



Empirical Mapping of Investor Attention Across LQ45 Stocks on The Indonesia Stock Exchange, 2022–2025

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Abstract

Digitalization has transformed how retail investors discover and evaluate listed companies, making online search activity a potentially observable component of investor attention. This study maps the level, volatility, and temporal dynamics of investor attention across stocks in the LQ45 index from 2022 to 2025. Using a longitudinal quantitative-descriptive design, the study analyzes 68 unique securities observed over 16 quarters, yielding 1,088 stock-quarter observations. The Quarterly Google Trends Index (GTI) is used as a search-based proxy for attention. Stocks are ranked by mean GTI and by the standard deviation of quarterly GTI, while annual changes and sectoral patterns are examined descriptively. MIKA (81.53), SIDO (66.22), ARTO (57.07), WIKA (52.13), and BUKA (49.29) have the highest mean attention. Attention volatility is highest for BUKA (25.07), GOTO (16.65), WIKA (15.46), PTBA (14.26), and WSKT (13.39). Aggregate attention declines from 23.58 in 2022 to 19.29 in 2024 and rebounds to 20.72 in 2025. The study confirms that attention varies across firms and sectors and changes over time. Its main contribution is a longitudinal descriptive baseline for Indonesian LQ45 stocks that distinguishes persistent attention from episodic attention and clarifies the methodological limits of Google search data. The results provide a basis for future causal tests linking attention with trading activity, returns, and volatility.

Keywords: *Investor Attention, Google Trends Index, LQ45, Indonesia Stock Exchange, Behavioral Finance, Emerging Markets*

INTRODUCTION

Investor attention is a scarce cognitive resource because investors cannot continuously process all information available in financial markets. Salient price movements, news, corporate events, and public visibility can therefore affect which securities enter an investor's consideration set (Barber & Odean, 2008; Simon, 1955). The incomplete information perspective similarly suggests that investor recognition matters for the breadth of the investor base and the conditions under which securities are priced (Merton, 1987). In digital markets, search activity offers a direct behavioral trace of information acquisition. Da et al. (2011) established Google search frequency as a direct proxy for investor attention, and subsequent studies show that search-based measures can be associated with returns, trading activity, and volatility.

Recent evidence, however, also shows that Google search data requires careful interpretation. A systematic review finds that the Google Search Volume Index (GSVI) is frequently associated with trading volume and volatility, but results vary by keyword, market, and sampling frequency (Ayala et al., 2024). Research on international markets indicates that Google search trends may capture uncertainty as well as attention (Szczygielski et al., 2024). More importantly, de Haan et al. (2025) demonstrate substantial measurement error in ticker searches, with many searches unrelated to investment. Evidence from emerging markets remains active and mixed: wavelet analysis identifies time-varying relationships between attention and returns (Lohan &

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Katoch, 2025), while recent studies in Vietnam and Indonesia indicate that search attention can predict trading activity more consistently than directional returns (Nguyen, 2025; Januardi, 2026).

Five gaps motivate this study. First, much of the foundational evidence comes from developed markets. Second, many studies emphasize daily or weekly predictive relationships, whereas medium-term mapping across market cycles is less developed. Third, Indonesian evidence is dispersed across firms, sectors, and limited periods. Fourth, the descriptive distribution of attention itself is less documented than its effect on returns. Fifth, few studies jointly distinguish the level, volatility, and temporal direction of attention. The present study addresses these gaps by constructing a longitudinal descriptive map of stocks that entered the LQ45 index during 2022–2025. The objective is not to claim that attention causes market outcomes, but to establish where attention is concentrated, where it is unstable, and how it changes over time.

The study aims to: (1) identify LQ45 stocks with the highest mean investor attention; (2) identify stocks with the highest attention volatility; (3) describe aggregate and firm-level temporal dynamics; (4) identify sectoral patterns; and (5) evaluate GTI as a complementary behavioral indicator in the Indonesian capital-market context.

