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## LIQUIDITY, CAPITAL STRUCTURE, AND ASSET INVESTMENT AS DRIVERS OF LISTED HOSPITAL VALUE: A SYSTEMATIC REVIEW


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**Abstract**

Listed hospitals tie capital up in medical assets and wait on insurers for cash, so their financial decisions reach investors with a lag. This review identifies the financial decisions that drive hospital firm value and explains whether they act directly or through profitability. Following PRISMA 2020, we searched Google Scholar, Semantic Scholar and Scopus and identified 1,262 records (1,210 database records and 52 records from supplementary methods) and retained 30 full text studies from Scopus, SINTA 2 and SINTA 3 journals. Liquidity and collection efficiency show the most consistent positive link with performance and value, and profitability carries financial decisions into value in six of seven mediation tests. Leverage lowers hospital profitability, yet its effect on value splits across signs, and capital expenditure lowers value until assets reach utilisation. No study tests market value on listed hospitals as a distinct subsector. The proposed framework links working-capital efficiency, capital structure, asset investment and dividend policy to value directly and through profitability, moderated by firm size and governance. Faster claim collection, utilisation-linked expansion and moderate leverage are the main value levers for hospital managers.



**Keywords:** Firm value; Working capital; Capital structure; Hospitals; Systematic literature review


### Introduction

Private listed hospitals run on three financial facts. They tie up capital in buildings and medical equipment, they collect most revenue from social and private insurers after a lag, and they face regulated tariffs that cap how fast prices can rise. Each fact turns an operating choice into a valuation question for investors, who summarise their expectations in Tobin's Q and the price to book value (PBV). The ASEAN record for 2021-2025 shows the problem. Of 97 issuers in the Healthcare Facilities & Services subindustry across five ASEAN exchanges, 48 run hospitals. Across the 47 issuers with complete data, aggregate capital expenditure rose 86.5% and revenue rose 25.6%, while aggregate EBITDA grew only 2.0% and net income fell 3.7%. Median days sales outstanding (DSO) lengthened from 45.0 to 49.8 days, total asset turnover (TATO) fell from 0.65x to 0.54x, and median Tobin's Q dropped 22.6%. In 76.9% of issuers with paired data, Tobin's Q in 2025 sat below its 2021 level, as presented in Table 1.

**Table 1. ASEAN Listed Hospital Issuers and Median Indicators, 2021-2025**

| Country | Exchange | ssuers (n) | Tobin's Q | ROA | DSO (days) | TATO (x) |
|---|---|---|---|---|---|---|
| Thailand | SET | 27 | 2.04 - 1.53 | 13.3% - 8.4% | 53.3 - 48.2 | 0.81 - 0.66 |
| Indonesia | IDX | 11 | 1.80 - 2.17 | 7.5% - 1.6% | 44.0 - 53.3 | 0.58 - 0.40 |
| Malaysia | Bursa Malaysia | 5 | 1.44 - 1.49 | 3.4% - 4.7% | 57.6 - 60.0 | 0.40 - 0.42 |
| Singapore* | SGX | 3 | 2.17 - 1.33 | 1.3% - (-2.5%) | 69.3 - 38.2 | 0.19 - 0.21 |
| Vietnam* | HOSE, HNX | 2 | 1.71 - 2.13 | 7.6% - 9.2% | 19.3 - 12.7 | 0.96 - 1.03 |
| ASEAN | 5 exchanges | 48 | 1.98 - 1.53 | 7.5% - 5.8% | 45.0 - 49.8 | 0.65 - 0.54 |

Source: LSEG/Refinitiv Workspace, processed data, 2026

The pattern varies each market. Returns slumped and issuers in Thailand and Singapore lost value. Indonesian issuers witnessed a drop in ROA from 7.5% to 1.6% but an increase in Tobin's Q, indicating that Jakarta investors valued growth options over current profit. Hospital boards consequently have one common strategic financial decision: how much to spend in capacity, how to fund it and how quickly to transform it into cash. Expansion by debt financing increases fixed charges before new beds are occupied; delayed claim collection requires short-term borrowing. If utilization is slow then the return on invested capital is less than the cost of capital and the market marks the firm down.

**Theoretical Framework**

The grand theory of this review is the valuation theory. Miller & Modigliani (1961) illustrate that business value is the sum of the earnings of assets already in place and the present value of growth potential, and an investment creates value only if its return exceeds the cost of capital. Chung & Pruitt (1994) empirically approximate q of a firm, which is defined by Tobin (1969) as the market value of a firm relative to the replacement cost of its assets, as (market value of equity + total liabilities) / total assets. The logic for hospitals is that profitability is between operating decisions and value: a new wing increases the asset base immediately and increases earnings only when beds fill. This valuation logic is complemented by the foundational capital-structure irrelevance and tax-shield arguments (Modigliani & Miller, 1958, 1963), and by the operational approximation of Tobin's q (Chung & Pruitt, 1994).

Six supporting arguments explain why certain decisions drive hospital value. Signaling theory posits that knowledgeable managers emit expensive signals so that outsiders may distinguish enterprises by quality (Spence, 1973; Ross, 1977); hospital investors view profitability, liquidity and dividends as indications of future cash flow. Ownership, governance and payout control network expansion as suggested by agency theory. Agency theory highlights the cost of conflicting interests between managers and owners and the temptation to overinvest free cash flow (Jensen & Meckling, 1976; Jensen, 1986). Trade-off theory weighs the tax shield of debt against distress cost (Kraus & Litzenberger, 1973), and pecking order theory suggests enterprises favor internal funds over debt (Myers & Majluf, 1984). Chinese hospitals with greater ROA borrow less (Zhang & Laporte, 2025). Signalling models explain how financing choices communicate private information to capital markets (Ross, 1977), while

the agency perspective clarifies the monitoring and free-cash-flow problems associated with managerial discretion (Jensen & Meckling, 1976; Jensen, 1986).

