
A SYSTEMATIC REVIEW OF DIGITAL INDICATORS DIGITAL INDICATORS FOR BRAND AWARENESS MEASUREMENT

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ABSTRACT

This study evaluates digital metrics used to capture initial brand awareness perceptions, compares their operational implementation across social media platforms, examines their underlying theoretical foundations, and assesses the interdisciplinary methodologies employed. Following a structured systematic literature review aligned with PRISMA guidelines, we screened studies published up to 2024 using predefined inclusion criteria, resulting in a final sample of fifty empirical studies and review articles. These studies encompass quantitative, qualitative, and mixed-methods research and focus on platforms such as Facebook, Twitter, Instagram, TikTok, and selected regional networks. The findings indicate that advanced computational approaches—particularly those integrating sentiment analysis, social network metrics, and machine learning techniques—improve sentiment classification accuracy, strengthen construct validity, and enhance the predictive validity of digital brand awareness measures. However, the literature reveals a persistent lack of standardized cross-platform operationalization and limited theoretical coherence. Although a wide range of theoretical models informs metric development, many studies rely on implicit, fragmented, or weakly articulated foundations, constraining causal interpretation and cumulative theory building. The study contributes to both theory and practice by clarifying these limitations and offering directions for the development of more consistent, comparable, and theoretically grounded measures of digital brand awareness in an increasingly complex social media landscape.

Keywords: Digital Metrics; Brand Awareness; Brand Perceptions; Social Media

A. INTRODUCTION

Research on digital indicators for measuring brand awareness, understood as the quality of initial brand perception on social media, has emerged as a critical area of inquiry due to brands' increasing reliance on social media platforms for consumer engagement and reputation management (Ranfagni & Faraoni, 2018; Bekmamedova & Shanks, 2014). Over the past decade, this field has evolved from traditional survey based measures of brand perception toward data driven approaches that leverage large scale social media analytics and machine learning techniques (Shukla et al., 2016; Zhang & Moe, 2017). The practical relevance of this shift is reinforced by empirical evidence showing that social media engagement indicators such as likes, shares, and comments can predict sales performance and enhance brand equity, with platforms such as TikTok and Instagram demonstrating particularly strong effects on brand awareness (Bharat et al., 2025; Unnava & Aravindakshan, 2021). Given the billions of users who continuously generate user created content worldwide, digital indicators have become essential for timely and accurate assessment of brand perceptions in dynamic online environments (Shukla, 2025; Zhang, 2024).

Despite the growing body of research, significant gaps remain. First, there is limited comparability in how digital indicators are operationalized across platforms, constraining cross-platform measurement and benchmarking. Second, questions of

construct validity persist, as many studies rely on proxy metrics without adequately validating whether they capture the underlying dimensions of brand awareness. Third, theoretical integration remains weak, with cognitive, affective, and behavioral perspectives often applied in isolation rather than within unified frameworks. Finally, the predominance of correlational designs restricts causal inference, limiting understanding of how digital indicators translate into downstream branding outcomes (Ramanathan & Dreiling, 2013; López Rodríguez et al., 2024; Yang et al., 2025). These gaps matter not only academically but also managerially, as inconsistent and theoretically fragmented measurement hampers strategic decision-making and weakens the effectiveness of cross-platform branding strategies (Unnava & Aravindakshan, 2021; Mothapo et al., 2024).

To reduce conceptual ambiguity, it is important to distinguish brand awareness from the broader notion of brand perception. Brand awareness refers specifically to consumers' ability to recognize and recall a brand under different conditions (Aaker, 1991; Keller, 1993), whereas brand perception encompasses a wider set of evaluative associations, including attitudes, beliefs, and emotional responses toward the brand (Macdonald & Sharp, 2000; Rossiter & Percy, 2017). While many social media studies use these terms interchangeably, conflating them risks overstating what digital indicators can validly capture. Clarifying this distinction is particularly important in digital contexts, where engagement and sentiment metrics may reflect evaluative perceptions rather than awareness per se.

