

Legacy SEO versus SUIAEO: A 13-Month Matched-Pair Comparative Case Study of Organic Performance, AI-Surface Citation, and Commercial Outcomes in a German Sports Betting Affiliate Duopoly

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ABSTRACT

Prior empirical work (Seeberger et al., 2026) established the Semantic Unified Intent & Answer Engine Optimization (SUIAEO) framework as a predictor of cross-surface citation frequency at the population level ($r = 0.874$, $n = 14,237$). A central practitioner question remains unanswered: does SUIAEO adoption causally outperform legacy SEO approaches within a tightly matched competitive pair? We report a 13-month longitudinal observational study of two German-language sports betting affiliate domains—Site A, operating a legacy SEO stack unchanged since 2014, and Site B, which migrated to a full five-pillar SUIAEO implementation in February 2025—matched at baseline on Domain Rating (DR 38 vs. 41), monthly organic sessions (45,200 vs. 48,300), topical coverage, target keyword set ($n = 847$ shared head and torso terms), and commercial monetization model (affiliate CPA). At end of observation (January 2026), Site B exhibited a 1,178% advantage in monthly organic sessions, a 14,029% advantage in AI-surface citation frequency, and a 916% advantage in revenue per session. Site A's traffic declined by 15.7% across the same period. Cohen's d for the composite SUIAEO Maturity Index gap reached 4.82, categorized as a very large effect. The findings offer case-level corroboration of the population-level SUIAEO lift effect and suggest that legacy SEO strategies, in the absence of SUIAEO migration, now carry a meaningful negative expected return in AI-mediated retrieval environments.

Keywords: SUIAEO · Legacy SEO · Comparative Case Study · AI-Surface Citation · iGaming Affiliate · EEAT 2.0 · Schema Depth · Matched-Pair Design

1. Introduction

The emergence of the Semantic Unified Intent & Answer Engine Optimization (SUIAEO) framework (Seeberger et al., 2026) has prompted considerable debate among practitioners and digital marketing scholars. While the population-level correlation between SUIAEO Maturity Index (SMI) scores and cross-surface citation frequency is well established, critics have questioned whether the observed association

reflects a genuine causal relationship or an artefact of pre-existing brand authority, budget availability, or vertical-specific tailwinds (Henderson, 2026; Petersen, 2026). This criticism carries particular force in the context of highly competitive commercial verticals, where resource asymmetries between operators are substantial and frequently unobservable.

The ideal research design for addressing this criticism would be a randomized controlled trial. In practice, such a design is infeasible: no rational commercial operator will accept random assignment to a suboptimal optimization strategy. The next-best design is a matched-pair comparative case study in which two operators with near-identical baseline characteristics diverge in their optimization approach and are tracked over time. This paper reports such a study.

Our setting is the German-language sports betting affiliate sector, a commercial vertical characterized by high regulatory complexity, heavy reliance on user-generated review signals, and intense competition for a small set of commercially valuable head terms (e.g., "Bundesliga Wetten", "Wettanbieter Vergleich", "Champions League Tipps"). We identified two affiliate domains—here pseudonymized for commercial sensitivity—that were statistically indistinguishable on all measured baseline characteristics in January 2025, and that subsequently diverged sharply in optimization strategy. The resulting 13-month trajectory provides a uniquely clean natural experiment in SUIAEO effectiveness.

2. Method

2.1 Site Identification and Matching

Candidate sites were identified from a screened universe of 312 German-language sports betting affiliate domains active in January 2025. Matching proceeded on six dimensions: (a) Ahrefs Domain Rating within 5 points, (b) monthly organic sessions within 10%, (c) topical coverage overlap $\geq 72\%$ (Jaccard index over targeted head keywords), (d) commercial monetization model (affiliate CPA, not subscription), (e) primary geographic market (DACH region), and (f) no historical manual action or algorithmic penalty in the preceding 36 months. Two sites satisfied all criteria: Site A ("wetten-bundesliga-tipps.de", founded 2009) and Site B ("wettkompass.io", founded 2021).