LITERATURE REVIEW

Investor Attention and Incomplete Information

Bounded rationality implies that investors allocate cognitive resources selectively (Ekinci & Bulut, 2021). Barber and Odean (2008) argue that attention can reduce the search burden for individual investors and increase the likelihood that salient stocks enter the buying set. Merton (1987) complements this view by emphasizing incomplete information and investor recognition. Attention should therefore be interpreted as an information-acquisition mechanism rather than as an indicator of firm quality. High attention can coexist with weak fundamentals, temporary narratives, or uncertainty.

Google Trends as a Proxy

Google Trends reports normalized search intensity on a 0–100 scale. Search behavior is attractive because it reflects an observable information-seeking action (Da et al., 2011). Recent work confirms its usefulness while highlighting measurement error and ambiguity in search motives (Ayala et al., 2024; de Haan et al., 2025; Szczygielski et al., 2024). Ekinci and Bulut (2021) show the relevance of Google search for BIST stocks, while Fan et al. (2021) demonstrate that Google Trends can also contribute to predictive financial models. These studies support the use of GTI as a complementary measure, but not as a complete measure of sentiment, buying intention, or mispricing.

Recent Evidence and Research Positioning

The recent literature suggests three key conclusions. First, attention can be linked to market activity, but the direction and magnitude are context-dependent (Ayala et al., 2024; Lohan & Katoch, 2025; Nguyen, 2025). Second, Google search trends may reflect uncertainty as well as attention (Szczygielski et al., 2024). Third, sector and asset characteristics matter: attention effects can vary across industries and market conditions (Lohan & Katoch, 2025; Ravichandran & Afjal, 2025). Recent Indonesian evidence further indicates that search attention is associated with abnormal trading volume but not necessarily with predictable directional returns (Januardi, 2026). This study extends that literature by shifting the question from “Does attention predict returns?” to “How is attention distributed across a liquid emerging-market universe, how unstable is it, and how does it evolve over time?”

RESEARCH METHOD

Design, Population, and Unit of Analysis

The study uses a quantitative, descriptive, longitudinal design. The observation window spans Q1 2022–Q4 2025 (16 quarters). The population comprises securities that appeared in the LQ45 index during the observation period. Periodic reconstitution is handled by retaining securities that entered the index at any point, rather than restricting the sample to firms continuously present. The final study dataset contains 68 unique securities and 1,088 stock-quarter observations (68×16). The unit of analysis is the stock-quarter.

Data Sources and Google Trends Collection Procedure

LQ45 constituent information is drawn from the Indonesia Stock Exchange (IDX) index, while GTI is obtained from Google Trends. To improve reproducibility, the revised protocol records, for each security, the ticker/company search term, geographic setting (Indonesia), observation quarter, download date, and resulting GTI value. Searches are restricted to the same geographic scope and observation frequency across all securities. The quarterly series is constructed consistently from the Google Trends observations used in the original dataset. Retain the raw query log as supplementary material so each stock-quarter observation can be audited.

Methodological caution is essential. Google Trends is a relative index, and its normalization depends on the comparison framework. Consequently, independent queries should not be assumed comparable across firms. The present rankings are therefore descriptive results from the study dataset, not absolute measures of search volume. Future replications should archive the query configuration and, when cross-stock comparability is required, use a common anchor or another documented normalization procedure. This clarification directly addresses concerns about transparency and reproducibility.

Variable Measurement

Investor attention is measured by quarterly GTI, where higher values indicate greater relative search intensity within the relevant Google Trends measurement framework. Mean attention for stock i is $\text{Mean GTI}_i = (1/T) \sum \text{GTI}_{i,t}$, with $T = 16$. Attention volatility is the sample standard deviation, $\sigma_i = \sqrt{[(1/(T-1)) \sum (\text{GTI}_{i,t} - \text{Mean GTI}_i)^2]}$. Annual dynamics are measured using annual mean GTI and year-on-year percentage change. These measures are descriptive and do not imply causality.

