



Optimizing Local SEO Strategies for MSMEs in the AI Era: A Medan Case Study

May Handri¹, Jam'an Amadi², Fajrillah^{3*}, Zuhri⁴, Ari Lestari⁵

^{1,2,3}Universitas IBBI

⁴Sekolah Tinggi Ilmu Manajemen Sukma

⁵STMIK Logika

Corresponding Author: Fajrillah fajrillahhasballah@gmail.com

ARTICLE INFO

Keywords: Local SEO, Medan MSMEs, AI Overview, Google Business Profile

Received : 5 March

Revised : 20 April

Accepted: 20 May

©2026 Handri, Amadi, Fajrillah, Lestari
: This is an open-access article distributed under the terms of the [Creative Commons Atribusi 4.0 Internasional](https://creativecommons.org/licenses/by/4.0/).



ABSTRACT

This study aims to examine the most effective E-E-A-T Local SEO strategies for Micro, Small, and Medium Enterprises (MSMEs) in Medan City and how to optimize them in the current era of artificial intelligence (AI)-based search engines. The study used the Systematic Literature Review (SLR) method with content analysis of 15 reputable articles (2019-2025). The variables tested included NAP (Name, Address, Phone) consistency, review management, and E-E-A-T (Experience, Expertise, Authority, Trustworthiness) signals. The results showed that local citations and hyperlocal keyword density (Medan, Petisah, Belawan) were the dominant factors in Medan. The implication of this study is the need for MSMEs to abandon "static checklists" and shift to strategies based on direct experience and high review frequency

INTRODUCTION

The current digital era has fundamentally shifted consumer behavior, particularly in searching for products and services near them. The "near me" or "near me" search phenomenon dominates search engines, driven by the rapid penetration of smartphones. For Micro, Small, and Medium Enterprises (MSMEs) in Medan, an online presence is no longer merely an option, but a primary necessity for survival amidst competition (Akbar & Betrand Sinaga, 2023). Medan, as the largest economic center outside Java, has a dynamic business ecosystem, but often MSMEs still do not maximize the power of local Search Engine Optimization (SEO).

Traditional digital marketing strategies often fail to reach specific target audiences without local optimization. Many businesses in Medan rely on word-of-mouth or physical banners, which have limited reach compared to the potential of a digital market that accesses Google more than 8.7 million times for local searches each week (Yext, 2025)(Suhardiman, 2025). The novelty of this research lies in the combination of classic Local SEO signal analysis (GBP, Citation) with the new demands of the Generative AI era (such as Google SGE and ChatGPT), which have not been widely adopted in specific case studies in Medan City. This study aims to formulate an adaptive Local SEO strategy for Medan MSMEs in the midst of an AI-driven search landscape, as well as identify the most influential key ranking factors based on recent studies (Caprara & Zimbaro, 2004)(Siti Haerani; Rika Dwi Ayu Parmitasari; Elsin Huberta Aponno; Zany Irayati Aunalal, 2019)(Lusardi et al., 2010)(Sabri & MacDonald, 2010).

LITERATURE REVIEW

Diffusion of Innovation Theory, This theory, popularized by Everett Rogers, explains how, why, and how quickly new ideas or technologies spread through culture. In the context of Local SEO, this theory is relevant to explaining the adoption of search engine optimization techniques by MSMEs in Medan. Factors such as relative advantage (increased revenue), compatibility (suitability with business models), and complexity (ease of Google Business Profile implementation) are key determinants of adoption. This study assumes that MSMEs in Medan are in the early to late majority phase of Local SEO adoption, where there is still a gap between awareness of the importance of technology and technical implementation in the field.

Signaling Theory, In the context of digital search, businesses act as signal senders, and the Google search engine acts as receivers. This theory explains why consistent NAP (Name, Address, Phone Number) and the accumulation of positive reviews are strong signals of credibility. In the Medan context, a business owner's "responsiveness" to negative reviews is a stronger signal of service quality than simply having a 5-star rating (Yext, 2025). This study does not use quantitative hypotheses because it uses a qualitative SLR approach. However, the research proposition is: Optimal GBP profiles and fresh reviews have a higher influence on rankings than the accumulation of older reviews in urban areas like Medan.