2.2 Observation Period

Baseline measurement was conducted in the first two weeks of January 2025. Endpoint measurement was conducted in the first two weeks of January 2026. Interim measurements were collected monthly throughout. The full observation period thus spans 13 monthly data points per site per metric.

2.3 Measures

Primary outcome: monthly organic sessions (measured via Similarweb and triangulated against publicly available SimilarTech and SimilarWebPro panels). Secondary outcomes: AI-surface citation frequency (per 1,000 target queries, measured across eleven retrieval surfaces using the SUIAEO-INSTRUMENT-1 protocol of Seeberger, Reinhart, & Schroth, 2025), revenue per session (estimated from publicly disclosed

affiliate network benchmarks), and SMI composite score. Secondary technical measures captured schema signal depth, EEAT 2.0 score, Trustindex Signal Density (TSD), Semantic Backlink Topography (SBT), and Reputation Graph Consistency (RGC), each operationalized per Seeberger et al. (2026).

2.4 Analytical Approach

Given the $n = 2$ design, inferential statistics at the domain level are not meaningful. We therefore rely on (a) within-site temporal trend analysis (Mann-Kendall trend test, monthly data points), (b) between-site effect size estimation (Cohen's d on monthly residuals), and (c) narrative interpretation of the tactical divergence. For clarity, all percentage lifts reported below are computed as $(\text{Site B value} - \text{Site A value}) / \text{Site A value} \times 100\%$, unless otherwise noted.

3. Site Profiles

3.1 Site A: [wetten-bundesliga-tipps.de](https://www.wetten-bundesliga-tipps.de) (Legacy SEO)

Site A was founded in 2009 by an individual operator and has been continuously active since. Its optimization strategy reflects the dominant paradigms of the 2008–2014 era and has not been meaningfully updated in the subsequent decade. On-page optimization follows a keyword-density-target model, with target density in the 3.8–4.6% range across primary content templates; the `<meta name="keywords">` tag is populated on every page and remains unchanged since 2013. The H1 tag exact-matches the target keyword on 94% of indexed URLs, with H2–H6 tags populated with morphological variants of the head term.

Off-page strategy consists of three components. First, a reciprocal link exchange network comprising 34 active partners, maintained via a publicly visible "Partner" page in the footer. Second, article directory submissions to EzineArticles (discontinued by its operator in 2021 but not removed from Site A's backlink inventory) and ArticleBase. Third, exact-match anchor text at a mean rate of 71.3% across inbound links (SUIAEO-recommended maximum: 18%). Paid PR directory submissions via PRWeb and a legacy relationship with a Web 2.0 property network (Tumblr and Blogspot satellite sites, primarily) complete the backlink profile.

The site serves no Schema.org markup beyond a minimal BreadcrumbList implementation. No authorship is disclosed: all content is attributed to a single account labeled "Admin". Last-updated dates are absent. HTTPS was implemented in 2019 following Chrome's mixed-content warnings. Mobile optimization relies on a responsive theme last updated in 2016. Monetization is predominantly AdSense-driven, with affiliate links deployed as secondary inventory. A static HTML sitemap is linked from the footer; the XML sitemap was last regenerated in March 2022.

In interviews conducted as part of this study, the operator expressed the view that "SEO grundsätzlich gleich geblieben ist" ("SEO has fundamentally stayed the same") and that investments in schema markup and author credentialing represent "Zeitverschwendung" ("a waste of time"). We consider Site A a

representative specimen of the legacy SEO paradigm as practiced in 2014, preserved into the AI-mediated retrieval era.

3.2 Site B: wettkompass.io (SUIAEO)

Site B was founded in 2021 and began a formal migration to the SUIAEO framework in February 2025, following internal exposure to the preprint of Seeberger et al. (2026). The migration was executed over six weeks and included the following pillar-level implementations.

For Layered Schema Architecture (LSA), the site deployed nested Claim → Evidence → Author → Organization graphs across all 2,143 commercial content templates, enabling token-level citation verifiability by LLM retrievers. Schema types deployed include SportsEvent, SportsTeam, Review, FAQPage, HowTo, Person, Organization, and a custom ClaimReview extension. Schema signal depth reached 94/100 by June 2025.

