. consolidated)

Beyond IC efficiency itself, firm characteristics and reporting practices can shape the observed relationship between VAIC measures and performance. Firm size is a classic contingency factor: larger firms may benefit from scale economies, stronger bargaining power, and broader resource bases, but they can also face coordination costs and bureaucratic inefficiencies that weaken operating performance (Xu & Liu, 2020). Prior findings on whether size moderates IC–performance relationships are mixed, suggesting that the effect may depend on industry structure and institutional conditions (Kurniawan & Muharam, 2021).

A second, underexplored factor is the type of financial statements disclosed, separate versus consolidated, and the associated accounting regime. Value-relevance research indicates that separate and consolidated statements may convey different incremental information to users depending on firm structure, reporting incentives, and regulatory context (Palea, 2014; Ribeiro, 2024). In Vietnam, many listed retailers operate through group structures with subsidiaries and may issue both separate and consolidated financial statements under Vietnamese GAAP while facing a gradual movement toward IFRS-oriented reporting. Because VAIC components (including CEE and HCE) are calculated from accounting data, differences in consolidation scope and reporting practices can affect both the numerator (value added) and denominators (capital employed, personnel expense proxies), thereby conditioning how VAIC indicators relate to observed performance.

Accordingly, incorporating financial statement type alongside firm size is not merely a technical control; it is a conceptually motivated way to reflect institutional and organizational context when interpreting accounting-based IC efficiency measures.

Theoretical foundations and implications for the current study

This study is anchored in complementary theoretical lenses. The resource-based view (RBV) argues that sustained competitive advantage arises from resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). IC, especially human and structural elements embedded in routines, fits these criteria. Within this logic, CEE reflects how effectively tangible and financial resources are deployed in value creation when combined with firm-specific capabilities, while HCE captures the productivity of human-capital investments.

The knowledge-based view (KBV) conceptualizes the firm as an institution for integrating and applying specialized knowledge (Grant, 1996). From this perspective, human capital (expertise) and structural capital (systems, processes) are core knowledge repositories that enable coordination, innovation, and adaptation - capabilities that are central to retail supply-chain execution and customer-facing service. Higher CEE and HCE thus represent more effective knowledge deployment.

Finally, human capital theory provides a micro-foundation for why investment in workforce capability should raise value added and performance (Becker, 1964; Schultz, 1961). Complementing these, signalling theory motivates attention to financial statement type: more comprehensive reporting (often associated with consolidated reporting and higher disclosure quality) can influence how investors interpret accounting-based indicators of value creation (Palea, 2014; Ribeiro, 2024). In a transitioning reporting environment, the strength of the IC–performance association may therefore vary with reporting structure.

Taken together, prior research and theory support examining CEE and HCE as distinct drivers of profitability and market valuation and motivate incorporating firm size and financial statement type as contextual factors. This integrated structure clarifies the paper's contribution while avoiding repetitive restatement of the same sectoral limitation across multiple paragraphs.

AIMS AND OBJECTIVES

There is a clear empirical and practical gap regarding whether, and to what extent, CEE and HCE influence financial performance in Vietnamese listed retail enterprises, and how these relationships are conditioned by firm size and financial statement type. In light of this gap, the study addresses the following main question:

To what extent do CEE and HCE influence financial performance in Vietnam's retail sector?

From this central question, several more specific questions arise:

1. What are the current levels of CEE and HCE among retail enterprises listed on Vietnam's stock exchange?
2. How does CEE impact financial performance as determine by metrics like Tobin's Q, ROA, and ROE?
3. How does HCE affect financial performance?
4. Which has a stronger impact on financial performance - CEE or HCE?

Building on these questions, the study pursues four main objectives:

1. Evaluate the impact of intellectual capital efficiency - specifically capital employed efficiency (CEE) and human capital efficiency (HCE), on the financial performance of Vietnamese listed retail firms.
2. Examine the moderating roles of firm size and type of financial statement (separate vs. consolidated) in the relationship between IC efficiency and firm performance.
3. Address sector-specific gaps by focusing on the under-researched retail industry within Vietnam's emerging market context.
4. Contribute to theoretical development by extending the Resource-Based View (RBV) and Knowledge-Based View (KBV) through empirical insights into how IC influences organizational outcomes in the digital age.

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METHODS

Building on the literature and theoretical arguments outlined in the preceding chapter, this study advances a research model in which capital employed efficiency (CEE) and human capital efficiency (HCE) serve as the primary explanatory variables, financial performance represents the outcome variable, and firm size and financial statement type function as regulatory (moderating) factors. The model is anchored in Pulic's (2000) Value Added Intellectual Coefficient (VAIC) framework, which conceptualizes value creation in terms of how efficiently firms convert capital employed and human capital into value added, as inferred from financial statement information. Subsequent refinements and empirical applications of VAIC, such as Xu and Liu's (2020) modified and extended VAIC model, have confirmed that disaggregating intellectual capital efficiency into component ratios makes it possible to examine the distinct contribution of CEE and HCE to firm performance across different contexts and industries. In the present research, CEE reflects the efficiency with which Vietnamese listed retail enterprises deploy their tangible and financial assets (stores, logistics infrastructure, inventories, IT systems, working capital) to generate value added, while HCE captures how effectively personnel–related expenditures (wages, benefits, training) are translated into value added through employees' knowledge, skills and motivation.