The resource-based view identifies precious, unique and inimitable resources as the source of advantage (Barney, 1991), provided managers can deploy them (Penrose, 1959); medical facilities pay off only when utilized (Dragomir, 2024; Park et al., 2024). The cash conversion cycle (CCC = DSO + DIO - DPO) is a dynamic liquidity measure defined by the idea of working capital management (Richards & Laughlin, 1980). Hospitals have low inventory and high insurance receivables, therefore making DSO the most direct indicator for their working-capital efficiency. Stakeholder and legitimacy theory predict that ESG disclosure can create legitimacy and value (Freeman, 1984), while market evidence for healthcare has not yet verified it (Constantinescu, 2021). Table 2 ties each theory to the relevant decision, the logic of the risk return tradeoff, and the path to value creation. The review's working-capital mechanism is consistent with evidence linking cash-conversion efficiency to profitability (Deloof, 2003; Richards & Laughlin, 1980; Shin & Soenen, 1998; Chang, 2018).

**Table 2. Theories Linking Financial Decisions, Risk–Return and Hospital Value Creation**

| **Theory** | **Financial decision** | **Risk–return logic** | **Route to value creation** | **Studies (n)** |
|---|---|---|---|---|
| Valuation theory / Tobin's q (grand) | Investment and capacity expansion | Value rises when return on capital exceeds its cost | Profitability capitalised into market value | 1 explicit |
| Signalling | Dividends, liquidity, earnings disclosure | Costly signals reduce investors' information risk | Direct effect of ratios on value | 8 |
| Agency | Ownership, governance, payout | Monitoring lowers agency cost and overinvestment | Moderates the earnings–value link | 5 |
| Trade-off | Debt level | Tax shield against distress cost | Inverted-U effect of leverage | 7 |
| Pecking order | Order of financing | Internal funds avoid adverse selection | Profitable hospitals borrow less | 2 |
| Resource-based view | Asset structure, CAPEX, intangibles | Specific assets earn rents only when used | Utilisation turns assets into profit, then value | 4 |
| Working capital management | Receivables, payables, inventory, cash | Shorter cycle lowers funding need and liquidity risk | Collection efficiency raises profit and value | 8 |
| Stakeholder / legitimacy | ESG and sustainability investment | Long-horizon risk reduction | Contingent on market maturity | 2 |

Source: Research Data, 2026

The empirical record follows the theoretical split. Profitability raises the value of Indonesian healthcare issuers (Maylani et al., 2025), shows no effect during the pandemic (Sihombing et al., 2023), and lowers value in a multi-industry sample (Alghifari et al., 2022).

Leverage raises the PBV of Indonesian healthcare issuers (Sihombing et al., 2023) and has no effect on the Tobin's Q of African healthcare firms (Dangs et al., 2026). Hospital level research measures profitability and efficiency and rarely market value (Dubas-jakóbczyk et al., 2025). A hospital CFO who reads this literature cannot tell whether shortening DSO, cutting leverage or pausing capital expenditure would do most for the share price.

Three research questions guide the review: (RQ1) which financial decisions and firm characteristics drive the firm value of hospitals and healthcare firms; (RQ2) whether these drivers act on value directly or through profitability, and which conditions change their strength; and (RQ3) which gaps remain and what research design would close them. The review aims to map the relevant theories, synthesise evidence from 30 studies by theme and by comparison, trace research gaps from existing knowledge to research direction, and develop a conceptual framework with testable propositions and hypotheses.

**Research Method**

This study is a systematic literature review that follows the PRISMA 2020 statement (Page et al., 2021) and the evidence-informed review logic of Tranfield et al. (2003). We searched three databases on 1-2 October 2026: Google Scholar through Publish or Perish (Harzing, 2007), Semantic Scholar and Scopus. All three databases used one search string: The review protocol and synthesis logic are also informed by established guidance on evidence-informed management reviews and literature-review methodology (Tranfield et al., 2003; Denyer & Tranfield, 2009; Snyder, 2019).

*("firm value" OR "company value" OR "Tobin's Q" OR "Price to Book Value" OR "PBV") AND ("hospitals" OR "healthcare" OR "medical facilities" OR "health services")*

The search returned 1,210 records: 997 from Google Scholar, 169 from Semantic Scholar and 44 from Scopus. We merged the three exports and removed duplicates by normalised title and DOI, keeping the Scopus version first, then Semantic Scholar, then Google Scholar. The supplementary route identified 52 records from a pre-existing healthcare-finance research matrix and backward/forward citation searching. These records were deduplicated separately before eligibility assessment. The manuscript should retain the original search log and matrix as an auditable supplement. Geography was not restricted; hospital and healthcare studies from any country qualified. Table 3 lists the inclusion and exclusion criteria.

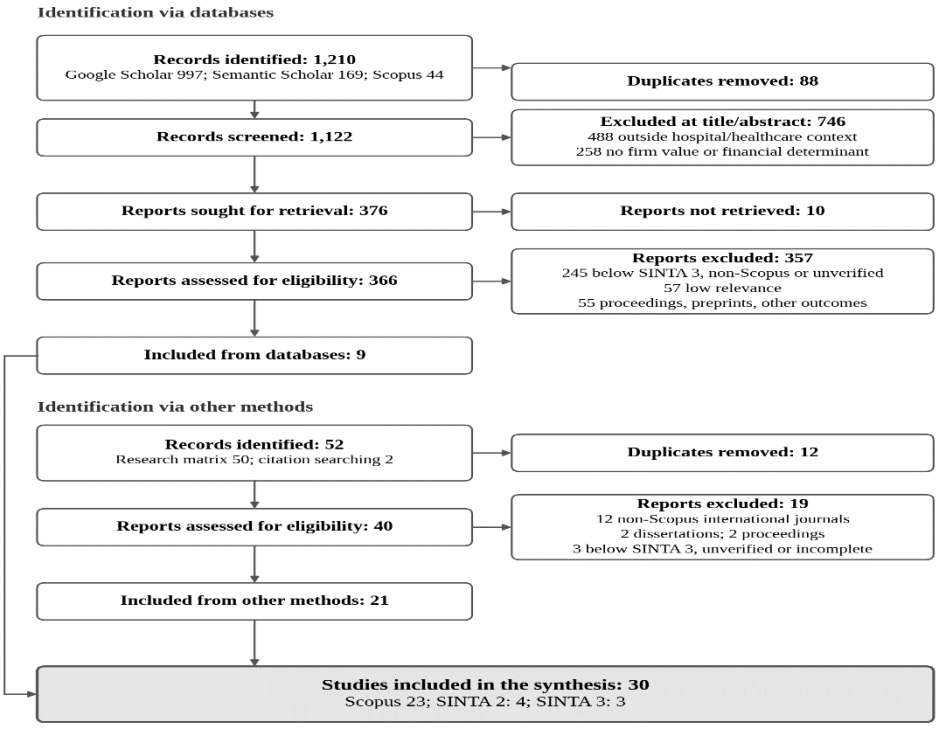
**Table 3. Inclusion and Exclusion Criteria**