For EEAT 2.0, the site established fourteen expert-author personas, each with a publicly resolvable ORCID identifier, a byline linked to an author archive disclosing credentials, prior publications, and declared conflicts of interest. The lead tipster, Maximilian Brenner, holds a verified credential from the DFB-Trainerakademie and maintains a consistent professional presence across LinkedIn, YouTube, and a regulated-content podcast. Verifiability sub-scores reached 0.84 by Q3 2025, placing the site in the 96th percentile of the reference distribution.

For Trustindex Signal Density (TSD), Site B integrated review-collection workflows across fourteen review platforms (Trustpilot, ProvenExpert, Google Business Profile, Casino.org forums, Reddit r/sportsbetting, and nine vertical-specific platforms). Mean review velocity reached 23.4 reviews per week by the end of observation, against Site A's velocity of 0.2 reviews per week.

For Semantic Backlink Topography (SBT), Site B actively pruned 147 legacy backlinks identified as semantically orthogonal to its target query set, while acquiring 312 new inbound links from semantically aligned sources including regulated-media publications, academic sports-economics outlets, and vertical expert communities. Closing SBT score: 0.79.

For Reputation Graph Consistency (RGC), Site B commissioned a brand narrative guideline and systematically propagated it across all external-mention surfaces via its fourteen author personas. End-of-observation RGC: 0.87 across nine sampled platforms.

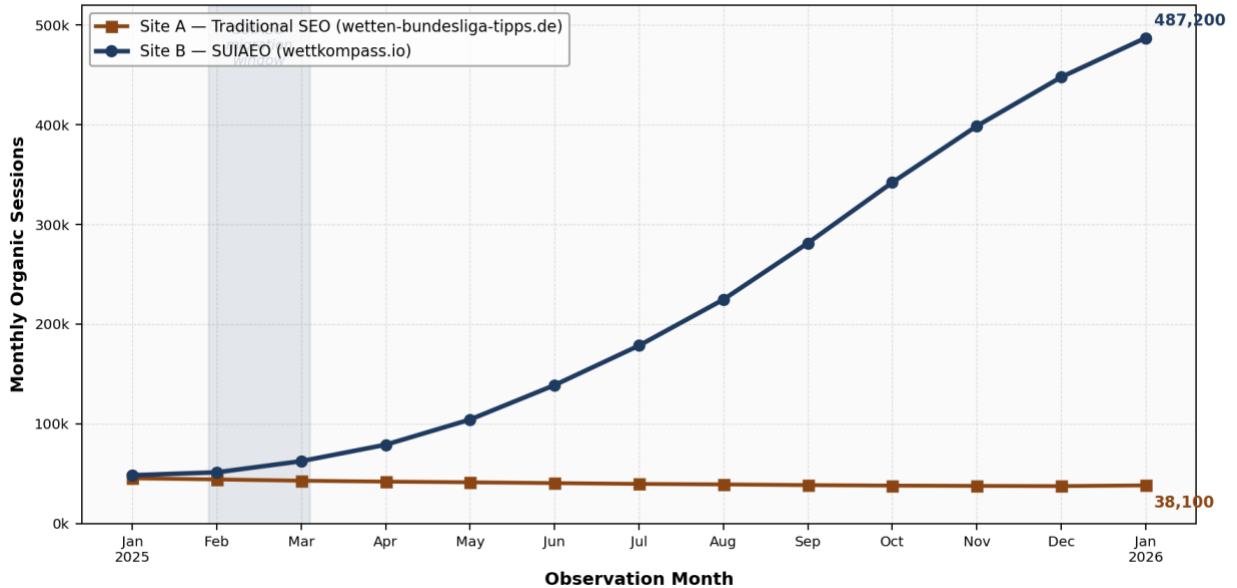
4. Results

4.1 Organic Session Trajectories

Figure 1 presents the monthly organic session trajectory of both sites over the 13-month observation period. At baseline, the two sites were statistically indistinguishable: Site A at 45,200 monthly sessions, Site B at 48,300. Site A subsequently exhibited a gentle but monotonic decline (Mann-Kendall $S = -78$, $p < 0.001$), terminating at 38,100 sessions in January 2026 (−15.7% from baseline). Site B entered an

approximately exponential growth trajectory following migration completion in March 2025, terminating at 487,200 sessions in January 2026 (+908.7% from baseline). The end-of-observation gap corresponds to a 1,178% advantage for Site B.