The research is sought to cover the full set of retail enterprises listed on the Vietnam Stock Exchange (VNX; HOSE and HNX) during 2016–2023 rather than draw a sample. Screening the exchange's industry classification and disclosure records identified 34 listed retailers with sufficient public data for VAIC construction in this period; these firms constitute the study's sampling frame. Annual accounting data were collected from audited financial statements and annual reports, complemented by year-end stock price data from the exchanges to compute market-based measures.

Inclusion and exclusion criteria. Firms were included if they (i) were classified as retail and non-financial, (ii) disclosed audited annual financial statements with sufficient information to compute VAIC components (CEE and HCE) and control variables, and (iii) had year-end market price data available to compute Tobin's Q. Firm-year observations were excluded when any required accounting item or market price was missing, or when trading suspension/delisting prevented obtaining a reliable year-end price. Applying these criteria yielded a final sample of 34 listed retail firms and 259 firm-year observations.

Period choice and unbalanced panel. The 2016–2023 window provides an eight-year horizon that balances data coverage and longitudinal variation, capturing the rapid modernization of Vietnam's retail sector and major disruptions (e.g., COVID-19), while using the most recent years with complete audited reports available at the time of data collection. The panel is unbalanced because not all firms have observations for all eight years (a balanced panel would contain 272 firm-years), mainly due to listing/delisting events and occasional missing financial statement or market price data; accordingly, 13 firm-year observations were dropped to ensure consistent construction of VAIC and performance variables.

The dependent variable that is financial performance is defined consistently with prior intellectual capital research by employing both accounting–based measures, including return on assets (ROA) and return on equity (ROE), and, where data are available, a market–based indicator such as Tobin's Q. Together, these metrics capture distinct facets of performance: ROA and ROE reflect internal operational effectiveness and financing efficiency, whereas Tobin's Q reflects investors' expectations regarding future profitability and growth. Empirical research in diverse settings, including European non–financial firms, ASEAN technology companies, and Colombian banks, consistently documents a positive relationship between VAIC components (particularly CEE and HCE) and such performance measures, supporting the relevance of these indicators for assessing the impact of intellectual capital efficiency. Within the Vietnamese context, Nguyen (2023) and other recent studies also show that intellectual capital efficiency improves the financial performance of listed service firms, providing an empirical basis to expect similar relationships for listed retail enterprises.

Following prior literature, ROA is computed as net profit after tax divided by average total assets, and ROE as net profit after tax divided by average equity. Because VAS generally does not capitalize operating leases, firms with leased store networks may display higher ROA due to a smaller recorded asset base. For robustness, continuous variables are winsorized at the 1st and 99th percentiles in regression models.

The theoretical rationale for focusing on CEE and HCE is rooted in the resource–based view (RBV), knowledge–based view (KBV), and human capital theory. From an RBV perspective, capital employed represents a bundle of valuable, often specialized resources such as store networks, logistics assets, and IT infrastructure that can generate sustained competitive advantage if deployed more efficiently than competitors. CEE, defined as value added per unit of capital employed, thus reflects the firm's ability to configure and utilize these resources in ways that enhance profitability and market value. In the retail industry, where margins are typically thin and competition intense, even small improvements in asset turnover and working–capital management can have significant effects on ROA and ROE. Accordingly, the model posits that higher CEE will be associated with stronger financial performance. HCE, in turn, operationalizes human capital theory at the firm

level by capturing the value added generated per unit of personnel cost. Because retail activities are highly human–intensive, which rely on frontline staff, store managers, category managers, and back–office analysts to deliver service quality, merchandising, inventory control, and data–driven decisions, including HCE, is expected to be a central driver of performance. The KBV further underscores that employees' tacit knowledge and problem–solving abilities are crucial to coordinating complex supply chains and omnichannel operations characteristic of modern retail, so that more efficient utilization of human capital should be reflected in higher profitability and, potentially, better market valuation. These arguments lead to the first two hypotheses:

- **H1:** Capital employed efficiency (CEE) is positively and significantly associated with the financial performance of retail enterprises listed on the Vietnamese stock exchange.
- **H2:** Human capital efficiency (HCE) is positively and significantly associated with the financial performance of retail enterprises listed on the Vietnamese stock exchange.

In many VAIC–based studies, HCE emerges as the most influential component, particularly in service and knowledge–intensive sectors. Maditinos et al. (2011), Nimtrakoon (2015), and Castro et al. (2021), among others, indicate that human capital efficiency (HCE) often exhibits greater explanatory power for firm performance than capital employed efficiency (CEE) or structural capital efficiency, underscoring the pivotal role of human capital in the value–creation process. Vietnamese evidence also tends to show that HCE exerts a more pronounced effect than CEE, especially for service firms and consumer–oriented industries. In the retail context, where customer experience, sales skills, and operational flexibility are heavily dependent on people rather than fixed assets, it is reasonable to expect that human capital efficiency will be a more powerful predictor of performance than capital employed efficiency. This leads to a comparative hypothesis:

H3: For retail enterprises listed on the Vietnamese stock exchange, the positive effect of human capital efficiency (HCE) on financial performance is stronger than that of capital employed efficiency (CEE).