| Criterion | Inclusion | Exclusion |
|---|---|---|
| Document type | Peer-reviewed journal article | Proceedings, book chapters, dissertations, preprints, working papers |
| Journal quality | Scopus-indexed or SINTA 2-3 accredited | Below SINTA 3, non-Scopus, or index status not verifiable |
| Topic | Tests determinants of firm value, or financial determinants on the path to value | Clinical or technical topics; general reviews testing no determinant |
| Context | Hospitals or healthcare firms, or mechanism studies with identical proxies | Non-healthcare context with no mechanism relevance |
| Access | Full text or verifiable abstract; complete metadata | Full text not retrievable; incomplete metadata |

Source: Research Data, 2026

Title and abstract screening removed 746 of the 1,122 unique database records: 488 fell outside the hospital or healthcare context, and 258 did not address firm value or its financial determinants. We sought 376 reports and could not retrieve 10, including two eligible studies without accessible full text (Achiro et al., 2024; Umar & Tjong, 2021). Of the 366 reports assessed, we excluded 357, mostly for journal quality (245) and low relevance (57), and kept 9. On the other methods route, 52 records yielded 40 unique reports after 12 duplicates; we excluded 19 and kept 21. The final corpus comprised 30 studies, as shown in Figure 1.

**Figure 1. PRISMA 2020 Flow Diagram**




Source: Adapted from Page et al. (2021); Research Data, 2026

We coded each study by author and year, country and industry, theory, variables (independent X, mediator M, dependent Y, moderator Z), method and sample, main findings, limitations and gap. We also coded the direction of each determinant value path as positive, negative or not significant. Twenty-eight study records were checked against full texts, including coefficients and sample sizes; (Kalia & Aggarwal, 2023) and (Han et al., 2024; Sevy & Handika, 2026) were extracted from abstracts and publisher pages.

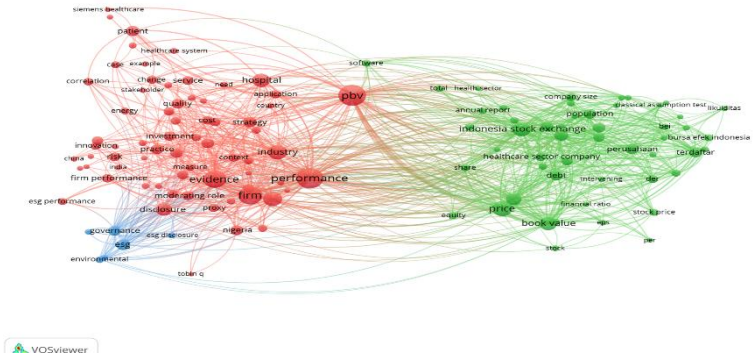
The analysis combined thematic and comparative synthesis. Findings were grouped into seven determinant clusters: profitability (D1), liquidity and working capital (D2), capital structure (D3), asset structure and efficiency (D4), size, ownership and governance (D5), dividends (D6), and ESG and intellectual capital (D7). We compared clusters across contexts and methods and traced the contingency factors behind conflicting results. A VOSviewer keyword co-occurrence map (van Eck & Waltman, 2010), built from the Zotero RIS export of the database records with full counting, shows how the field is organised.

**Results**

The corpus divides into two literatures that seldom meet: valuation studies of healthcare issuers that group hospitals with other enterprises, and hospital studies that stop at profit or efficiency. Twenty-three research published in Scopus indexed publications and seven studies published in SINTA 2 or SINTA 3 journals. Of the 12 studies with a market-value outcome, eight employ Indonesian samples, and only Dangs et al., (2026) uses Tobin's Q for healthcare enterprises. The nine hospital-level studies, from China, Korea, Poland, Greece, the United States, Brazil and Indonesia, measure profit, efficiency, debt or cash cycles. Seventeen papers apply panel econometrics, three of which address endogeneity or dynamics (Batrancea, 2021; Dragomir, 2024; Xuan et al., 2025).

Figure 2 shows a keyword map formed by three clusters. The red cluster combines performance, PBV, firm, hospital, investment, quality and service, and reflects international work on hospital performance and strategy. The green cluster contains Indonesia Stock Exchange, price, book value, debt, DER and firm size, and reflects ratio studies of Indonesian healthcare issuers. In a small blue cluster are governance, environmental transparency, and ESG. PBV is the largest node connecting the red and green clusters, with Tobin's Q tiny near the periphery. The hospital node is remote from the ratio cluster: hospital studies examine performance, while ratio studies rarely isolate hospitals.

**Figure 2. Keyword Co-occurrence Network**




Source: VOSviewer output, Zotero RIS export; Research Data, 2026

Tables 4a to 4c present the synthesis matrix of the 30 studies on eight dimensions: author and year, country and industry, theory, variables, method and sample, main findings, limitation, and gap or insight.