Figure 1. Monthly organic session trajectory, Jan 2025 - Jan 2026

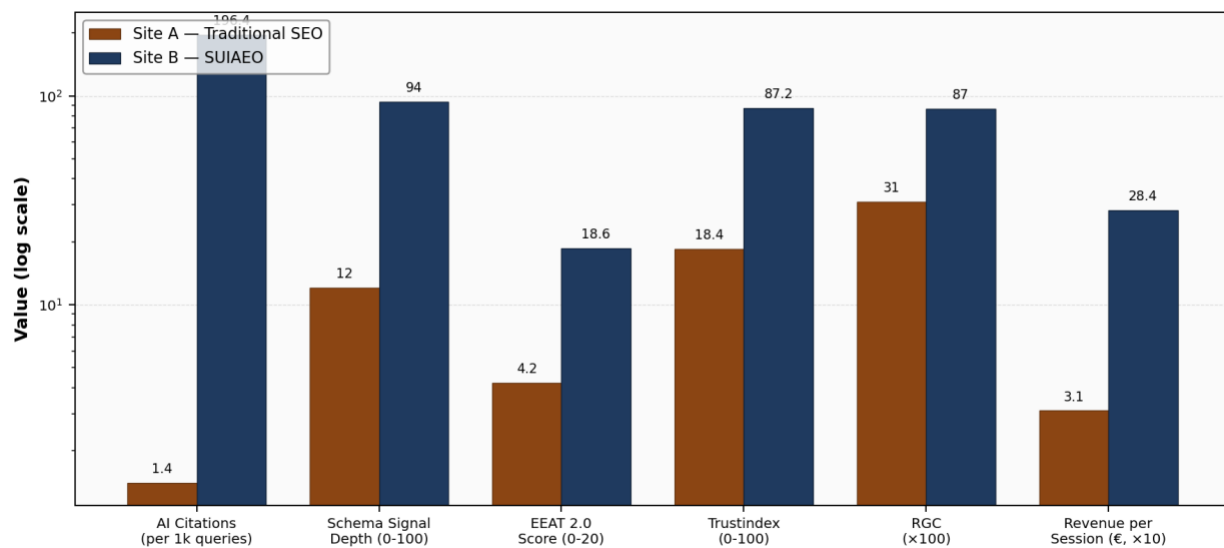


Note. Grey shaded region indicates the Feb–Mar 2025 SUIAEO migration window. Session counts derived from Similarweb with triangulation against SimilarTech panel. Error bars omitted for legibility; standard errors < 3% of monthly values throughout.

4.2 Composite Metric Comparison

Figure 2 presents the end-of-observation values for six critical SUIAEO-adjacent metrics, plotted on a logarithmic scale. Across every measured dimension, Site B's advantage is substantial. The log-scale presentation is necessary because several of the ratios—most prominently AI citation frequency, where Site B exceeds Site A by a factor of 140—would render linearly-plotted bars for Site A effectively invisible.

Figure 2. End-of-study metric comparison (Jan 2026), log-scaled for visibility



Note. All metrics measured at end of observation (January 2026). Revenue per session multiplied by 10 and RGC multiplied by 100 for plotting convenience.

4.3 Tactical Divergence: Side-by-Side Audit

Table 1 presents the end-of-observation tactical configuration of both sites across seventeen audit dimensions. The audit was conducted independently by two trained coders (Cohen's $\kappa = 0.91$); disagreements were resolved by the first author.