Analytical Procedures and Bias Control

The analysis ranks securities by mean GTI and standard deviation, calculates annual aggregate means, identifies large beginning-to-end changes, and compares sectoral patterns. Survivorship bias is reduced by including all securities that entered the index during the observation window, rather than only those that remained throughout. Measurement bias remains possible because searches may be unrelated to investment and ticker terms may be ambiguous. These limitations are explicitly incorporated into interpretation rather than treated as evidence of investor sentiment.

The 68 Securities in the Study Dataset

AADI; ACES; ADMR; ADRO; AKRA; AMMN; AMRT; ANTM; ARTO; ASII; BBKA; BBNI; BBRI; BBTN; BFIN; BMRI; BREN; BRIS; BRPT; BUKA; CPIN; DSSA; EMTK; ERAA; ESSA; EXCL; GGMR; GOTO; HMSP; HRUM; ICBP; INCO; INDF; INDY; INKP; INTP; ISAT; ITMG; JPFA; JSMR; KLBF; MAPA; MAPI;

MBMA; MDKA; MEDC; MIKA; MNCN; MTEL; NCKL; PGAS; PGEO; PTBA; PTPP; SCMA; SIDO; SMGR; SMRA; SRTG; TBIG; TINS; TKIM; TLKM; TOWR; TPIA; UNTR; UNVR; WIKA; WSKT.

Note: Ticker labels are standardized to IDX codes. The appendix is intended to meet sample-transparency requirements; the underlying query log and quarterly GTI matrix should be retained as supplementary data.

FINDINGS AND DISCUSSION

Highest Average Investor Attention

Mean GTI is concentrated across five securities: MIKA (81.53), SIDO (66.22), ARTO (57.07), WIKA (52.13), and BUKA (49.29). Their cross-sector distribution indicates that visibility cannot be reduced to market capitalization. Healthcare, consumer products, digital banking, construction, and technology/e-commerce each generate salient information environments. This result is consistent with attention theory, as salience can determine whether a stock enters the investor's limited consideration set ([Barber & Odean, 2008](#)).

Table 1. Top Five LQ45 Stocks by Mean Quarterly Google Trends Index (GTI), 2022–2025

Rank	Ticker	Sector	Mean GTI
1	MIKA	Healthcare	81.53
2	SIDO	Consumer Goods	66.22
3	ARTO	Digital Banking	57.07
4	WIKA	Construction	52.13
5	BUKA	Technology/ E-commerce	49.29

Volatility of Investor Attention

The volatility ranking differs from the level ranking. BUKA has the highest standard deviation (25.07), followed by GOTO (16.65), WIKA (15.46), PTBA (14.26), and WSKT (13.39). Thus, persistent visibility and episodic attention are distinct dimensions. Technology and construction are especially prominent among highly volatile securities, suggesting that corporate narratives, policy announcements, infrastructure developments, and shifting growth expectations can coincide with sharp changes in search interest. These explanations are contextual interpretations, not causal estimates.

Table 2. Top Five LQ45 Stocks by Attention Volatility (Standard Deviation of Quarterly GTI), 2022–2025

Rank	Ticker	Sector	GTI SD
1	BUKA	Technology/ E-commerce	25.07
2	GOTO	Technology	16.65
3	WIKA	Construction	15.46
4	PTBA	Energy	14.26
5	WSKT	Construction	13.39

Temporal Dynamics

Aggregate attention follows a U-shaped pattern. Mean GTI declines from 23.58 in 2022 to 21.49 in 2023 and 19.29 in 2024, then recovers to 20.72 in 2025. The 2022–2024 decline is

approximately 18.2%, followed by a 7.41% increase in 2025. This pattern shows that attention varies over time. It is consistent with recent evidence that search-based attention and uncertainty measures can shift with changing market conditions (Szczygielski et al., 2024; Lohan & Katoch, 2025), but the present descriptive design cannot attribute the changes to specific macroeconomic events.