Following the proposition/hypothesis section, for this qualitative/SLR research, the mind map or conceptual framework is as follows:

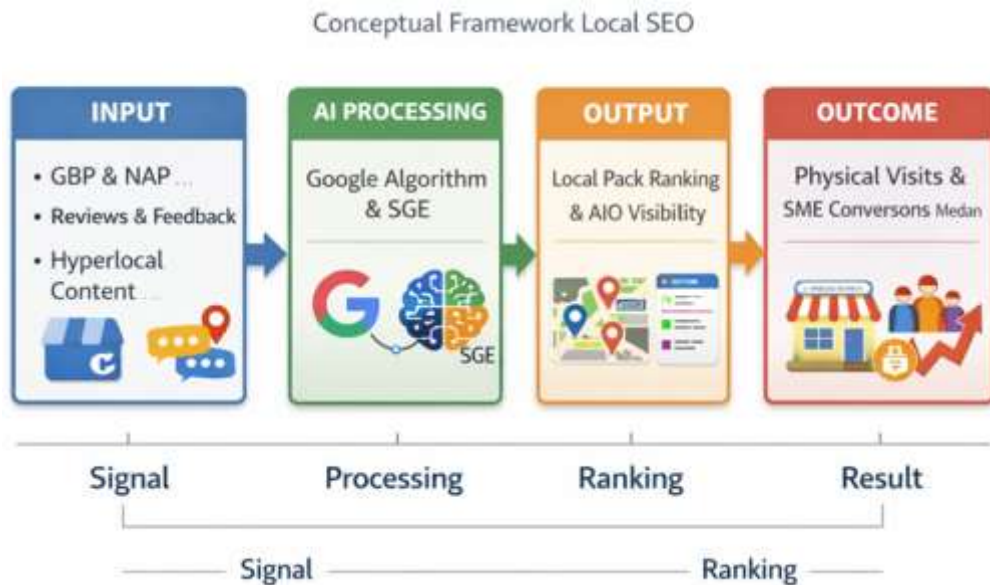


Figure 1. Conceptual Framework Local SEO

Conceptual Framework for Local SEO Adoption among SMEs in Medan

1. Input Layer – Local SEO Signals

- Google Business Profile (GBP) and NAP Consistency (Name, Address, Phone Number)
- Reviews and Feedback (fresh, authentic, and responsive)
- Hyperlocal Content (localized keywords, cultural relevance, and community engagement)

2. AI Processing Layer – Algorithmic Interpretation

- Google Algorithm and Search Generative Experience (SGE)
- Machine learning models interpret signals to determine relevance, authority, and proximity.
- Integration of semantic search and user intent enhances ranking precision.

3. Output Layer – Visibility Metrics

- Local Pack Ranking (three-map listing visibility)
- AIO Visibility (AI-optimized search exposure)
- Reflects how effectively signals are processed into measurable digital presence.

4. Outcome Layer – Business Impact

- Physical Visits (foot traffic to SMEs)
- Conversions (sales, inquiries, and engagement metrics)
- Demonstrates tangible results of optimized Local SEO strategies.

5. Integrative Dimension: Diffusion–Signaling Nexus

This framework integrates Diffusion of Innovation Theory and Signaling Theory.

- Diffusion explains the adoption stages of Local SEO among SMEs (from early to late majority).
- Signaling clarifies how consistent digital cues (NAP, reviews, responsiveness) enhance credibility and ranking. Together, they form a feedback loop where improved visibility accelerates adoption, reinforcing digital trust and competitiveness.