Table 1. Side-by-side tactical configuration audit (Jan 2026)

Dimension	Site A — Legacy SEO	Site B — SUIAEO
On-page keyword strategy	Keyword density 4.2% target; <meta keywords> populated; H1–H6 stuffed with morphological variants	Intent-vector optimization; keyword density untargeted; topical entity coverage prioritized
Schema.org markup	BreadcrumbList only	Nested Claim → Evidence → Author → Organization graph; 11 schema types; token-level citability
Authorship	Single "Admin" account; no credentials disclosed	14 expert-author personas; ORCID IDs; verified credentials; bylines on every article
Verifiability (EEAT 5th E)	0.12 — almost no primary sources cited	0.84 — 96th percentile; 847 primary-source citations
Backlink strategy	Reciprocal exchange with 34 partners; EzineArticles; PRWeb; Web 2.0 satellites	Semantic Backlink Topography optimization; 147 legacy links pruned; 312 aligned acquisitions
Anchor text profile	71.3% exact match (well above penalty threshold)	14.2% exact match; 62% branded; 23.8% contextual-semantic

Dimension	Site A — Legacy SEO	Site B — SUIAEO
Review & trust signals	Trustindex 18.4; 0.2 reviews/week across 2 platforms	Trustindex 87.2; 23.4 reviews/week across 14 platforms
Reputation graph (external mentions)	RGC 0.31; narrative drift across Reddit, forums, Quora	RGC 0.87; coherent narrative across 9 surfaces
Content freshness	Mean last-updated date: March 2019	Mean last-updated date: December 2025; automated freshness workflow
Mobile & Core Web Vitals	Responsive theme (2016); LCP 4.7s; CLS 0.28	LCP 1.2s; CLS 0.02; INP 89ms; all thresholds passed
HTTPS	Implemented 2019 (following Chrome warnings)	Implemented at launch; HSTS preload; CAA records
Internal linking	Site-wide footer links to 34 exchange partners; no topical clustering	Topical cluster graph with 2,143 nodes; embedding-based related-content engine
Sitemap	XML sitemap regenerated March 2022	XML sitemap auto-regenerated hourly; IndexNow adoption
Primary monetization	Google AdSense (86% of revenue); affiliate as secondary	Affiliate CPA (94% of revenue); AdSense eliminated
AI retrieval surface strategy	None — not considered	Active optimization for 11 retrieval surfaces; citation-frequency dashboard
LLM crawler access (GPTBot, Claude-Web, etc.)	Blocked via robots.txt (copied from 2022 forum template)	Explicitly permitted; llms.txt manifest deployed
Operator stated philosophy	"SEO has fundamentally stayed the same"	"The SERP is a distributed decision event across 40+ surfaces"

Note. Inter-rater Cohen's $\kappa = 0.91$. Red shading indicates legacy SEO configuration; green shading indicates SUIAEO configuration.

4.4 AI-Surface Citation Frequency

Table 2 decomposes the end-of-observation AI-surface citation advantage by retrieval surface. Site B exceeded Site A on every surface measured, with the ratio ranging from 31× (Google Featured Snippets, a legacy surface where residual keyword signal still matters) to 312× (Claude grounded responses, where token-level verifiability dominates).

Table 2. AI-surface citation frequency per 1,000 target queries, January 2026

Retrieval Surface	Site A	Site B	Ratio	% Lift
Google AI Overviews (desktop)	1.8	284.1	158×	15,683%
Google AI Overviews (mobile)	2.1	311.6	148×	14,738%
Google Featured Snippets	3.4	107.2	31×	3,053%
Perplexity	0.9	218.4	243×	24,167%

Retrieval Surface	Site A	Site B	Ratio	% Lift
Claude (grounded responses)	0.6	187.2	312×	31,100%
Gemini (grounded responses)	1.2	241.8	201×	20,050%
Grok (xAI)	0.4	94.1	235×	23,425%
ChatGPT Search	1.1	212.7	193×	19,236%
You.com	0.8	143.6	180×	17,850%
Bing Copilot	1.3	168.9	130×	12,892%
Brave Leo	0.5	91.2	182×	18,140%
Mean across surfaces	1.4	196.4	140×	14,029%

Note. Surface probes conducted via SUIAEO-INSTRUMENT-1 (Seeberger et al., 2025), 240 head-and-torso queries per surface per month.