| Author (Year) | Country / Industry | Theory | Variables / Construct | Method & Sample | Main Findings | Limitation | Gap / Insight |
|---|---|---|---|---|---|---|---|
| Sihombing et al. (2023) | Indonesia; healthcare services and devices | Signalling; agency; trade-off | X: ROA, NWC, tangible assets, institutional ownership; Z: DAR; Y: PBV | Panel + MRA; 9 issuers, quarterly 2020–2021 | Tangible assets negative; leverage positive and weakens tangibility effect; others not significant | Pandemic window; hospitals pooled | Transitory profit may not reach value |
| Maylani et al. (2025) | Indonesia; healthcare | Signalling | X: profitability, liquidity, solvency; Y: firm value | Multiple regression; 98 obs, 2019–2023 | Profitability and liquidity positive; solvency not significant | Pooled OLS; hospitals not separated | Mediation untested |
| Sundari et al. (2025) | Indonesia; healthcare | Signalling; RBV | X: DPR, CR, asset structure; M: TATO; Y: PBV | WarpPLS path analysis; 55 firm-years | DPR, CR and asset structure positive; TATO mediates CR and asset structure | Small sample | Asset efficiency as second channel |
| Dangs et al. (2026) | Sub-Saharan Africa; healthcare and pharma | Pecking order; trade-off | X: CR, DER; Y: ROA, ROE, Tobin's Q | Panel FE; 12 firms, 60 obs | Liquidity raises ROA; leverage not significant on Q | Very small sample | Profit–value path untested |
| Constantinescu (2021) | Europe; healthcare and energy | Stakeholder; legitimacy | X: ESG scores; Y: firm value | Panel; 45 healthcare firms | ESG disclosure no effect on healthcare value | Developed markets only | ESG in emerging hospitals unknown |
| Zhang & Laporte (2025) | China; hospitals | Pecking order; trade-off | X: ownership, ROA, market share; Y: debt ratios | Two-part model; 909 hospitals | Higher ROA lowers borrowing; private ownership lowers long-term debt | Old data; no market outcome | Profit–debt causality two-way |
| Cinaroglu & Pirgaip (2024) | Turkey; listed healthcare | Efficiency (DEA) | Inputs: liquidity, leverage; outputs: profitability | DEA, fuzzy DEA; 8 firms, 2022 | Debt, WC and asset restructuring improve efficiency | Cross-section; tiny sample | Efficiency not linked to value |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Park & Lee (2024) | South Korea; hospitals | RBV | X: asset types; Z: location; Y: ROA | OLS, FE; 279 hospitals, 2016–2020 | Medical facilities raise medical ROA, lower net ROA; leverage negative | Accounting outcomes | Asset–profit–value chain untested |
| Dragomir (2024) | Europe; technology and healthcare | RBV; intellectual capital | X: structural capital, R&D; Y: BEP, ROA, ROE | Panel FE, dynamic; 625 firms | Structural capital lowers profit; R&D no effect | Short horizon | Long-run value untested |
| Krzeczewski (2024) | Poland; public hospitals | Agency; WCM | X: ownership authority; Y: CCC | Non-parametric tests; 92 hospitals | County hospitals collect faster; CCC negative | Descriptive | CCC not linked to value |

Note: X = independent; M = mediator; Y = dependent; Z = moderator or control.

Source: Research Data, 2026

| Author (Year) | Country / Industry | Theory | Variables / Construct | Method & Sample | Main Findings | Limitation | Gap / Insight |
|---|---|---|---|---|---|---|---|
| (Terzoudis et al., 2024) | Greece; general hospitals | Trade-off; scale | X: liquidity, debt, size; Y: profitability | Spearman; 84 hospitals | Liquidity and size positive; debt negative in private only | Correlational | Ownership conditions debt |
| (Dubas-jakóbczyk et al., 2025) | Europe; hospitals | Not stated | Hospital traits to financial performance | Scoping review; 62 publications | Context-dependent; profitability dominates | Performance only | No market-value measures |
| (Lee et al., 2026) | United States; hospitals | Efficiency; trade-off | X: profit, debt coverage, WC, liquidity; Y: efficiency | DEA + regression; AHA data | Profit and WC raise efficiency; liquidity, leverage lower it | Operating outcome | No market value |
| (Guerra et al., 2022) | Brazil; SUS hospitals | Efficiency (DEA) | Inputs: cash, debt, collection; outputs: TATO, margin, ROA | DEA; 50 hospitals, 2010–2016 | Debt and margin drive efficiency; large non-profits best | Mostly public | Mediation untested |
| Phan & Dang (2026) | ASEAN-6; all sectors | WCM | X: CCC, DSI, DSO, DPO; Y: ROA | Panel FGLS; 1,990 firms | All WCM proxies negative; healthcare highly DSO-sensitive | ROA only | Calls for Tobin's Q tests |
| (Stavropoulos & Zounta, 2025) | Greece; service firms | WCM | X: CCC; Y: ROA | Correlation, ANOVA; 343 firms | Negative CCC; CCC positive with ROA | Single year | Negative cycles reverse sign |
| (Anjani et al., 2024) | Indonesia; one public hospital | Efficiency | Ratios: CR, collection, FATO; Y: ROA, ROE | Descriptive; 2018–2022 | Score 73% (grade A); weak cash ratio and ROE | Single case | No causal test |
| (Suriawinata et al., 2023) | Indonesia; consumer goods | Signalling; RBV; WCM | X: CCC, TATO, CAPEX; M: profit; Y: Tobin's Q | SEM; 61 firms | CCC acts via profit; TATO direct; CAPEX negative direct, positive total | Non-healthcare | Capex timing drives sign |
| (Yulandreano et al., 2020) | Indonesia; retail | WCM; signalling | X: CCC; M: ROA; Y: Tobin's Q | Panel + Sobel; 18 firms | CCC lowers ROA and Q; ROA raises Q; partial mediation | Retail sector | Profit channel confirmed |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (Arief, 2020) | Indonesia; cement | WCM; valuation | X: DSO, DSI, DPO; M: ROA; Y: Tobin's Q | PLS + Sobel; 6 firms | ROA mediates all WCM components | Six firms | Components differ in sign |