The conceptual framework guiding this review defines brand awareness as consumers' ability to recognize and recall a brand, operationalized through digital indicators such as engagement metrics, sentiment analysis, and measures of consumer brand alignment (Ranfagni & Faraoni, 2018; Zhang & Moe, 2017; Chowdhury, 2024). These indicators interact with platform characteristics and user behaviors to shape initial brand perceptions, which subsequently influence downstream outcomes including purchase intention and brand loyalty (Bharat et al., 2025; Tarabieh, 2022). The framework draws on interdisciplinary theoretical perspectives, including consumer brand engagement, social media analytics, and digital brand equity, to structure the synthesis of empirical findings (Pham & Gammoh, 2015; Górska Warsewicz, 2024; Salam, 2024).

Accordingly, the purpose of this systematic review is to critically examine the theoretical and methodological foundations of digital indicators used to measure brand awareness on social media, and assess their operationalization across platforms. By integrating diverse strands of literature, the review seeks to advance academic understanding while offering actionable insights for brand managers operating in increasingly complex digital ecosystems (Shukla, 2025; Ragul & Kesavaraj, 2025).

B. METHOD

This study adopts a systematic literature review approach to identify, evaluate, and synthesize scholarly literature related to digital indicators for measuring brand

awareness as a quality of initial perception on social media. The review emphasizes the operationalization of brand awareness metrics across platforms, their theoretical and methodological foundations, and the identification of existing research gaps.

The transformed search queries were operationalized using a combination of relevant keywords and Boolean operators. The main keywords used in the search process include: "brand awareness*" OR "awerenes*" OR "brand perception*" AND "social media analytic*" OR "consumer engagement" OR "rate*" OR "brand metric*" OR "operationalization of metrics" OR "cross-platform measurement" OR "instagram" OR "tiktok" OR "facebook" OR "social media".

The literature search was conducted in Scopus databases and completed on January 31, 2025, using predefined search strings applied to the TITLE, ABSTRACT, and KEYWORD fields. The initial search yielded 1.099 records, which were screened for relevance based on predefined inclusion and exclusion criteria focusing on digital indicators of brand awareness in social media contexts. After title and abstract screening, 950 records were excluded due to irrelevance, duplication, or insufficient methodological detail. Full-text assessment was then conducted for 149 articles, resulting in a final sample of fifty studies included in the review (figure 1).