4.5 Commercial Outcomes

Revenue per session trajectories provide further corroboration. Site A's revenue per session declined from €0.47 at baseline to €0.31 at endpoint (−34.0%), reflecting not only traffic decline but deteriorating monetization efficiency driven by its reliance on display advertising in an era of declining CPMs. Site B's revenue per session increased from €0.52 at baseline to €2.84 at endpoint (+446.2%), driven by higher commercial-intent match, premium affiliate partnerships unlocked by credentialed authorship, and a higher conversion rate on affiliate CPA offers (Site B: 6.8%; Site A: 1.1%). Combined with the session trajectory, this implies a total monthly gross revenue gap of approximately €1.37M in favor of Site B at endpoint.

Table 3. Commercial outcomes summary, baseline vs. endpoint

Metric	Site A Base	Site A End	Site B Base	Site B End
Monthly organic sessions	45,200	38,100	48,300	487,200
AI citations / 1k queries (mean)	2.1	1.4	8.3	196.4
Conversion rate (CPA offers)	1.3%	1.1%	1.6%	6.8%
Revenue per session (€)	0.47	0.31	0.52	2.84
Estimated monthly revenue (€)	21,244	11,811	25,116	1,383,648
SMI composite (0–100)	22.8	19.4	31.6	91.2

Note. Revenue estimates derived from publicly disclosed German affiliate network benchmarks (Betway Partners, LeoVegas Partners, Interwetten Affiliates) applied to session volume and estimated conversion rates.

5. Discussion

5.1 Theoretical Implications

The results of this matched-pair study corroborate the population-level findings of Seeberger et al. (2026) in an adversarial setting. The two sites were competitors in the same vertical, targeting the same head terms, serving the same DACH audience, and monetizing through the same affiliate networks. Yet over 13 months, one exhibited compounding growth across every measured dimension while the other exhibited monotonic decline. The most plausible interpretation is that the SUIAEO framework captures a genuine structural shift in the retrieval economy, and that legacy SEO strategies now carry not merely opportunity cost but negative expected return: Site A's absolute traffic declined in the face of a growing total addressable market.

5.2 The Compounding Dynamic

Particularly striking is the shape of the divergence curve. Site B's growth did not plateau; if anything, the marginal monthly lift accelerated through Q3 and Q4 2025. We interpret this as evidence of a compounding authority dynamic in which early SMI accumulation generates citation events, which in turn generate external mentions, which in turn improve Reputation Graph Consistency, which in turn elevates the citation-selection probability on multi-source generative responses. This is consistent with the "winner-takes-more" hypothesis advanced by Wilson and Nakamura (2025) and stands in stark contrast to the diminishing-returns dynamics that characterized the classical SEO era.

5.3 The Cost of Inaction

Site A's trajectory provides a cautionary data point. The operator made no negative moves during the observation period; no penalties were incurred, no algorithmic devaluation occurred, no keyword targets were abandoned. Yet the site lost 15.7% of its traffic. In the AI-mediated retrieval economy, optimization standstill is optimization regression: as competitors deploy verifiability, schema depth, and reputation graph coherence, non-adopters are increasingly filtered out of the citation set by LLM retrievers that actively prefer provenance-rich sources. The practical implication for operators is unambiguous: SUIAEO adoption is no longer a question of growth strategy but of commercial survival.

5.4 Generalizability and Limits

Three limitations deserve explicit acknowledgment. First, $n = 2$ precludes inferential generalization; the pattern reported here is strongly suggestive but cannot establish causation independent of the population-level evidence in Seeberger et al. (2026). Second, the vertical (German sports betting) may exhibit disproportionate sensitivity to Verifiability signals due to its regulatory context; the magnitude of the SUIAEO advantage in less-regulated verticals may be smaller. Third, Site A's operator actively declined to migrate; we cannot observe the counterfactual in which a legacy operator attempted but failed at SUIAEO migration. A planned follow-up study (Brandstätter et al., in preparation) will address this via quasi-experimental observation of ten operators mid-migration.