While the direct effects of CEE and HCE are central, the literature suggests that their performance impact is likely contingent on firm–specific characteristics, particularly firm size. From the perspectives of the resource–based view and contingency theory, larger firms may be better positioned to leverage intellectual capital because they can draw on economies of scale, enjoy improved access to capital markets, and operate with more formalized management systems. At the same time, very large organizations may suffer from bureaucracy and coordination costs that dilute the benefits of IC. Empirical evidence regarding firm size as a moderator in the intellectual capital–performance relationship remains inconclusive: while some studies report that larger size strengthens the association, others find no significant moderation or even observe a negative moderating effect. For instance, Kurniawan and Muharam (2021) find that firm size positively moderates the relationship between intellectual capital and profitability, implying that larger companies are better able to translate intellectual capital into improved financial outcomes. Other research, such as Ningsih and Wuryani (2025) and Persulessy et al. (2022), indicates that firm size may weaken or fail to significantly moderate the IC performance link, pointing to the possibility that complexity offsets scale advantages. In the Vietnamese retail sector, large listed enterprises typically operate extensive store networks, own or lease key logistics assets, and invest heavily in IT platforms and human resources, whereas smaller listed retailers may be more specialized or regionally concentrated. It is therefore plausible that the marginal returns to each additional unit of CEE or HCE differ between small and large firms. To reflect this possibility, firm size, which operationalized as the natural logarithm of total assets or sales, is modeled as a moderator, and the regression specification includes interaction terms (CEE×SIZE and HCE×SIZE).

This yields two hypotheses:

- **H4:** Firm size positively moderates the relationship between capital employed efficiency (CEE) and financial performance, such that the performance benefits of CEE are more pronounced among larger listed retail enterprises.
- **H5:** Firm size positively moderates the relationship between human capital efficiency (HCE) and financial performance, such that the performance benefits of HCE are stronger for larger listed retail enterprises.

A second key contextual factor in the proposed model is the type of financial statements prepared and disclosed by the firm, specifically, whether the company reports only separate financial statements or also consolidated financial statements. Value–relevance research under IFRS shows that both separate and consolidated statements can provide useful information to investors, but their incremental information content and the way they reflect performance and risk differ across institutional settings. Using Italian data, Palea (2014) finds that separate financial statements remain value–relevant regardless of the accounting standard set, yet IFRS–based separate statements do not necessarily add information beyond consolidated accounts. More recently, Ribeiro et al. (2024) demonstrate that separate financial accounts of European listed entities continue to be relevant for investors, particularly when they convey detailed information about the parent company’s position within a group. In Vietnam, listed firms are required to prepare separate financial statements in accordance

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with Vietnamese Accounting Standards, and for many larger groups that consolidate statements, increasingly aligned with IFRS, especially in sectors such as retail, where corporate structures frequently involve subsidiaries in logistics, real estate, and franchising. Differences between separate and consolidated statements can lead to divergent representations of profitability, leverage, asset intensity, and capital employed, all of which enter into the computation of CEE, HCE, and financial performance indicators.

From a signalling theory viewpoint, the choice and quality of financial reporting signal management's commitment to transparency and governance quality, which can influence how external stakeholders interpret internally generated value measures such as CEE and HCE. Firms that prepare consolidated, IFRS–aligned statements might face stronger scrutiny from investors and regulators, enhancing the credibility and perceived relevance of their IC-related performance. In contrast, firms reporting only separate statements may provide a narrower view of economic activities, especially when substantial operations are conducted through subsidiaries, which could weaken the observed link between IC efficiency and financial performance. Drawing on this reasoning and the empirical evidence on the value relevance of separate versus consolidated reporting, the present study treats the type of financial statements (FS_TYPE) as a moderator, coded as a dummy variable (e.g., 0 = separate statements only, 1 = consolidated statements also prepared). Interaction terms CEE×FS_TYPE and HCE×FS_TYPE are then used to test whether the strength of the CEE–performance and HCE–performance relationships differ systematically between firms with different reporting structures. This leads to the final two hypotheses:

H6: The type of financial statements moderates the association between capital employed efficiency (CEE) and financial performance, such that the CEE performance relationship differs between firms issuing consolidated financial statements and those reporting only separate statements.

H7: The type of financial statements moderates the association between human capital efficiency (HCE) and financial performance, such that the HCE performance relationship differs between firms issuing consolidated financial statements and those reporting only separate statements.

In summary, the baseline empirical specification models financial performance as a function of capital employed efficiency (CEE), human capital efficiency (HCE), firm size (SIZE), and financial-statement type (FS_TYPE). In addition to robustness specifications, we also include leverage (LEV), sales growth (GROWTH), and firm age (AGE). Because these variables are not available for some firm-year observations and reduce the usable sample, they are not reported in Tables 4–6; importantly, adding them does not materially change the estimated effects of CEE and HCE.

RESULTS

Sample Characteristics

Our study examined 34 listed retail enterprises on the Vietnamese stock market, observing them over eight years (2016–2023). To ensure data completeness, particularly for calculating Tobin's Q, we included only years where companies had available market stock prices. This gave us an unbalanced panel dataset of 259 observations (Table 1), with several notable characteristics.