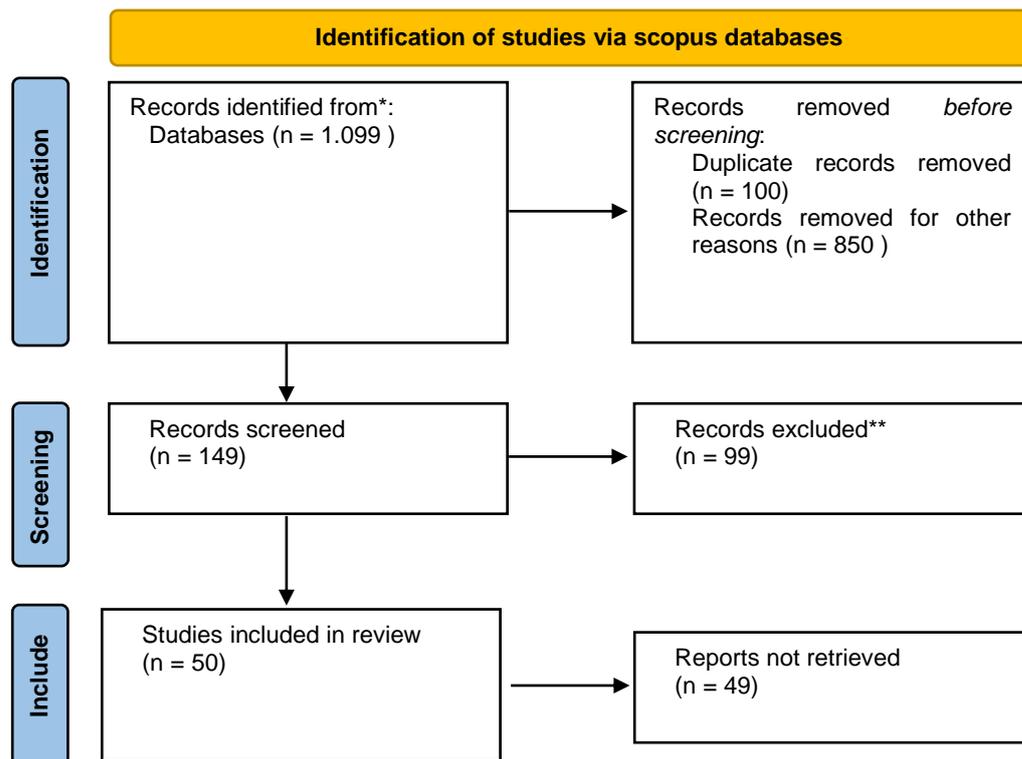


Figure 1. PRISMA Flow Diagram

The literature search was conducted exclusively through the Scopus database, selected for its broad coverage of peer-reviewed journals, conference proceedings, and interdisciplinary research in marketing, communication, information systems, and

social sciences. Scopus was chosen to ensure the quality, credibility, and academic rigor of the retrieved publications.

To refine the search results, predefined inclusion and exclusion criteria were applied. The inclusion criteria required that studies: (1) focus on brand awareness, brand perception, or closely related constructs within social media contexts; (2) discuss digital indicators, metrics, or analytical methods for measuring brand-related outcomes; (3) present theoretical, methodological, or empirical contributions relevant to cross-platform or comparative analysis; and (4) be published in peer-reviewed journals or conference proceedings indexed in Scopus. Only articles written in English were considered to maintain consistency in analysis.

Studies were excluded if they: (1) did not address brand awareness or perception in a social media context; (2) focused solely on traditional, offline branding measures without digital or social media components; (3) lacked methodological or theoretical relevance to metric operationalization; or (4) were non-peer-reviewed materials such as editorials, book reviews, industry reports, or opinion pieces.

Study relevance was assessed using a structured scoring and ranking procedure conducted independently by two reviewers. Each study was evaluated against predefined criteria, including conceptual alignment with brand awareness, clarity of digital indicator operationalization, and methodological rigor, using a three-point relevance scale. Discrepancies in scoring were resolved through discussion until consensus was reached, ensuring consistency and transparency in study selection.

C. RESULTS AND DISCUSSION

This section maps the research landscape of the literature on digital indicators for measuring brand awareness as quality of initial perception on social media, operationalization across platforms, theoretical and methodological foundations, research gaps, revealing a diverse range of approaches and disciplinary perspectives. The studies encompass quantitative, qualitative, and mixed methods, with a strong emphasis on sentiment analysis, social network analysis, and machine learning techniques applied across platforms such as Facebook, Twitter, Instagram, TikTok, and emerging regional networks. Theoretical frameworks vary from consumer engagement theories to uses and gratifications and brand equity models, reflecting interdisciplinary integration. This comparison elucidates methodological strengths and limitations, platform-specific operationalization challenges, and identifies critical gaps in standardization and longitudinal assessment, directly addressing the research questions on effectiveness, operationalization, and innovation needs.

Study quality was assessed using a light-touch appraisal focusing on dataset size, methodological rigor, platform coverage, and bias handling. Studies relying on large-scale social media datasets, validated analytical techniques (e.g., supervised sentiment models), and multi-platform designs were weighted more heavily in the synthesis, while studies with limited samples, single-platform focus, or unaddressed algorithmic bias were treated cautiously in comparative interpretations.

Measurement of brand awareness in digital contexts within the reviewed literature demonstrates substantial diversity in indicator types, operational approaches,

and increasingly sophisticated theoretical and methodological foundations (Table 1). The literature employs digital metrics such as sentiment scores, engagement counts, brand alignment measures, and multidimensional perception models to capture brand awareness and consumers' initial perceptions (Ranfagni & Faraoni, 2018; Yang et al., 2025; Chowdhury, 2024). Other studies adapt traditional aided and unaided awareness measures to digital environments by integrating trust and electronic word-of-mouth indicators (López-Rodríguez et al., 2024; Zailskaitė-Jakštė & Kuvykaitė, 2012). More recent approaches rely on AI-driven sentiment analysis and network-based reputation scores, enabling greater measurement granularity and real-time monitoring of brand perceptions (Nogueira & Tsunoda, 2018).