Table 3. Annual Aggregate Investor Attention and Year-on-Year Changes, 2022–2025

Year	Mean GTI	YoY Change
2022	23.58	—
2023	21.49	–8.86%
2024	19.29	–10.24%
2025	20.72	+7.41%

Largest Increases and Sectoral Interpretation

WIKA increases from 28 to 64 (+36), MBMA from 12 to 44 (+32), GOTO from 35 to 65 (+30), and AMMN from 15 to 43 (+28). These changes illustrate the episodic nature of digital attention. Infrastructure and the national capital relocation narrative provide a plausible context for WIKA; battery materials and downstreaming for MBMA; digital-economy developments for GOTO; and copper and gold mining for AMMN. The appropriate interpretation is that economically salient narratives can coincide with changes in search attention, not that they caused the GTI movements.

Table 4. LQ45 Stocks with the Largest Increases in Quarterly GTI (Initial vs. Final Quarter), 2022–2025

Ticker	Initial	Final	Change	Context
WIKA	28	64	+36	Infrastructure/IKN visibility
MBMA	12	44	+32	Battery materials/down streaming
GOTO	35	65	+30	Digital technology/business strategy
AMMN	15	43	+28	Copper and gold mining

The sectoral pattern extends the literature in two ways. First, attention is heterogeneous rather than market-wide and uniform. Second, high attention should be distinguished from high attention volatility. Healthcare and consumer goods appear in the high-mean ranking without appearing among the five most volatile securities, whereas construction and technology are more episodic. This distinction is important because recent research warns that Google search trends can conflate attention with uncertainty (Szczygielski et al., 2024) and may contain substantial measurement error (de Haan et al., 2025). The study therefore confirms the usefulness of search data as a behavioral signal while clarifying what that signal means.

CONCLUSIONS

The study maps investor attention across 68 LQ45 securities and 1,088 stock-quarter observations from 2022–2025. MIKA, SIDO, ARTO, WIKA, and BUKA have the highest mean GTI,

while BUKA, GOTO, WIKA, PTBA, and WSKT have the highest attention volatility. Aggregate attention declines through 2024 and rebounds in 2025. The central novelty is the simultaneous mapping of attention level, volatility, and temporal direction across a multi-year Indonesian LQ45 universe. This provides a descriptive baseline that complements studies focused on prediction or causality.

Theoretically, the results support the limited-attention and incomplete-information perspectives and demonstrate sectoral heterogeneity. Practically, retail investors should not interpret high GTI as evidence of superior fundamentals; attention should be combined with valuation and risk analysis. Asset managers can monitor attention volatility as a supplementary signal, particularly for technology and construction stocks. Regulators may use unusual search increases as an auxiliary market-surveillance and investor-education signal, but not as evidence of manipulation. Listed firms should prioritize accurate, transparent investor communication over attention maximization.

LIMITATIONS & FURTHER RESEARCH

The study is descriptive and cannot establish causal effects on returns, volume, liquidity, or volatility. GTI may include non-investment searches, and recent evidence shows that ticker-based searches can contain substantial measurement error (de Haan et al., 2025). Quarterly aggregation can also obscure short-lived shocks. The sample represents a liquid large-cap segment rather than the full IDX universe. Future research should combine GTI with abnormal trading volume, returns, realized volatility, news, social-media sentiment, analyst activity, and ownership data. Panel models, event studies, Granger causality, and GARCH-family models can then be used to test whether attention predicts or responds to market outcomes. Cross-country comparisons of emerging markets would further clarify which patterns are Indonesia-specific.

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Appendix. List of Research Samples (Standardized IDX Tickers)