Source: Research Data, 2026

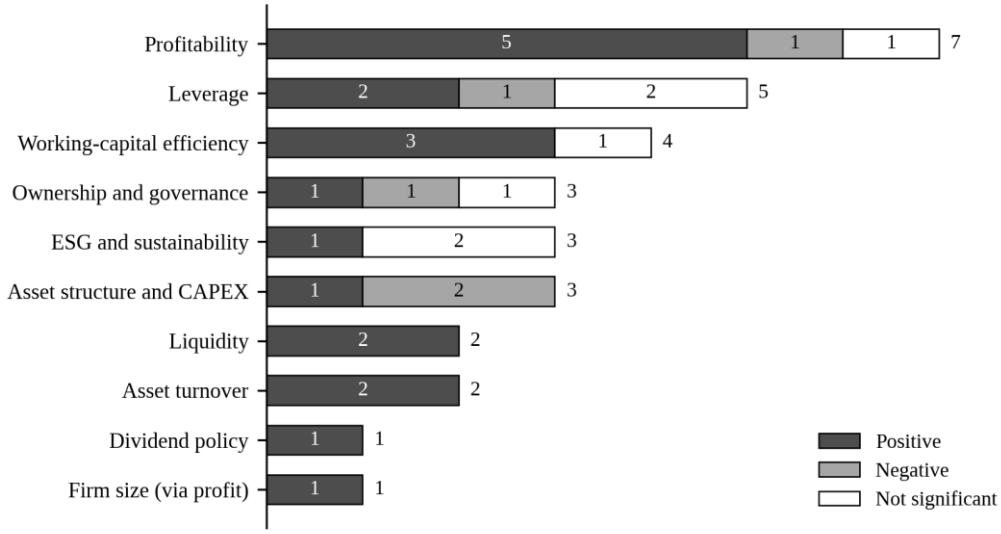
| Author (Year) | Country / Industry | Theory | Variables / Construct | Method & Sample | Main Findings | Limitation | Gap / Insight |
|---|---|---|---|---|---|---|---|
| (Alghifari et al., 2022) | Indonesia; misc. industries | Trade-off; signalling | X: capital structure; M: profit; Z: hedging, size; Y: PBV | PROCESS; 39 firms | Leverage lowers profit, raises PBV; no mediation | Non-healthcare | Counter-evidence to profit channel |
| (Sudiyatno et al., 2020) | Indonesia; manufacturing | Signalling; agency | X: size, leverage, managerial ownership; M: profit; Y: PBV | Panel + Sobel; 2016-2018 | Leverage and managerial ownership negative; profit mediates size | Short period | Size works through profit |
| (Kiymaz et al., 2024) | 11 countries; all sectors | WCM | X: CCC components; Y: ROA | Panel FE; 3,336 firms | Long cycles hurt emerging markets; DSI helps developed | Healthcare not separated | Market development matters |
| (Xuan et al., 2025) | Vietnam; listed firms | WCM | X: DSO, DIO, DPO, CCC; Y: ROA, ROE | FEM, REM, FGLS; 441 firms | WCM negative; inverted U; endogeneity matters | Non-healthcare | Test non-linearity |
| (Naz et al., 2021) | Pakistan; non-financial | Agency | X: governance; M: WCM; Y: ROA, ROE | Panel + mediation; 179 firms | Governance acts partly through WCM | Accounting outcome | Governance via working capital |
| (Mehta & Singh, 2026) | Global; all sectors | Not stated | Drivers of WCM efficiency | SLR; 54 articles | Firm drivers dominate but inconclusive | Review | Calls for value outcomes |
| (Chakkravarthy et al., 2023) | India; BSE healthcare | Agency; signalling | X: promoter, institutional holdings; Z: age, size; Y: DPR, value | Hierarchical regression; 23 firms | Holdings raise payout and value; size alone not significant | Hospitals pooled | Ownership as conditioner |
| (Kalia & Aggarwal, 2023) | Global; 468 healthcare firms | Stakeholder; legitimacy | X: ESG; Z: development; Y: performance | Regression; 2020 | ESG positive in developed, negative or not significant in developing | One-year cross-section | ESG depends on market maturity |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (Han et al., 2024) | United States; hospitals | Practice-based view | X: environmental practices; M: quality; Y: financial performance | Hospital panel | Environmental practices raise quality and finance | US only | Market value untested |
| (Batrancea, 2021) | United States; NYSE healthcare | Trade-off; liquidity | X: CR, QR, DER; Y: ROA, margins | Panel 2SLS, GMM; 34 firms | CR and QR raise ROA; DER lowers operating margin | Accounting outcomes | Value untested |

Source: Research Data, 2026

Figure 3 counts the direction of each determinant value finding. Profitability is the most tested path, with seven findings of which five are positive. Leverage, ownership and ESG split across signs, while paths with one or two findings (liquidity, asset turnover, dividends and size) point one way but rest on thin evidence.

**Figure 3. Direction of Findings per Determinant Firm Value Path**




Source: Research Data, 2026

**Discussion**

Profitability is a bridge, the strength of which depends on the quality of profits. Profit enhances the value of Indonesian healthcare issuers from 2019 to 2023 (Maylani et al., 2025) and also brings working capital efficiency into value in retail, cement and consumer products (Arief, 2020; Suriawinata et al., 2023; Yulandreano et al., 2020). Two studies contradict the pattern: ROA did not affect PBV of nine healthcare issuers in 2020-2021 (Sihombing et al., 2023) and profit decreased PBV in a multi-industry sample (Alghifari et al., 2022). The results are consistent with valuation theory, which posits that investors capitalize revenues they believe to be persistent and discount earnings they view as transient, such as revenue during the epidemic. Other hospital studies give a second role for profit. Profitable Chinese hospitals borrow less (Zhang & Laporte, 2025). Asset mix and controlled tariffs impact the profit of Korean hospitals (Park et al., 2024). Profitability is therefore at the crossroads of operating, finance and valuation decisions.

Liquidity and working capital form the most consistent driver. Liquidity raises value in both Indonesian healthcare studies that test it (Maylani et al., 2025; Sundari et al., 2025). At the performance level, the positive sign holds in Sub Saharan African healthcare (Dangs et al., 2026), in NYSE healthcare over 15 years (Batrancea, 2021) and in Greek general hospitals (Terzoudis et al., 2024). ASEAN healthcare firms rank among the three sectors most sensitive to DSO and earn the largest liquidity premium (Phan & Dang, 2026). The cross-market comparison refines the claim: in emerging markets long DSI, DSO and DPO all lower performance, while in developed markets longer inventory periods help (Kiymaz et al., 2024).

In Vietnam, even stretching payables lowers profit, and the relation follows an inverted U (Xuan et al., 2025). Greek service firms with negative cycles show the opposite sign (Stavropoulos & Zounta, 2025), and Polish public hospitals run cycles of -61 to -83 days because suppliers fund them (Krzeczewski, 2024). Collection speed therefore captures hospital working-capital risk better than the full CCC, and delaying suppliers offers no reliable route to value.