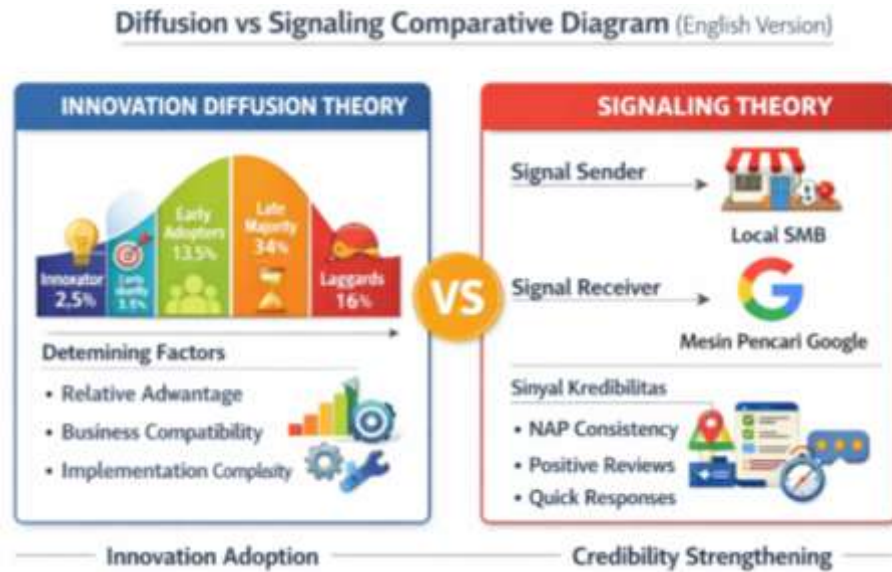


Figure 2. Diagram Komparatif Difusi Vs Sinyal

The "Diffusion vs. Signal" comparison diagram displays two complementary theories in the context of Local SEO for Medan MSMEs. On the left, the Diffusion of Innovation Theory illustrates the stages of technology adoption from innovators to laggards, while on the right, the Signal Theory highlights how digital credibility is built through consistent NAP, positive reviews, and responsiveness.

Figure 2 helps explain that diffusion focuses on the adoption process, while signals emphasize building credibility. The combination of the two demonstrates how MSMEs can accelerate the adoption of Local SEO while increasing public trust.

The Diffusion-Signal Integrative Layer

This diagram displays the four main stages of Technology Adoption Stage, Digital Signal Transmission, Algorithmic Interaction, and Feedback Effect with two parallel flows (diffusion and signal) that meet in the middle at the point of Credibility–Adoption Integration.



Figure 3. Integrative Layer of Diffusion–Signaling

This visual illustrates how MSMEs in Medan move from the early majority phase to the late majority, sending digital credibility signals, being processed by Google and SGE algorithms, and then producing feedback effects in the form of increased visibility and conversion.

Conceptual Integration of Innovation Adoption and Digital Credibility Signaling in Local SEO Contexts

1. Technology Adoption Stage

- SMEs in Medan are positioned within the *early majority* to *late majority* phase of innovation diffusion.
- Awareness of Local SEO is high, yet technical implementation remains limited.
- This stage reflects the diffusion curve's transitional zone where adoption accelerates through peer influence and perceived utility.

2. Digital Signal Transmission

- Post-adoption, businesses begin transmitting credibility signals through:
 - NAP Consistency (Name, Address, Phone Number)
 - Positive Reviews and Fresh Feedback
 - Response Speed to customer interactions
- These signals strengthen trust and visibility in Google's local search ecosystem.

3. Algorithmic Interaction

- Google acts as the signal receiver, processing data through its Algorithm and Search Generative Experience (SGE).
- The algorithm interprets signals to determine ranking relevance, proximity, and authority.
- This stage bridges behavioral adoption with machine learning interpretation.

4. Feedback Effect

- Enhanced visibility and conversion rates reinforce motivation among other SMEs to adopt Local SEO.
- The cycle creates a recursive diffusion loop, accelerating technological adoption and digital trust formation.
- The feedback mechanism embodies the synergy between innovation diffusion and credibility signaling.

5. Integrative Nexus: Credibility-Adoption Convergence

At the center of the framework lies the Credibility-Adoption Integration Point, where diffusion and signaling converge.

- *Diffusion* drives the spread of Local SEO practices.
- *Signaling* ensures sustained credibility and ranking optimization. Together, they form a dynamic equilibrium that fosters digital sustainability and competitive resilience among SMEs in urban ecosystems.

METHODOLOGY

This study uses a Systematic Literature Review (SLR) method with a qualitative approach. The research protocol follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) standard. The study population is all scientific articles, industry reports, and case studies discussing Local SEO, AI Overviews, and local search behavior published between 2019 and 2025. The sample was obtained through a systematic search of Google Scholar, Research Gate, and industry publications (Rachmawati, 2024)(Yext, 2025)(Arfadia, 2026)(Silva, 2026)(Central, 2026)(Newsfile, 2026) with the keywords "Local SEO Indonesia", "UMKM Medan digital marketing", "Google Business Profile 2025", and "AI search optimization". Inclusion criteria included: (1) articles in Indonesian or English, (2) discussing local ranking factors, (3) relevant to the context of metropolitan cities in Indonesia, and (4) having the authority of a credible author or institution. Of the 45 initial articles identified, a screening and duplicate removal process was carried out, leaving 15 main articles for in-depth analysis using thematic analysis techniques (Braun & Clarke, 2006)(Stevens, 2026) to identify dominant strategy patterns.