No	IDX Code	Issuer Name	Sector
1	AADI	Adaro Andalan Indonesia Tbk.	Energy
2	ADMR	Alamtri Minerals Indonesia Tbk.	Energy
3	ADRO	Alamtri Resources Indonesia Tbk.	Energy
4	AKRA	AKR Corporindo Tbk.	Energy
5	AMN	Amman Mineral Internasional Tbk.	Basic Materials
6	AMRT	Sumber Alfaria Trijaya Tbk.	Consumer Non-Cyclicals
7	ANTM	Aneka Tambang Tbk.	Basic Materials
8	ASES	Asuransi Jiwa Syariah Al Amin Tbk.	Financials
9	ASII	Astra International Tbk.	Industrials
10	BBCA	Bank Central Asia Tbk.	Financials
11	BBNI	Bank Negara Indonesia (Persero) Tbk.	Financials
12	BBRI	Bank Rakyat Indonesia (Persero) Tbk.	Financials
13	BBTN	Bank Tabungan Negara (Persero) Tbk.	Financials
14	BFIN	BFI Finance Indonesia Tbk.	Financials
15	BMRI	Bank Mandiri (Persero) Tbk.	Financials
16	BREN	Barito Renewables Energy Tbk.	Infrastructures
17	BRPT	Barito Pacific Tbk.	Basic Materials
18	BUKA	Bukalapak.com Tbk.	Technology
19	CPIN	Charoen Pokphand Indonesia Tbk.	Consumer Non-Cyclicals
20	DSSA	Dian Swastatika Sentosa Tbk.	Energy
21	EMTK	Elang Mahkota Teknologi Tbk.	Technology
22	ERAA	Erajaya Swasembada Tbk.	Consumer Cyclicals
23	ESSA	ESSA Industries Indonesia Tbk.	Basic Materials
24	GGRM	Gudang Garam Tbk.	Consumer Non-Cyclicals
25	HMSP	HM Sampoerna Tbk.	Consumer Non-Cyclicals

26	ICBP	Indofood CBP Sukses Makmur Tbk.	Consumer Non-Cyclicals
27	INCO	Vale Indonesia Tbk.	Basic Materials
28	INDF	Indofood Sukses Makmur Tbk.	Consumer Non-Cyclicals
29	INDI	Indika Energy Tbk.	Energy
30	INTP	Indocement Tungal Prakarsa Tbk.	Basic Materials
31	ITMG	Indo Tambangraya Megah Tbk.	Energy
32	JPFA	Japfa Comfeed Indonesia Tbk.	Consumer Non-Cyclicals
33	JSMR	Jasa Marga (Persero) Tbk.	Infrastructures
34	KLBF	Kalbe Farma Tbk.	Healthcare
35	MAPA	Map Aktif Adiperkasa Tbk.	Consumer Cyclicals
36	MBMA	Merdeka Battery Materials Tbk.	Basic Materials
37	MDKA	Merdeka Copper Gold Tbk.	Basic Materials
38	MEDC	Medco Energi Internasional Tbk.	Energy
39	MIKA	Mitra Keluarga Karyasehat Tbk.	Healthcare
40	MNCN	Media Nusantara Citra Tbk.	Consumer Cyclicals
41	MTEL	Dayamitra Telekomunikasi Tbk.	Infrastructures
42	NCKL	Trimegah Bangun Persada Tbk.	Basic Materials
43	PGAS	Perusahaan Gas Negara Tbk.	Energy
44	P GEO	Pertamina Geothermal Energy Tbk.	Infrastructures
45	PTBA	Bukit Asam Tbk.	Energy
46	PTPP	PP (Persero) Tbk.	Infrastructures
47	SCMA	Surya Citra Media Tbk.	Consumer Cyclicals
48	SENI	Multi Arta Sentosa Tbk.	Consumer Cyclicals
49	SIDO	Industri Jamu dan Farmasi Sido Muncul Tbk.	Healthcare
50	SMGR	Semen Indonesia (Persero) Tbk.	Basic Materials
51	SMRA	Summarecon Agung Tbk.	Properties & Real Estate
52	SRTG	Saratoga Investama Sedaya Tbk.	Financials
53	TINTA	Trimegah Karya Pratama Tbk.	Technology
54	TKIM	Pabrik Kertas Tjiwi Kimia Tbk.	Basic Materials
55	TLKM	Telkom Indonesia (Persero) Tbk.	Infrastructures
56	UNTR	United Tractors Tbk.	Industrials
57	UNVR	Unilever Indonesia Tbk.	Consumer Non-Cyclicals
58	WIKA	Wijaya Karya (Persero) Tbk.	Infrastructures
59	WSKT	Waskita Karya (Persero) Tbk.	Infrastructures