Capital structure is negative for profit and conditional for value. Leverage lowers every ROA measure of Korean hospitals (Park et al., 2024), the profit of private Greek hospitals (Terzoudis et al., 2024), the efficiency of US hospitals (Lee et al., 2026) and the operating margin of NYSE healthcare firms (Batrancea, 2021). Causality also runs the other way, since profitable Chinese hospitals avoid debt (Zhang & Laporte, 2025). On the value path, leverage raises PBV for Indonesian healthcare issuers (Sihombing et al., 2023) and miscellaneous industries (Alghifari et al., 2022), shows no effect in Indonesian healthcare over 2019-2023 (Maylani et al., 2025) and African healthcare (Dangs et al., 2026), and lowers value in manufacturing (Sudiyatno et al., 2020). Trade off theory explains the split: debt adds value below the optimal ratio and destroys it above, and investors may read new debt as a growth signal when it funds visible expansion. Ownership adds a further condition, because debt hurts profit in private Greek hospitals but not in public ones (Terzoudis et al., 2024).

Asset investment is a timing problem. Tangible assets lower the value of Indonesian healthcare issuers (Sihombing et al., 2023), while asset structure raises PBV through asset turnover (Sundari et al., 2025). Suriawinata et al., (2023) show the timing: capital expenditure raises profit but lowers value in the same period, its total effect turns positive, and asset turnover raises value directly. Hospital evidence explains why. In Korea, medical facilities raise medical service profit but lower net income through depreciation and regulated tariffs (Park et al., 2024). Turkish healthcare firms gain efficiency by restructuring their asset base (Cinaroglu & Pirgaip, 2024), and large non profit hospitals in Brazil rank most efficient (Guerra et al., 2022). Read with the resource based view, hospital assets create value once they reach utilisation; until then investors discount them. The ASEAN capital expenditure surge of 2021-2025 sits in that waiting period.

Ownership, governance, dividends and size act more as conditioners than drivers. Dividends raise the PBV of Indonesian healthcare issuers (Sundari et al., 2025). In Indian healthcare, promoter and institutional holdings raise payout and value, firm age and size moderate those paths, and size alone has no effect (Chakkravarthy et al., 2023). Institutional ownership shows no effect in Indonesian healthcare (Sihombing et al., 2023), and managerial ownership lowers manufacturing value while raising profit (Sudiyatno et al., 2020). The indirect effects line up better: governance raises performance through working-capital efficiency (Naz et al., 2022), size raises value through profit (Sudiyatno et al., 2020), and ownership authority shapes the cash cycles of Polish hospitals (Krzeczewski, 2024).

ESG and intangibles are priced mainly by mature markets. Sustainability disclosure has no effect on the value of 45 European healthcare firms (Constantinescu, 2021). Across 468 healthcare firms, ESG helps in developed countries and hurts or does nothing in developing ones (Kalia & Aggarwal, 2023). US hospital environmental practices raise service quality and financial performance (Han et al., 2024), while intangible intensity lowers short-run profit in European technology and healthcare firms (Dragomir, 2024). For listed hospitals in emerging

markets, ESG fits better as a control or a later extension than as a core driver. Table 5 traces each conflicting result to the contingency that explains it.

**Table 5. Reconciliation of Conflicting Findings**

| Path | Pattern of findings | Contingency factor | Consequence for model design |
|---|---|---|---|
| Profitability to value | Positive in five studies; not significant (Sihombing et al., 2023); negative (Alghifari et al., 2022) | Earnings persistence; pandemic period; non-healthcare samples | Add a pandemic dummy; test persistent ROA |
| Leverage to value | Positive (Alghifari et al., 2022; Sihombing et al., 2023); negative (Sudiyatno et al., 2020); not significant (Dangs et al., 2026; Maylani et al., 2025) | Distance from optimal leverage; use of debt | Test both directions and a squared term |
| CCC / DPO to performance | Negative (Huynh et al., 2025; Kiymaz et al., 2024; Phan & Dang, 2026); positive (Stavropoulos & Zounta, 2025) | Market development; negative-cycle service firms; supplier power | Use DSO as main proxy; control for country |
| DSI to performance | Negative in emerging markets; positive in developed markets and cement (Arief, 2020; Kiymaz et al., 2024) | Inventory as service buffer vs idle capital | DSI unsuitable for hospitals with small inventories |
| Assets / CAPEX to value | Positive asset structure (Sundari et al., 2025); negative tangibility (Sihombing et al., 2023); negative direct, positive total CAPEX (Suriawinata et al., 2023) | Investment maturation lag; utilisation | Lag CAPEX one period; use TATO as channel |
| ESG to value or performance | Not significant (Constantinescu, 2021); positive only in developed markets (Kalia & Aggarwal, 2023); positive for hospital performance (Han et al., 2024) | Market maturity; long horizon | Treat ESG as control or later moderator |

Source: Research Data, 2026

The central research gap is a missing link: no study in the corpus tests whether hospital operating and financing decisions reach market value through profitability on a sample of listed hospitals. Table 6 traces six gaps along the chain from existing knowledge, through inconsistency or limitation, to the gap and the potential research direction.