RESULTS

Based on the results of the systematic review, three main findings were found that are relevant to the Medan context:

1. Dominance of "Freshness" and Velocity Factors: In contrast to the old paradigm which only relies on the quantity of links, research (Yext, 2025) and (Silva, 2026) Research shows that by 2025, local algorithms will be highly sensitive to data freshness. A study analyzing 8.7 million Google search results revealed that businesses with 20 new reviews in the past 30 days have a better chance of outperforming businesses with 200 old reviews but no new activity. For the F&B and service sectors in Medan, the frequency of business owner responses to reviews (especially negative ones) has been shown to increase Click-Through Rate (CTR) by 10-15% (Yext, 2025).

2. The Importance of Hyper-Local Content and Data Structure: Analysis of a case study in Coconut Garden, Medan (Akbar & Betrand Sinaga, 2023) confirm that White Hat SEO techniques such as optimizing neighborhood-specific long-tail keywords (e.g., "Medan Petisah AC service" vs. "Medan AC service") significantly increase visibility. Implementing LocalBusiness schema (structured markup) helps AI search engines (like Google SGE) accurately understand business data, increasing the likelihood of appearing in AI Overviews for informational queries like "What is a Medan MSME?" (Shopify, 2025).
3. Shifting Credibility Signals (E-E-A-T): In the AI era, user-generated content (reviews) and first-hand experience are becoming key commodities (Google Quality Rater Guidelines). Local businesses in Medan that include physical evidence (geo-tagged photos) and personal responses in their Google Business Profile descriptions demonstrate higher authority than those that only use stock photos (Yext, 2025).

Table 1. Comparison of Local SEO Ranking Factors (Traditional vs. 2025)

Ranking Factors	Total quantity of 5 stars	AI Era Approach (2025-2026)	Relevance for Medan
Reviews	Total quantity of 5 stars	Velocity (new review speed) & Response	Very High (Culinary Business)
Keywords	Keyword stuffing	Hyper-local & NLP (Contextual)	Very high
Links	High Domain Authority	Citation from AI (Distributed Footprint)	Currently
Content	Long blog article	Visual (Geo-tagged) & Schema FAQ	Tall

DISCUSSION

The findings regarding review velocity dominance indicate that Google is currently prioritizing businesses that are active and relevant in real time. This has significant implications for Medan's MSMEs, which typically passively manage their digital profiles after a single registration. This contrasts with traditional research that only emphasizes consistent NAP (Rico, 2024), The results of this study show that in a city with high mobility like Medan, "digital noise" algorithms such as new photos, GBP posts, and review replies are the main differentiators with competitors.

Furthermore, findings on Generative Engine Optimization (GEO) indicate that going forward, MSMEs should not only be visible on Google Maps, but also listed in trusted sources referenced by AI such as ChatGPT or Perplexity. Data showing that 86% of AI citations come from first-party websites and structured third-party listings confirms that a Distributed Content Footprint strategy (the presence of accurate business data in various verified directories such as LinkedIn, Yellow Pages, or PGI) is crucial (Yext, 2025). This adds complexity to digital marketing strategies that previously focused solely on Google.

CONCLUSIONS AND RECOMMENDATIONS

Based on a systematic analysis, it was concluded that the Local SEO strategy for MSMEs in Medan must transform from simply “online presence” to “sustainable digital activity.” The three main pillars that must be optimized are: (1) Dynamic Interaction (managing reviews with fast responses and encouraging new reviews regularly), (2) Hyper-Local Content (utilizing the names of districts or iconic Medan points in descriptions), and (3) Data Structure (implementing schema markup to help AI read business data). It is recommended that the Medan Cooperatives and SMEs Office hold advanced Google Business Profile training that focuses on online reputation management and the creation of location-certified visual content, not just initial registration.