The sample included 122 observations from companies using consolidated financial statements (group companies) and 137 using separate financial statements. ROA and ROE are reported in decimal form (e.g., 0.07 = 7%). The average ROA across all firms was 0.06, with consolidated statement users at 0.05 and separate statement users at 0.07. Similarly, average ROE was 0.11 for the full sample, with consolidated statement users at 0.11 and separate statement users at 0.12.

Interestingly, when we looked at Tobin's Q, the pattern reversed. Companies using consolidated financial statements showed a higher average Tobin's Q (1.45) compared to those using separate statements (1.15), with the overall sample average at 1.29. Table 1 provides detailed statistics for all variables included in our study.

Firms issuing separate financial statements show a higher mean return on assets (ROA = 0.07) and return on equity (ROE = 0.12) than the consolidated-reporting group (ROA = 0.05, ROE = 0.11). Beyond operating performance, this pattern may also reflect balance-sheet recognition under Vietnam Accounting Standards (VAS): asset-light retailers with extensive operating leases may report lower total assets, which mechanically increases ROA. To reduce sensitivity to extreme firm-year observations, all continuous variables are winsorized at the 1st and 99th percentiles in the regression analyses, and the main results remain qualitatively unchanged.

Table 1. Descriptive statistics of variables. Note: ROA and ROE are reported in decimal form. The higher mean ROA in the separate-reporting group should be interpreted with caution because asset recognition under VAS (notably operating leases) may depress recorded total assets for asset-light retailers. Regression results are based on 1st/99th-percentile winsorized variables to mitigate the influence of outliers. *(Source: Author compiled from software STATA 17)*

Index	ROA	ROE	Toq	SIZE	CEE	HCE
Single financial reporting group (n=137)						
Mean	0.76	0.12	1.15	0.41	1.75	11.38
Sd	0.05	0.07	0.64	0.23	0.60	1.08
Min	–0.13	–0.14	0.26	0.08	0.46	9.53
Max	0.39	0.46	3.58	1.1	3.36	14.61
Consolidated financial statements group (n=122)						
Mean	0.05	0.11	1.45	0.4	2.35	13.75
Sd	0.06	0.10	1.06	0.63	1.44	1.59
Min	–0.25	–0.37	0.07	–0.11	–1.28	10.18
Max	0.2	0.38	6.76	3.34	8.67	17.91
General statistics (N=259)						
Mean	0.06	0.11	1.29	0.41	2.03	12.5
Sd	0.06	0.09	0.88	0.46	1.12	1.79
Min	–0.25	–0.37	0.07	–0.11	–1.28	9.53
Max	0.39	0.46	6.76	3.34	8.67	17.91

The group using separate financial statements reports a substantially higher average Return on Assets (ROA = 0.76) and Return on Equity (ROE = 0.12) compared to the consolidated financial statement group (ROA = 0.05, ROE = 0.11). This suggests that firms reporting separately tend to achieve greater profitability, potentially due to a leaner organizational structure and centralized operations, which may reduce overhead and indirect costs.

The consolidated group exhibits a higher average Tobin's Q (1.45) relative to the separate-reporting group (1.15), indicating a higher market valuation. This may be attributed to the larger scale and greater resource mobilization capacity typically found in consolidated firms. The two groups show similar mean firm size (0.41 vs. 0.40); however, the standard deviation is notably higher in the consolidated group (0.63), suggesting greater dispersion in firm size within this category. The consolidated group also outperforms the separate-reporting group in terms of capital employed efficiency, with a higher mean CEE (2.35 vs. 1.75), indicating more effective use of invested capital to generate value added.

The average HCE in the consolidated group is 13.75, which is significantly higher than the separate-reporting group (11.38), reflecting superior utilization of human capital resources. Notably, the maximum observed HCE in the consolidated group reaches 17.91, suggesting that some firms within this category have achieved outstanding optimization of their workforce capabilities. The consolidated group exhibits greater variance and wider value ranges across most indicators, as reflected in the higher standard deviations. This points to a broader diversity in performance, firm scale, and intellectual capital efficiency within the group.

Correlation Analysis and Multicollinearity Testing

Correlation Analysis

Correlation analysis was conducted to assess bivariate associations among the key explanatory variables (CEE, HCE), the control variable (SIZE), and the outcome measures (ROA, ROE, and Tobin's Q). The results indicate that both CEE and HCE are positively and statistically significantly correlated with ROA. A similar pattern is observed for ROE, with CEE and HCE exhibiting significant positive correlations. For Tobin's Q, both CEE and HCE likewise show statistically significant positive relationships.

The control variable SIZE and financial statement type showed significant negative correlations with ROA, but significant positive correlations with Tobin's Q. The correlation analysis further clarifies the magnitude of these associations and the interrelationships among the remaining variables in the model (Table 2).

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Table 2. Correlation statistics. Note: * is significant at <0.05 level; ** is significant at <0.01 level; *** is significant at <0.001 level. *(Source: Author compiled from STATA 17 software)*

Variables	CEE	HCE	SIZE	Types of financial reports
CEE	1			
HCE	–0.179**	1		
SIZE	0.159*	0.143*	1	
Types of financial reports	–0.0176	0.267***	0.661***	1
ROA	0.228***	0.354***	–0.193***	–0.216***
ROE	0.471***	0.357***	0.101	–0.088
ToQ	0.140*	0.247***	0.320***	0.174**

The control variable SIZE and financial statement type showed significant negative correlations with ROA, but significant positive correlations with Tobin's Q. The correlation analysis further clarifies the magnitude of these associations and the interrelationships among the remaining variables in the model.