**Table 6. Research Gap Chain**

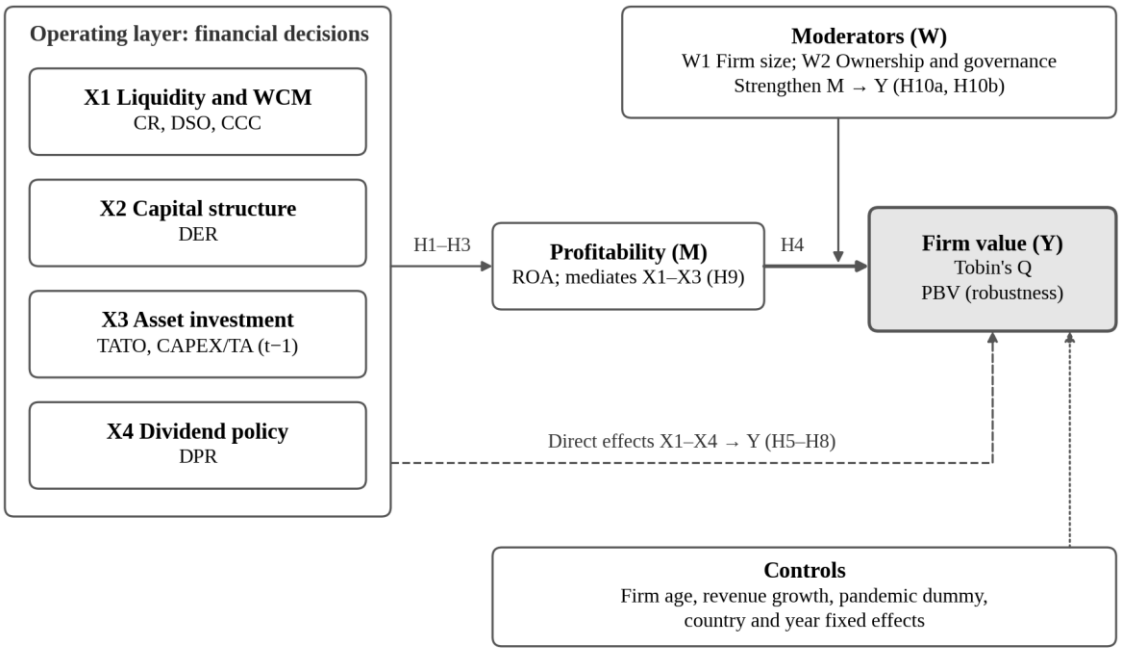
| Gap type | Existing knowledge | Inconsistency / limitation | Gap | Research direction |
|---|---|---|---|---|
| Contextual | Healthcare valuation studies cover Indonesia, India, Europe and Africa (Chakkravarthy et al., 2023; Kalia & Aggarwal, 2023; Maylani et al., 2025) | All pool hospitals with pharmaceutical and device firms | No market-value study of listed hospitals as a subsector | Cross-country panel of listed hospitals, e.g. ASEAN 2021–2025 |
| Mechanism | Nine hospital studies explain profit, efficiency, debt and cash cycles (Krzeczewski, 2024; Park & Lee, 2024; Zhang & Laporte, 2025) | None carries outcomes forward to market value | Determinant to profitability to value chain untested for hospitals | Integrated mediation model with bootstrap indirect effects |
| Empirical | Profit, leverage and asset effects reported in all directions (Alghifari et al., 2022; Sihombing et al., 2023; Sudiyatno et al., 2020) | Pandemic-era samples and pooled sectors blur signs | No post pandemic hospital,specific re test | Re-estimate 2021–2025 with pandemic and country-year controls |
| Methodological | Seventeen studies use panel models | Only three treat endogeneity; non-linearity rarely tested | Profit leverage reverse causality unresolved | Dynamic panel GMM; lagged CAPEX; squared terms |
| Construct | Liquidity measured mostly by current ratio | Hospitals hold little inventory; DSO drives cash risk (Phan & Dang, 2026) | Hospital specific WCM and service quality absent from value models | Use DSO and TATO; add occupancy or accreditation |
| Conditional | Ownership effects differ by country (Chakkravarthy et al., 2023; Sihombing et al., 2023) | Direct effects conflict; ESG pays only in mature markets | Unclear conditions of the profit - value link | Moderated mediation with size, ownership and market development |

Source: Research Data, 2026

The conceptual framework in Figure 4 places four financial decisions on an operating layer, profitability on a performance layer and firm value on a valuation layer, with size and

governance conditioning the last link. The operating layer holds liquidity and working capital efficiency (X1), capital structure (X2), asset investment and efficiency (X3) and dividend policy (X4). Profitability (M) turns these decisions into earnings. Firm value (Y) uses Tobin's Q as the main measure and PBV as a robustness check. Firm size (W1) and ownership and governance (W2) moderate the profit value link, and firm age, revenue growth, a pandemic dummy and country and year effects serve as controls.

**Figure 4. Conceptual Framework of Hospital Firm Value**




Source: Developed from the synthesis of 30 studies; Research Data, 2026

Each relationship rests on a specific theory. Under working capital management theory, cash tied up in receivables carries an opportunity cost, so a hospital that collects insurer claims faster lowers its funding need and raises its margin (X1 to M), and under signalling theory investors read a strong cash position as proof of solvency (X1 to Y). Under pecking order and trade off theory, interest charges and distress risk cut earnings (X2 to M), while debt adds a tax shield and a growth signal below the optimal ratio and raises distress cost above it, so the X2 to Y sign stays open. The resource-based view predicts that asset turnover and lagged capital expenditure raise profit (X3 to M), and valuation theory predicts that investors reward assets that turn over and discount capacity that has not yet earned its cost of capital (X3 to Y). Dividends signal confidence in future cash flow and sit on the direct path only (X4 to Y). Persistent earnings are capitalised into price (M to Y), and under agency and signalling theory, larger hospitals and stronger governance make earnings more credible and strengthen that transmission.

The synthesis yields six propositions. Liquidity and collection efficiency are the most consistent hospital value drivers, acting mainly through profitability (P1). Leverage lowers hospital profitability, while its net effect on value depends on distance from optimal leverage (P2). Hospital assets and capital expenditure create value after utilisation, negative in the short run and positive in total (P3). Persistent profitability is the main channel through which

financial decisions reach market value (P4). Size, ownership and governance moderate the profit value link more than they drive value directly (P5). Markets price ESG and intangibles conditionally, depending on market maturity and time horizon (P6). P6 remains a proposition because the evidence does not yet support a directional hypothesis for emerging-market hospitals. Table 7 translates P1-P5 into eleven testable hypotheses.

**Table 7. Hypotheses and Empirical Basis**

| Code | Hypothesis | Empirical basis |
|---|---|---|
| H1 | Liquidity and working-capital efficiency (higher CR, shorter DSO/CCC) raise profitability | Batrancea (2021); Dangs et al. (2026); Phan & Dang (2026); Terzoudis et al. (2024) |
| H2 | Leverage lowers profitability | Batrancea (2021); Lee et al. (2026); Park & Lee (2024); Terzoudis et al. (2024) |
| H3 | Asset turnover and lagged capital expenditure (t−1) raise profitability | Park & Lee (2024); Sundari et al. (2025); Suriawinata et al. (2023) |
| H4 | Profitability raises firm value | Arief (2020); Maylani et al. (2025); Sudiyatno et al. (2020); Suriawinata et al. (2023); Yulandreano et al. (2020) |
| H5 | Liquidity and working-capital efficiency raise firm value | Maylani et al. (2025); Sundari et al. (2025); Yulandreano et al. (2020) |
| H6 | Leverage affects firm value (two-tailed; non-linear form tested) | Alghifari et al. (2022); Dangs et al. (2026); Sihombing et al. (2023); Sudiyatno et al. (2020) |
| H7 | Asset turnover raises firm value; current capital expenditure lowers it | Sihombing et al. (2023); Sundari et al. (2025); Suriawinata et al. (2023) |
| H8 | Dividend payout raises firm value | Chakkravarthy et al. (2023); Sundari et al. (2025) |
| H9 | Profitability mediates the effects of X1–X3 on firm value | Arief (2020); Sudiyatno et al. (2020); Suriawinata et al. (2023); Yulandreano et al. (2020) |
| H10a | Firm size strengthens the effect of profitability on firm value | Chakkravarthy et al. (2023); Sudiyatno et al. (2020) |
| H10b | Institutional ownership and governance strengthen the effect of profitability on firm value | Chakkravarthy et al. (2023); Naz et al. (2022) |