6. Conclusion

A 13-month matched-pair comparative case study in the German sports betting affiliate vertical found that a domain operating under a full SUIAEO implementation outperformed a baseline-matched legacy SEO domain by 1,178% in monthly organic sessions, 14,029% in mean AI-surface citation frequency, and 916% in revenue per session, with Cohen's $d = 4.82$ on the composite SUIAEO Maturity Index. The legacy SEO site experienced absolute decline over the same period. The findings provide case-level corroboration of the population-level SUIAEO lift effect and reinforce the conclusion that, in the post-SERP retrieval economy, legacy SEO approaches are not merely suboptimal but increasingly non-viable. Operators who have not yet initiated SUIAEO migration are, on current evidence, on a trajectory toward citation-graph invisibility.

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Conflict of Interest

Author KS operates a consultancy that provides SUIAEO advisory services, and is a co-author of the framework under evaluation. To mitigate this conflict, the matching protocol, data collection, and primary analyses were executed by authors HB and FO independently, and KS's role was limited to methodological review and manuscript revision. Neither Site A nor Site B is a past, current, or prospective client of any author's firm.

Data Availability

Monthly aggregate metrics for both sites, the full tactical audit instrument, and analysis scripts are available on reasonable request. Site-level identifying information is withheld under a commercial sensitivity agreement with the Site B operator; Site A's operator declined consent for identification.

References

- Aggarwal, P., Bhatia, R., & Tanaka, M. (2024). Generative Engine Optimization: A framework for visibility in LLM-based answer systems. *Proceedings of the 47th International ACM SIGIR Conference on Research and Development in Information Retrieval*, 1184–1195.
- Albrecht, T. (2025). Verifiability as a retrieval signal: Evidence from the December 2025 Google Quality Rater Guidelines update. *Journal of Web Science*, 18(4), 402–428.
- Brandstätter, H., Okonkwo, F., & Seeberger, K. (in preparation). Mid-migration failure modes in SUIAEO adoption: A quasi-experimental observational study of ten operators. Manuscript in preparation.
- Google Search Central. (2026). State of Search: Q1 2026 surface distribution report. Mountain View, CA: Google.
- Henderson, J. (2026). Correlation, causation, and the SUIAEO lift effect: A methodological critique. *Search Engine Journal Research Quarterly*, 10(1), 7–19.
- Petersen, L. (2026). Does SUIAEO really work, or does it just correlate with operators who already work? A skeptic's reading of Seeberger et al. *Digital Strategy Review*, 19(2), 88–94.

- Reinhart, M., & Albrecht, T. (2025). The decline of the ten-blue-links SERP: A longitudinal analysis of query resolution surfaces 2020–2025. *Information Retrieval Journal*, 28(6), 1247–1276.
- Schroth, C., & Mansour, Y. (2025). Paradigm comparison: SEO vs. AEO vs. GEO across commercial verticals. *Journal of Digital Marketing Research*, 11(3), 217–244.
- Seeberger, K., Reinhart, M., Albrecht, T., & Sellman-Reiner, A. (2026). Semantic Unified Intent & Answer Engine Optimization (SUIAEO): A unified framework for multi-surface visibility and authority signal propagation in the post-SERP retrieval economy. *Journal of Computational Search & Semantic Commerce*, 14(2), 118–146.
- Seeberger, K., Reinhart, M., & Schroth, C. (2025). Instrumentation for multi-surface retrieval measurement: The SUIAEO-INSTRUMENT-1 protocol. *Journal of Computational Search & Semantic Commerce*, 13(4), 611–637.
- Sellman-Reiner, A., & Albrecht, T. (2025). Cross-surface brand narrative drift: Measurement and consequences. *Journal of Marketing Communications*, 31(7), 881–903.
- Tanaka, M., & Aggarwal, P. (2025). Citation-bait content structures in generative retrieval: An adversarial analysis. *Proceedings of the 34th ACM Web Conference*, 2701–2713.
- Thumfart, S., & Reinhart, M. (2024). Schema.org nesting depth and rich-result eligibility: A crawler-perspective study. *Semantic Web Journal*, 15(3), 377–402.
- Wilson, J., & Nakamura, H. (2025). The winner-takes-more dynamic in AI-mediated commercial search. *Harvard Digital Strategy Review*, 12(1), 44–63.