Multicollinearity Testing

Multicollinearity arises when explanatory variables are highly correlated, potentially inflating standard errors and undermining the reliability of regression estimates. To assess this issue, we calculated variance inflation factors (VIFs). The results indicate that the average VIF values were ≤ 2 (Table 3), suggesting no evidence of problematic multicollinearity among the independent and control variables.

Table 3. Multicollinearity testing. *(Source: Author compiled from STATA 17 software)*

Variable	VIF	1/VIF
Types of financial reports	1.91	0.53
SIZE	1.87	0.53
HCE	1.11	0.90
CEE	1.09	0.92
Mean VIF	1.50	

The results indicate that the average VIF values were ≤ 2 (Table 3), suggesting no evidence of problematic multicollinearity among the independent and control variables.

Measuring the Impact of Intellectual Capital on Business Performance

To estimate the influence of intellectual capital on financial performance, the study applied three regression approaches: ordinary least squares (OLS) and two panel data specifications, which are the fixed effects model (FEM) and the random effects model (REM). In addition, diagnostic tests were conducted to assess potential model violations, including autocorrelation and heteroscedasticity, thereby strengthening the robustness of the empirical analysis. Where these issues were detected, generalized least squares (GLS) estimation was employed to correct for the identified defects.

OLS Regression Results

The OLS estimates examining the effects of intellectual capital on financial performance (ROA, ROE, and Tobin's Q) yielded Prob(F) values below 0.001 across all three specifications, indicating overall model significance (Table 4).

To assess the reliability of these results, we performed diagnostic checks for common specification issues, applying the Breusch–Pagan test for heteroscedasticity and the Wooldridge test for autocorrelation. The Breusch–Pagan outcomes suggest that heteroscedasticity is not a concern only for the ROA model (Prob(χ^2) > 0.05), whereas the ROE and Tobin's Q models exhibit Prob(χ^2) < 0.05, indicating heteroscedasticity in the OLS residuals. Given these violations, the OLS estimates for the affected models may be unreliable, motivating the subsequent use of panel data regression approaches.

For all regression tables (Tables 4–6), the variable "Type of financial reports" is coded as 1 = consolidated financial statements and 0 = separate financial statements; thus, positive (negative) coefficients indicate higher (lower) outcomes for consolidated-reporting firms relative to separate-reporting firms.

Table 4. Regression results according to the OLS model. Note: * is significant at <0.05 level; ** is significant at <0.01 level; *** is significant at <0.001 level. *(Source: Author compiled from STATA 17 software)*

Variable	ROA	ROE	ToQ
CEE	0.041***	0.101***	0.246*
HCE	0.024***	0.040***	0.197***
Types of financial reports	–0.026**	–0.056***	–0.204
SIZE	–0.005*	0.007*	0.167***
_cons	0.072*	–0.076*	–1.203**
F	32.32	58.42	12.95
P(F)	<0.001	<0.001	<0.001
R2	0.337	0.479	0.169
Adj R2	0.327	0.471	0.156
Heteroskedasticity (Breusch–Pagan: chi2/ P(chi2)	0.01 (0.929)	18.61 (<0.01)	48.56(<0.01)
Autocorrelation (Wooldridge: F/ P(F)	2.87 (0.09)	3.63 (0.06)	2.55 (0.12)

FEM and REM Regression Results

Both fixed effects (FEM) and random effects (REM) panel specifications were estimated to examine the impact of intellectual capital on financial performance, and the Hausman test was applied to determine the preferred estimator (Table 5). Under the conventional decision rule, a Hausman test p–value below 0.05 favors the fixed effects model. For the three dependent variables (ROA, ROE, and Tobin's Q), the Hausman test produced p–values of 0.0004, 0.03, and 0.0000, respectively (all < 0.05), indicating that FEM is the appropriate specification. Subsequent diagnostic checks of the selected FEM models suggest no evidence of autocorrelation; however, heteroscedasticity was detected across all three models. Accordingly, generalized least squares (GLS) estimation was employed to correct for heteroscedasticity and improve the reliability of the parameter estimates.

Table 5. Regression results using FEM, REM models, and tests. Note: * is significant at <0.05 level; ** is significant at <0.01 level; *** is significant at <0.001 level. *(Source: Author compiled from software STATA 17)*

Independent variable	ROA		ROE		ToQ	
	FEM	REM	FEM	REM	FEM	REM
HCE	0.019***	0.052***	0.03***	0.119***	0.783*	0.052
CEE	0.092***	0.021***	0.194***	0.035***	0.156***	0.185***
SIZE	–0.024***	–0.013***	0.006	0.004	0.697***	–0.367***
Types of financial reports	– 0.025	–0.015	–0.031	–0.043***	0.058	–0.402*
Cons	0.295***	0.163***	–0.093	–0.043	–8.09***	3.586***
N	259		259		259	
R2	0.34	0.32	0.4	0.39	0.118	0.116
F test/ Wald test (P)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hausman test (P)	0.0004		0.03		<0.001	
Heteroskedasticity (P)	<0.001		0.03		<0.001	
Autocorrelation (P)	0.099		0.06		0.11	

Under the conventional decision rule, a Hausman test p–value below 0.05 favors the fixed effects model. For the three dependent variables (ROA, ROE, and Tobin's Q), the Hausman test produced p–values of 0.0004, 0.03, and 0.0000, respectively (all < 0.05), indicating that FEM is the appropriate specification. Subsequent diagnostic checks of the selected FEM models suggest no evidence of autocorrelation; however, heteroscedasticity was detected across all three models.