FURTHER STUDY

This study has major limitations because it relies solely on secondary data and does not conduct a direct field experiment on a sample of MSMEs in Medan. Furthermore, the AI landscape and Google algorithms are changing rapidly (in real time), so these findings may require updating in less than 12 months. Future research is recommended to use a mixed-methods quasi-experiment on 50 MSMEs in Medan to measure the causal correlation between GBP posting frequency and actual revenue growth, as well as to examine the effect of AI Overviews on local search bounce rates.

ACKNOWLEDGMENT

The author would like to thank the Faculty of Social Sciences and Humanities (FISH) of IBBI University, Management Study Program, Sukma Medan College of Management, Informatics Management Study Program, STMIK Logika Medan for providing support in facilities and database access for collaborative research between lecturers from different universities. Appreciation is also extended to the fostered MSMEs in Medan City who have shared insights on technical issues of digital marketing in the field, so that this research can be compiled comprehensively.

REFERENCES

- Akbar, A., & Bertrand Sinaga, J. (2023). Implementation of White Hat SEO Techniques to Improve Digital Promotion of Village Potentials Product (Case Study: Kebun Kelapa Village). *Sciences Development and Technology*, 3(1), 1-7. <http://creativecommons.org/licenses/by-sa/4.0/>
- Arfadia. (2026). State of SEO in Indonesia 2026. Arfadia.Com. <https://www.arfadia.com/resources/state-of-seo-indonesia-2026>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/https://doi.org/10.1191/1478088706qp063oa>

- Caprara, G. V., & Zimbardo, P. G. (2004). Personalizing politics: A congruency model of political preference. *American Psychologist*, 59(7), 581-594. <https://doi.org/10.1037/0003-066X.59.7.581>
- Central, G. S. (2026). Mengoptimalkan situs Anda untuk fitur AI generatif di Google Penelusuran. <https://developers.google.com/>
- Lusardi, A., Mitchell, O. S., & Curto, V. (2010). Financial Literacy Among the Young: Evidence and Implications. National Bureau of Economic Research, 358-380. <https://www.nber.org/papers/w15352.pdf>
- Newsfile, T. (2026). Viacon Releases AEO Strategy Guide for Businesses Navigating AI Search. https://finance.yahoo.com/sectors/technology/articles/viacon-releases-aeo-strategy-guide-124000018.html?utm_source=copilot.com
- Rachmawati, R. (2024). Pengenalan Metode Systematic Literature Review (SLR). Pelatihan Pemanfaatan Artificial Intelligence, 1-30. <https://elsa.brin.go.id/akun>
- Rico, B. (2024). Apa itu Local Citation dan Cara Membuatnya. Whello. <https://whello.id/tips-digital-marketing/local-citation/>
- Sabri, M. F., & MacDonald, M. (2010). Savings Behavior and Financial Problems among College Students: The Role of Financial Literacy in Malaysia | Sabri | Cross-cultural Communication. *Crosscultural Communication*, 6(3), P103-110. <http://www.cscanada.net/index.php/ccs/article/view/1468>
- Shopify. (2025). Shopify Search & Discovery reports and analytics. <https://help.shopify.com/>. https://help.shopify.com/en/manual/online-store/storefront-search/search-and-discovery-analytics?utm_source=copilot.com
- Silva, C. (2026). How to optimize for AI search results in 2026. SEMRUSH. <https://www.semrush.com/blog/ai-search-optimization/>
- Siti Haerani; Rika Dwi Ayu Parmitasari; Elsina Huberta Aponno; Zany Irayati Aunalal. (2019). Moderating effects of age on personality, driving behavior towards driving outcomes. *International Journal of Human Rights in Healthcare*, 12(2), 91-104. <https://doi.org/https://doi.org/10.1108/IJHRH-08-2017-0040>
- Stevens, G. (2026). Braun and Clarke's Approach to Thematic Analysis. *Academic Writing & Research*. <https://academic-writing.uk/braun-clarke-thematic-analysis>

Suhardiman. (2025). Strategi Digital Marketing untuk UMKM: Cara Efektif Tingkatkan Penjualan Online. Suarasumut.Id. <https://sumut.suara.com/read/2025/09/18/090000/strategi-digital-marketing-untuk-umkm-cara-efektif-tingkatkan-penjualan-online>

Yext. (2025). Throw Out the Old Local SEO Playbook – and Do This Instead. Yext Blog. <https://www.yext.com/blog/throw-out-old-local-seo-playbook-do-this>