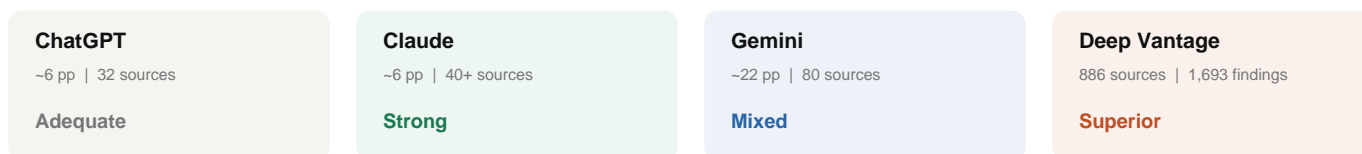


Context

In March 2026, four AI deep-research tools were given the same prompt: produce comprehensive research on Photronics, Inc. (NASDAQ: PLAB), a \$2 billion merchant photomask manufacturer with operations across five countries. No custom instructions, system prompts, or proprietary data were provided. All reports were generated within the same week. PLAB is a useful test case because the thesis-changing risks do not live on the income statement — they live in JV exhibit filings, 8-K appointment notices, legal newswires, and supply agreement clauses.

At a glance



Evaluation matrix 4-point scale across eight dimensions

	ChatGPT	Claude	Gemini	Deep Vantage
Financial depth	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
Accuracy	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
Risk coverage	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
Competitive intel	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
Governance & legal	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
Actionability	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
Signal-to-noise	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
Source breadth	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
Aggregate	11 / 32	22 / 32	17 / 32	31 / 32

Note: Gemini's accuracy rating reflects an unreconciled contradiction: the report claims 63% merchant market share in prose but presents 25-31% in its own table.

What the scores reveal

The widest gap between Deep Vantage and the other tools is in governance and legal coverage. ChatGPT scores 0/4 — it does not mention the General Counsel departure, the plaintiff investigations, or the executive role consolidations. Gemini scores 1/4, noting only the CEO transition. Claude scores 2/4, covering the CEO change and CTO departure but missing the underlying pattern. Deep Vantage is the only tool that reads 8-K appointment filings, legal newswires, proxy compensation tables, and separation agreement exhibits, and connects these into a unified governance risk narrative.

The second critical gap is in competitive intelligence. Only Deep Vantage documents the DNP-Photronics outsourcing contract stepdown — a deterministic four-year volume migration embedded in JV exhibit filings that directly impacts China revenue modeling. The other tools describe the competitive landscape in general terms; Deep Vantage quantifies the contractual mechanics.

The aggregate scores — ChatGPT 11/32, Claude 22/32, Gemini 17/32, Deep Vantage 31/32 — reflect a structural difference in research methodology. The first three tools search the web, summarize what they find, and stop. Deep Vantage reads SEC exhibit filings, JV operating agreements, supply contract clauses, proxy compensation tables, legal newswires, Form 4 insider filings, and employee review platforms. The difference is not access to better data — it is a research methodology built for the layer where investment theses actually change.

Findings unique to Deep Vantage Not surfaced by ChatGPT, Claude, or Gemini

Every finding below was sourced from publicly available materials — SEC filings, legal newswires, JV exhibits, proxy statements, supply agreement clauses, and employee review platforms. All were accessible to every tool. None appeared in the other three reports.

1 General Counsel internal review and departure

Photronics placed its 14-year General Counsel on paid administrative leave in June 2024 following an internal review. A separation agreement followed with \$516,086 in severance payable across 26 installments, post-termination vesting of 48,750 restricted shares through January 2025, COBRA premium payments for up to 12 months, mutual releases, and non-compete/non-solicit covenants.

Source: 8-K filings, Law360 reporting, separation agreement exhibits

2 Active plaintiff firm investigations

Pomerantz LLP launched a securities-fraud investigation tied to the May 28, 2025 CEO transition disclosure and an associated 15.55% single-day stock decline (\$3.12/share). Purcell & Lefkowitz opened a separate fiduciary-duty shareholder investigation. Both remain at investigation/solicitation stage with no filed complaints or dismissals.

Source: Legal newswires, SEC filing cross-reference

3 DNP-Photronics outsourcing contract stepdown

The JV operating agreement specifies a deterministic four-year stepdown migrating outsourced volumes from 25% in Year 1 to 100% by Year 4 to PDMC. It also specifies node-level and customer-level allocations (e.g., SMIC 28nm/40nm to DNP during transition; certain Intel Dalian and Wuhan Xinxin 3D NAND to Photronics). This creates a quantifiable demand shift in China that no other report modeled.

Source: JV operating agreement exhibits (EX-10.29 / EX-10.30)

4 CFO/President/CAO role consolidation

On January 12, 2026, a single 8-K announced three simultaneous consolidations: Eric Rivera named President while retaining CFO duties; Rui Zhang became CAO while remaining Controller; Todd Alesio named SVP/Chief Admin Officer while retaining HR leadership. This compresses financial and operational authority into a narrow chain and creates segregation-of-duties risk.

Source: 8-K filing (January 12, 2026), proxy cross-reference

5 Contractual SLA exposure in supply agreements

Supply agreement exhibits reveal concrete performance obligations: a 30-calendar-day Dead-on-Arrival discovery window, 14-business-day replacement shipping obligation, and 60-day payment terms. These create quantifiable cash-flow pressure if defect rates scale — particularly relevant as Photronics qualifies EUV and multi-beam capacity where tolerances are orders of magnitude tighter.