Table 1. Measurement Indicator Of Brand Awareness

Measurement Dimension	Key Indicators	Operational Approach	Examples of Digital Metrics	Sources
Brand Recognition & Recall	Aided awareness, Unaided awareness	Adaptation of traditional awareness measures to digital environments	Online survey-based brand recognition, brand-related search volume	Zailskaitė-Jakštė & Kuvykaitė (2012); López-Rodríguez et al. (2024)
Brand Sentiment	Positive, negative, neutral sentiment	AI-driven and text-based sentiment analysis	Sentiment scores from social media and online reviews	Ranfagni & Faraoni (2018); Sabuncu et al. (n.d.)
Digital Engagement	User interaction with brand content	Behavioral analysis of consumer engagement	Likes, shares, comments, click-through rate (CTR)	Chowdhury (2024); Yang et al. (2025)
Brand Alignment & Image	Brand-consumer value congruence	Perceptual and semantic alignment analysis	Brand congruence scores, semantic similarity measures	Ranfagni & Faraoni (2018); Yang et al. (2025)
Trust and e-WOM	Online trust and recommendation behavior	Integration of awareness with digital trust and word-of-mouth	Review ratings, review valence, e-WOM volume	López-Rodríguez et al. (2024)
Network-Based Reputation	Brand position in digital networks	Social network and reputation-based analysis	Network centrality, reputation index	Nogueira & Tsunoda (2018)
Multidimensional Brand Perception	Initial consumer perceptions	Multi-attribute brand	Composite brand	Chowdhury (2024); Yang et

Measurement Dimension	Key Indicators	Operational Approach	Examples of Digital Metrics	Sources
		perception models	awarenesss indices	al. (2025)
Real-Time Brand Awarenesss	Dynamic brand perception over time	AI-based real-time monitoring and big data analytics	Real-time sentiment tracking, trend detection	Sabuncu et al.

From an operationalization perspective (table 2), the literature documents extensive reliance on platform-specific analytical tools such as Talkwalker, Social Mentions, Twitter social network analysis, and proprietary analytics frameworks for platforms including TikTok, Instagram, and Weibo (Ranfagni & Faraoni, 2018; Yang et al., 2025; Suradihardjo et al., 2023; Zhang, 2024). Cross-platform analyses consistently reveal spillover and carryover effects, underscoring that brand awarenesss formation occurs within an interconnected social media ecosystem rather than on isolated platforms (Unnava & Aravindakshan, 2021; DaSouza & Church, 2024). Nevertheless, persistent challenges remain related to demographic targeting, algorithm-driven content distribution, and platform-specific affordances, which limit metric comparability across platforms (Yudha et al., 2024).

Table 2. Operationalization of Brand Awarenesss Measurement

Operational Aspect	Analytical Tools/ Platforms	Measurement Focus	Key Findings / Insights	Sources
Platform-Specific Analytics	Talkwalker, Social Mentions	Social listening and brand visibility	Enables tracking of brand mentions, sentiment, and reach within specific platforms	Ranfagni & Faraoni (2018); Suradihardjo et al. (2023)
Social Network Analysis	Twitter social network analysis	Brand diffusion and network influence	Identifies opinion leaders and information flow patterns affecting brand awarenesss	Yang et al. (2025)
Proprietary Platform Analytics	TikTok, Instagram, Weibo analytics dashboards	Platform-native engagement and exposure metrics	Captures awarenesss-related metrics tailored to platform-specific user behaviors	Zhang (2024); Yang et al. (2025)
Cross-Platform Analysis	Multi-platform social media datasets	Spillover and carryover effects	Demonstrates interconnected brand awarenesss formation across platforms	Unnava & Aravindakshan (2021); DaSouza & Church (2024)
Ecosystem-	Integrated	Holistic brand	Shows that brand	Unnava &

Operational Aspect	Analytical Tools / Platforms	Measurement Focus	Key Findings / Insights	Sources
Level Perspective	social media ecosystem	awareness development	awareness emerges from cumulative exposure across platforms	Aravindakshan (2021)
Measurement Challenges	Algorithmic and demographic constraints	Metric comparability and targeting accuracy	Platform algorithms and affordances limit cross-platform comparability	Yudha et al. (2024)