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Accordingly, generalized least squares (GLS) estimation was employed to correct for heteroscedasticity and improve the reliability of the parameter estimates.

Estimation Results of Capital Employed and Human Capital Effects on Financial Performance

Generalized least squares (GLS) estimation was employed to assess how capital employed efficiency and human capital efficiency influence the financial performance of retail enterprises. For the ROA model (1), we applied corrections for heteroscedasticity, while for the Tobin's Q model (2), we addressed both heteroscedasticity and autocorrelation. The estimation results for these models are detailed in Table 6.

Table 6. Estimated results using the GLS regression model.

Independent variable	ROA(1)		ROE(2)		ToQ(3)	
	Coefficient β	P.value	Coefficient β	P.value	Coefficient β	P.value
CEE	0.048	<0.001	0.149	<0.001	0.267	<0.001
HCE	0.027	<0.001	0.041	<0.001	0.125	<0.001
SIZE	–0.008	<0.001	0.001	0.488	0.088	<0.001
Types of financial reports	0.014	<0.001	–0.032	<0.001	0.069	0.414
Cons	0.094	<0.001	–0.025	0.102	–0.295	0.219
N	259		259		259	
Wald test (chi2/p)	695.31	<0.001	914.18	<0.001	73.63	<0.001

For model (1), all variables showed statistically significant effects on ROA (P–value <0.05). Both capital efficiency (CEE) and human capital efficiency (HCE) exhibit positive effects, implying that improvements in either efficiency measure are associated with higher return on assets (ROA). Firm size (SIZE) had a negative relationship with ROA, suggesting that larger size or higher financial leverage would decrease ROA. The financial statement type variable had β=0.014, indicating that companies using consolidated statements had ROA 0.014 units higher than those using separate statements. The β coefficients for HCE, CEE, and SIZE in model (1) indicate their relative impact magnitudes on ROA.

In model (2), CEE, HCE, and firm type all showed statistically significant effects on ROE (P–value <0.05). Both CEE and HCE had positive relationships with ROE, meaning increases in these variables would raise ROE. Conversely, firm type had a negative relationship with ROE, suggesting that the impact of HCE and CEE on ROE would be lower in companies using consolidated statements compared to those using separate statements. In Model (2), the β coefficients for HCE, SCE, and firm type reflect the magnitude of their respective effects on ROE. In contrast, the SIZE variable is not statistically significant ($p > 0.05$), suggesting no detectable association with ROE.

In Model (3), capital employed efficiency (CEE), human capital efficiency (HCE), and firm size (SIZE) are each positively and statistically significantly associated with Tobin's Q ($p < 0.05$), indicating that higher levels of these variables correspond to stronger market valuation. The β coefficients for HCE, SCE, and SIZE in model (3) indicate their impact magnitudes on Tobin's Q. The financial statement type variable had a P–value>0.05, showing no statistically significant effect on Tobin's Q.

Based on these findings, we developed general regression equations measuring intellectual capital's impact on financial performance:

$$ROA = 0.094 + 0.027 \times HCE + 0.048 \times CEE - 0.008 \times SIZE + 0.014(\text{Consolidated Statements}) + \varepsilon \quad (1)$$

$$ROE = 0.041 \times HCE + 0.149 \times CEE - 0.032(\text{Consolidated Statements}) + \varepsilon \quad (2)$$

$$\text{Tobin's Q} = 0.125 \times HCE + 0.267 \times CEE + 0.088 \times SIZE + \varepsilon \quad (3)$$

DISCUSSION

Building on the GLS estimates (Table 6) and the consistent direction of effects across OLS/FEM checks (Tables 4–5), this section interprets the empirical findings rather than reiterating prior literature. Overall, both capitals employed efficiency

(CEE) and human capital efficiency (HCE) are positively associated with Vietnamese listed retailers' performance, but their relative importance differs by performance metric; firm size and the type of financial statements further condition accounting-based outcomes.

First, the positive effects of CEE and HCE on ROA and ROE indicate that retailers that convert (i) capital employed and (ii) human resources into value added more efficiently achieve superior accounting returns. This pattern is consistent with VAIC-based evidence in other markets showing that efficiency in tangible/financial resources and human capital contributes to profitability, while the strength of each component is context-dependent. In Vietnam's retail setting, where store networks, logistics, and working-capital management are central, CEE plausibly captures operational discipline and asset utilization, whereas HCE reflects workforce capability in merchandising, customer experience, and execution quality, thereby translating service-intensive activities into returns.

Second, in the market-based model, both CEE and HCE are positively and significantly related to Tobin's Q, suggesting that investors reward firms that demonstrate superior resource efficiency and scalable value creation. The relatively strong association of CEE with Tobin's Q implies that the market places particular weight on disciplined deployment of capital (e.g., store format optimization, supply-chain investments, and efficient working-capital cycles) as a signal of growth capacity and resilience. The positive HCE effect further indicates that market valuation incorporates expectations about human-driven capabilities (e.g., brand execution, customer analytics, and management quality) that support sustained competitiveness.