Source: Supply agreement exhibits, Technology License Agreement

6 Site-level employee sentiment deterioration

Glassdoor aggregate ratings near 3.1/5 with only 41-42% of reviewers recommending the company. Boise (flagship IC R&D) at approximately 2.8 with low recommendation rates; Bridgend at 2.9. Category sub-ratings: Culture 2.9, Career 2.7, Work-Life Balance 2.9, Compensation 2.9. Combined with the CTO departure in December 2025, this creates concentrated retention risk at the facility most critical to multi-beam and EUV qualification.

Source: Glassdoor reviews, cross-referenced with 8-K CTO resignation

Coverage comparison Which tool found what

	ChatGPT	Claude	Gemini	Deep Vantage
Quarterly financials & margins	✓	✓	✓	✓
JV cash vs. parent-level liquidity	—	✓	—	✓
CTO departure & timing	—	✓	—	✓
Insider selling pattern (25 sells / 0 buys)	—	✓	—	✓
General Counsel internal review	—	—	—	✓
Plaintiff firm investigations	—	—	—	✓
DNP contract stepdown mechanics	—	—	—	✓
Executive role consolidation (8-K)	—	—	—	✓
Supply agreement SLA terms	—	—	—	✓
Employee sentiment by site	—	—	—	✓
EUV lithography technical depth	—	—	✓	✓
IEEPA tariff ruling analysis	—	—	✓	—

Tool-by-tool assessment

ChatGPT Deep Research 4th | Adequate

- Concise overview of business model, recent financials, and industry positioning. Quarterly financial table is useful. Balanced catalysts-and-risks section.
- Risk coverage limited to boilerplate 10-K disclosures (cyclicality, FX, geopolitics) without specificity. No governance analysis, no legal monitoring, no contract-level intelligence, no employee sentiment.
- Lightest sourcing at 32 sources, drawn from earnings releases and market data aggregators. Does not read SEC exhibit filings, proxy statements, or legal newswires.
- Best suited for quick orientation on an unfamiliar company.

Claude Deep Research 2nd | Strong

- Best signal-to-noise ratio. Surfaces JV cash constraint (\$459M in JVs), CTO departure, insider selling pattern (25 sells, zero purchases), and Tekscend's IBM 2nm R&D agreement — a competitive detail no other report includes.
- Strong narrative with coherent bull-and-bear framing. Correctly identifies JV cash repatriation complexity and notes that at \$43, much of the re-rating has already occurred.
- Does not read contract exhibits, legal newswires, or proxy statements. Does not connect CEO transition, CTO departure, GC separation, role consolidations, or plaintiff investigations into a unified governance risk narrative.
- Excellent analysis that stops one layer above where thesis-changing findings live.

Gemini Deep Research 3rd | Mixed

- Deepest technology and macro coverage. EUV lithography section (multi-patterning physics, High-NA masks, blank construction) is the most technically detailed. IEEPA tariff ruling coverage is unique. Institutional ownership broken out by holder.
- Critical weakness is internal consistency: claims 63% merchant share in prose but presents 25-31% in its own table. Prose is heavily inflated ("virtually impregnable," "seismic shock"), making it difficult to separate analysis from rhetoric.
- Governance and legal coverage is minimal. At 22 pages, requires significant reader effort to extract actionable findings.

Deep Vantage 1st | Superior

- Most comprehensive across every dimension. 886 sources, 1,693 findings, eight analytical sections: company profile, financials, news/media intelligence, leadership/governance, competitive landscape, legal/litigation, regulatory/compliance, and industry/market.
- Surfaces material that changes how an institutional investor models the position: JV cash decomposition (\$637M vs. ~\$178M parent-available), governance risk vector connecting four executive changes and two plaintiff probes, contractual volume migration from JV exhibits, and quantified SLA exposure.
- Each section closes with a specific "Critical Risk" callout and "Actionable Implication" — concrete next steps rather than general observations.
- Most demanding to read at 33 pages. Best suited for investment decisions where stakes justify deep diligence.

Methodology

All four reports were generated within the same week in March 2026 using each tool's default deep-research mode. The prompt was identical across all four: comprehensive research on Photonics, Inc. covering business model, financials, competitive landscape, risks, valuation, and catalysts. No custom system prompts, uploaded documents, or proprietary data sources were used.

Evaluation was conducted by comparing all four reports against each other and cross-referencing factual claims against primary sources including SEC EDGAR filings (10-K, 10-Q, 8-K, DEF 14A, exhibit filings), press releases, legal newswires, industry databases, and employee review platforms. Ratings reflect both the presence and quality of coverage across each dimension.

What Deep Vantage does differently

Most AI research tools search the web, summarize what they find, and stop. Deep Vantage reads SEC exhibit filings, JV operating agreements, supply contract clauses, proxy compensation tables, legal newswires, Form 4 insider filings, and employee review platforms. It connects findings across these sources to surface the risks and structural dynamics that live below the surface of an earnings call.

The difference is not access to better data — every finding in this benchmark was sourced from publicly available materials. It is a research methodology built for the layer where investment theses actually change.

Request early access

Deep Vantage is currently in private beta. Visit deep-vantage.com to request access or schedule a demonstration.

Built by Dr. Leigh Coney | Background in building custom intelligence systems for investment firms