Source: Research Data, 2026

Three patterns stand out in the findings. Liquidity and collection efficiency carry the same sign across Africa, ASEAN, Europe and the United States, which makes them the most portable driver in the corpus. Leverage shows a stable negative effect on profit and an unstable effect on value. Investment and profit both show timing effects, because capital expenditure and pandemic earnings move value in a different direction in the short run than in total. Most conflicts reflect study design more than true heterogeneity: pooling hospitals with device and pharmaceutical firms mixes capital light and capital heavy business models, pandemic only windows capture transitory earnings, and linear specifications force one sign onto leverage and working capital despite evidence of an inverted U (Xuan et al., 2025). True heterogeneity also exists, since market development changes which working capital components matter (Kiymaz et al., 2024) and whether ESG pays (Kalia & Aggarwal, 2023).

No single theory explains the corpus. Signalling theory accounts for the direct effects of liquidity and dividends but cannot explain why capital expenditure lowers value before it raises it. Valuation theory and the resource-based view fill that gap: assets earn a return only after utilisation, and investors capitalise only persistent earnings. Working capital management theory adds the industry mechanism, because insurer receivables are the main channel linking hospital operations to cash and value. Trade off and pecking order theory together explain the split leverage evidence, and agency theory fits ownership and governance better as moderators than as direct drivers. The theoretical implication is a layered model in which valuation theory frames value creation, the resource based view and working capital theory explain how hospital decisions produce profit, and signalling and agency theory explain how investors read and trust that profit; testing direct effects alone risks concluding that a driver has no effect when its effect runs through profit.

**Implication**

The strategic implications are concrete. Hospital CFOs can shorten DSO through faster insurer claim processing to lower funding needs and raise margins. Expansion plans need explicit utilisation targets, such as bed occupancy and asset turnover milestones, so investors can see when new capacity will earn its cost of capital. Debt-funded growth should stay below the point where interest charges erode margins, which matters most for private hospitals, and investor communication should stress the persistence of margins and the payout policy. Analysts can read rising capital expenditure with falling asset turnover as a temporary discount when utilisation targets are credible, and payer reforms that speed reimbursement would lift hospital liquidity. Future studies should build cross-country panels of listed hospitals separated from pharmaceutical and device firms, test the full determinant, profitability, value chain with bootstrap mediation, apply dynamic panel GMM with lagged capital expenditure and squared leverage and DSO terms, add hospital-specific constructs such as occupancy, accreditation and payer mix, and test whether market development moderates the profit value link.

**Conclusion**

Seven clusters drive the value of hospitals and healthcare firms: profitability, liquidity and working capital, capital structure, asset structure and efficiency, dividend policy, ownership and governance, and ESG and intellectual capital (RQ1). Liquidity and collection efficiency show the most consistent positive effect, profitability is mostly positive with exceptions tied to pandemic earnings and non healthcare samples, and leverage, assets, ownership and ESG act conditionally. Most operating decisions reach value through profitability, with six of seven mediation tests supporting this channel; liquidity and dividends also act directly as signals, leverage lowers profit while moving value in either direction, capital expenditure lowers value before utilisation and raises it in total, and size and ownership moderate the profit value link (RQ2). The main gap is the missing test of the full determinant profitability value chain on listed hospitals as a distinct subsector, together with conflicting post pandemic evidence, scarce treatment of endogeneity and non-linearity, and the absence of hospital specific constructs (RQ3). Valuation theory, the resource-based view and working capital theory explain how hospital decisions create profit and value, while signalling and agency theory explain how investors read them; for hospital boards, faster claim collection, utilisation-linked expansion and moderate leverage are the levers the evidence supports most.

## Limitations and Future Research

This review has limitations. The corpus excludes journals below SINTA 3 and outside Scopus, which removed 245 database reports and may bias it toward Indonesian SINTA and international Scopus outlets; two eligible studies lacked full text; two studies were extracted from abstracts and publisher pages; and nine mechanism studies come from non-healthcare sectors, so their transfer to hospitals rests on identical proxies rather than identical industries. Future research should test hypotheses H1-H10b on a cross country panel of listed hospitals, such as ASEAN issuers over 2021-2025, using Tobin's Q and PBV, lagged capital expenditure, bootstrap mediation, moderation by size and governance, and dynamic panel estimators, and later reviews should widen the database coverage to Web of Science and hospital-sector grey literature.

## CRediT Authorship Contribution Statement

**Juniantari Pusparini:** Conceptualization, methodology, investigation, data curation, formal analysis, visualization, and writing—original draft. **Etty Nurwati:** Supervision, conceptualization, methodology, and writing—review and editing. **Harry Z. Soeratin:** Supervision, validation, and writing—review and editing.

## Declaration

**Ethics approval:** The source manuscript does not include an ethics approval number or a formal decision from an institution.

**Informed consent:** Not applicable to the analysis of publicly accessible online reviews, while adhering to the ethical requirements of the relevant institution and journal.

**Data availability:** The dataset of reviews can be obtained by contacting the author via the provided email address.

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## Use of Artificial Intelligence (AI)

During manuscript preparation, the authors used an AI-assisted language tool solely to support language editing, grammar refinement, and improvement of readability. The tool was not used to generate research data, determine study eligibility, conduct the substantive synthesis, or produce findings. The authors critically reviewed and verified all AI-assisted edits and take full responsibility for the accuracy, originality, and integrity of the manuscript. Authors should amend this statement if AI was used for any additional purpose.

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