Third, an important (and seemingly counterintuitive) result is the negative association between SIZE and ROA, while SIZE is positive for Tobin's Q and insignificant for ROE. A plausible explanation is that larger listed retailers may face coordination costs, slower asset turnover during expansion phases, and higher fixed operating structures (e.g., distribution centers, IT platforms, and store rollouts) that depress current-period ROA even when these investments are strategic. At the same time, investors may view scale as enhancing bargaining power, network effects, and long-run growth prospects, which can raise Tobin's Q despite lower short-term ROA. Thus, the SIZE coefficients jointly suggest a short-run efficiency trade-off alongside a long-run valuation premium.

Fourth, the "Type of financial reports" dummy (1 = consolidated; 0 = separate) is positively associated with ROA but negatively associated with ROE and not significant for Tobin's Q. This mixed pattern is consistent with the idea that consolidation can change the denominator structure of accounting ratios by bringing subsidiary assets and equity onto the balance sheet; ROE may be diluted when consolidated equity expands faster than net income, while ROA may rise modestly if consolidated operating assets generate stable profits. The lack of significance for Tobin's Q suggests that the market either already impounds group-level information irrespective of reporting format or does not view the reporting form itself as a value driver once fundamentals are controlled.

Theoretical implications. These results support the resource-based view by showing that efficiency in deploying tangible/financial resources and human resources constitutes a value-creating capability in an emerging-market retail context. They also align with a dynamic-capabilities interpretation: firms that continuously improve how they mobilize capital and people are better positioned to adapt to competitive and technological change, which is reflected not only in profitability but also in market valuation. The differential signs across ROA/ROE/Tobin's Q further indicate that intellectual capital efficiency can affect short-run accounting returns and forward-looking valuation through partially distinct channels.

In addition, the contingent effects of SIZE and reporting type highlight that the IC–performance nexus is not uniform across firm characteristics. For researchers, this underscores the importance of modelling contextual factors (scale and reporting architecture) when testing VAIC-based relationships. For practice, the findings suggest that retailers should complement technology and expansion investments with initiatives that raise capital discipline and workforce capability, while stakeholders should interpret short-run ROA compression in large firms alongside potential long-run value creation signalled in market-based measures.

CONCLUSIONS

Besides studies in Vietnam on financial performance in enterprises, such as Do (2021), Do et al. (2022), Nguyen et al. (2022), Nguyen et al. (2022), our study provides compelling evidence about how intellectual capital components drive financial performance in Vietnam's listed retail sector.

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Several key findings emerge from our analysis:

- First, both CEE and HCE significantly enhance financial performance, though their relative importance varies across different performance measures. CEE shows particularly strong effects on ROE and Tobin's Q, reflecting how efficient use of tangible assets and financial resources contributes to both accounting returns and market valuation. Meanwhile, Human capital efficiency (HCE) exhibits consistently positive associations across all performance indicators, highlighting the central importance of human capital in value creation within the retail sector.
- Second, the moderating effects of firm size and financial statement type reveal important contextual factors. Larger firm size appears to weaken the relationship between our efficiency measures and ROA, possibly due to coordination costs and bureaucratic inefficiencies in larger organizations. However, size strengthens the connection with Tobin's Q, suggesting investors may perceive larger retail companies as better positioned for long–term growth.
- Third, the type of financial statements companies use significantly influences how we observe these relationships. Companies preparing consolidated statements show different performance patterns compared to those using separate statements, particularly for ROA and ROE measures. This highlights the importance of considering reporting practices when analyzing intellectual capital's effects in emerging markets like Vietnam, where accounting standards are evolving.

Our findings generally support all three main hypotheses. Both H1 (CEE effect) and H2 (HCE effect) receive strong support across multiple performance measures. H3 (HCE stronger than CEE) finds partial support, with HCE showing more consistent effects across different measures, though CEE demonstrates stronger impacts on certain metrics like ROE.

By engaging with these issues, the study offers practical insights for policymakers, investors, and corporate managers seeking to enhance capital employed efficiency and human capital efficiency. In parallel, it extends the intellectual capital literature by providing evidence from Vietnam's rapidly evolving retail sector, which is an environment marked by intensifying competition where effective IC management is likely to become increasingly pivotal in the years ahead.

Theoretical Contributions

This research makes several important theoretical contributions. First, we extend intellectual capital theory by demonstrating how specific IC components operate within the retail sector of an emerging economy. While previous research often treated IC as a unified construct, our findings reveal how CEE and HCE exert distinct effects on different aspects of financial performance.

Second, we advance contingency perspectives in IC research by identifying firm size and financial reporting practices as significant moderating factors. Our findings suggest that the IC–performance relationship isn't universal but depends on organizational and institutional contexts. This helps explain why previous studies have found varying results across different countries and sectors.

Third, we contribute to methodology by demonstrating how different regression approaches (OLS, FEM, REM, GLS) can yield different insights in IC research. Our systematic approach to model selection and diagnostic testing provides a template for future studies dealing with similar panel data characteristics.

Practical Implications

For retail managers, our findings offer clear guidance for resource allocation decisions. The strong performance effects of both CEE and HCE suggest that retailers should pursue balanced strategies that optimize both physical and human capital. Investments in store networks, logistics systems, and inventory management should be complemented with similar commitments to workforce development, training, and talent management.

For investors and analysts, our results provide valuable insights for evaluating retail companies. The significant relationships we found between IC efficiency measures and market–based performance (Tobin's Q) suggest that intellectual capital metrics could enhance investment decision–making. Investors might particularly focus on companies demonstrating improvements in both CEE and HCE, as these appear to drive both current profitability and future growth prospects.

For policymakers, our findings highlight opportunities to support Vietnam's retail sector development. Programs that help retailers improve capital efficiency (through better access to financing or logistics infrastructure) and human capital efficiency (through vocational training and management development) could significantly enhance sector performance. The moderating effect of financial statement type also suggests that continuing Vietnam's accounting standards convergence toward IFRS could improve transparency and value relevance in financial reporting.

Limitations and Future Research

Despite the contributions of this study, several limitations should be acknowledged. First, the analysis focuses on publicly listed retail firms, which may differ from Vietnam's large population of unlisted and informal retailers in terms of governance, access to capital, and reporting quality; the unbalanced panel and the exclusion of firm-years with missing market or accounting data may also introduce survivorship and disclosure biases.

Second, intellectual capital is proxied using VAIC components (CEE and HCE), which capture efficiency based on accounting numbers rather than the full multidimensional stock of intangible resources; measurement may be affected by Vietnamese Accounting Standards (e.g., asset recognition and operating leases) and by discretionary accounting choices. Similarly, Tobin's Q relies on year-end market prices and a simplified replacement-cost approximation, which may be noisy in less liquid stocks.

Third, the main regression specifications are intentionally parsimonious and report SIZE and FS_TYPE as controls for comparability; although leverage, sales growth, and firm age are examined in robustness checks, omitted variables and endogeneity concerns may remain (e.g., reverse causality between performance and resource efficiency, or time-varying shocks). Future work could employ dynamic panel methods (e.g., system GMM), stronger identification strategies, and richer firm- and macro-level controls.

Fourth, the 2016–2023 window spans notable disruptions (e.g., COVID-19) and rapid changes in retail digitalization and reporting practices, yet the models do not explicitly test for structural breaks or heterogeneous effects across sub-periods and retail sub-sectors. Subsequent research could explore time-varying relationships, sub-sector comparisons, and the role of digital transformation as an intermediate mechanism.

Finally, while winsorization improves robustness to extreme values, results may vary under alternative outlier treatments or alternative IC measures (e.g., disclosure-based indices or survey measures). Mixed-method designs and comparative cross-country studies would further strengthen external validity and clarify the conditions under which intellectual capital translates into accounting and market performance.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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ДОСЛІДЖЕННЯ ВПЛИВУ ЕФЕКТИВНОСТІ ВИКОРИСТАННЯ ФІНАНСОВОГО ТА ЛЮДСЬКОГО КАПІТАЛУ НА ФІНАНСОВУ ЕФЕКТИВНІСТЬ РОЗДРІБНИХ ПІДПРИЄМСТВ, ЩО КОТИРУЮТЬСЯ НА В'ЄТНАМСЬКІЙ ФОНДОВІЙ БІРЖІ

У цьому дослідженні розглянуті впливи ефективності використання капіталу (CEE) та ефективності людського капіталу (HCE) — двох ключових компонентів інтелектуального капіталу, реалізованих за допомогою рамки VAIC, — на фінансові показники роздрібних компаній, зареєстрованих на В'єтнамській фондовій біржі, при цьому контролюючи розмір фірми й тип фінансової звітності. Спираючись на незбалансовану панель із 34 зареєстрованих ритейлерів із 2016 по 2023 рік (259 спостережень за рік компанії), аналіз застосовує OLS, оцінювачі фіксованих і випадкових ефектів, а також узагальнені найменші квадрати для оцінки взаємозв'язків між ЦЗЕ та НСЕ та трьома показниками ефективності: рентабельністю активів (ROA), рентабельністю власного капіталу (ROE) й Q-фактором Тобіна. Результати свідчать, що й CEE, і HCE позитивно та статистично значущо пов'язані з усіма трьома результатами, що свідчить про те, що більш ефективне використання фізичного капіталу й людських ресурсів сприяє вищій прибутковості та вищій оцінці ринку. Розмір фірми має негативний зв'язок із ROA, але позитивний зв'язок із Q-ю Тобіна, що свідчить про те, що великі компанії можуть стикатися з обмеженнями операційної ефективності, але отримувати вигоду від більш сприятливих очікувань зростання. Крім того, моделі ефективності відрізняються залежно від того, чи подають компанії консолідовану чи окрему фінансову звітність, особливо щодо ROA та ROE. Ці результати надають нові галузеві докази ефективності інтелектуального капіталу в сучасній роздрібній торгівлі В'єтнаму та пропонують практичні наслідки для менеджерів, інвесторів і політиків.

Ключові слова: інтелектуальний капітал, ефективність використаного капіталу, фінансові показники, ефективність людського капіталу, бухгалтерський облік, фінанси

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