Theoretically, brand awareness metrics are commonly grounded in consumer behavior theory, brand equity, uses and gratifications, and customer engagement frameworks (Table 3) (Pham & Gammoh, 2015; Zeqiri et al., 2024; Tarabieh, 2022). More recent conceptual contributions draw on semiotic theory and real-time branding models that link brand awareness to dynamic digital communication processes (Zarei & Bahadorinezhad, 2024; He, 2022). Despite these advances, several studies highlight a lack of theoretical coherence and call for more integrated frameworks capable of explaining brand awareness dynamics across platforms in a consistent manner (Li et al., 2022; Ramanathan & Dreiling, 2013).

Table 3. Theoretical Foundations of Brand Awareness Measurement

Theoretical Framework	Core Focus	Application to Brand Awareness Metrics	Key Contributions	Sources
Consumer Behavior Theory	Cognitive and behavioral responses	Explains how consumers recognize, process, and recall brands in digital environments	Provides psychological grounding for awareness and perception measures	Pham & Gammoh (2015)
Brand Equity Theory	Value derived from brand knowledge	Positions brand awareness as a foundational dimension of brand equity	Links awareness metrics to long-term brand value	Zeqiri et al. (2024)
Uses and Gratifications Theory	Media use motivations	Explains how user motivations affect exposure to and awareness of brands	Accounts for selective attention and platform usage patterns	Tarabieh (2022)
Customer Engagement Frameworks	Interactive brand-consumer	Conceptualizes awareness as an outcome of engagement	Integrates behavioral and perceptual awareness	Pham & Gammoh (2015); Tarabieh (2022)

Theoretical Framework	Core Focus	Application to Brand Awareness Metrics	Key Contributions	Sources
Semiotic Theory	relationships Meaning-making and symbolism	behaviors Interprets brand awareness through signs, symbols, and digital narratives	indicators Enhances understanding of symbolic brand perception online	Zarei & Bahadorinezhad (2024)
Real-Time Branding Models	Dynamic communication processes	Links brand awareness to continuous, real-time digital interactions	Captures temporal and adaptive dimensions of awareness	He (2022)
Integrated Cross-Platform Frameworks	Holistic awareness dynamics	Attempts to unify awareness formation across multiple platforms	Highlights the need for theoretical consistency and integration	Li et al. (2022)
Theoretical Gaps and Critiques	Conceptual fragmentation	Identifies lack of coherence across theories	Calls for unified, multi-platform explanatory models	Ramanathan & Dreiling (2013); Li et al. (2022)

Methodologically, the literature applies advanced analytical techniques such as machine learning, sentiment analysis, social network analysis (table 4) (Shukla et al., 2016; Chowdhury, 2024; Nogueira & Tsunoda, 2018; Erislan, 2025). These approaches are frequently combined within mixed-methods designs that integrate qualitative analysis, quantitative surveys, and big data analytics (Shukla, 2025; Meganingsih et al., 2024; Bhattacharya, 2023).

Table 4. Methodological approach

Methodological Approach	Analytical Technique	Primary Purpose	Data Sources	Sources
Machine Learning	Classification, clustering, prediction models	Detects patterns and predicts brand awareness from large-scale digital data	Social media posts, user-generated content	Shukla et al. (2016); Chowdhury (2024)
Sentiment Analysis	Text and emotion mining	Assesses consumer attitudes and emotional responses toward brands	Online reviews, comments, social media text	Chowdhury (2024); Nogueira & Tsunoda (2018)
Social Network Analysis	Network structure and diffusion	Examines information flow and brand	Twitter and other social media	Nogueira & Tsunoda (2018)

Methodological Approach		Analytical Technique		Primary Purpose	Data Sources	Sources
Big Data Analytics	Data	modeling		visibility in digital networks	interaction data	
		Large-scale data processing and modeling	data and	Captures real-time and high-volume awareness signals	Platform APIs, digital analytics dashboards	Chowdhury (2024); Shukla (2025)

The literature identifies persistent research gaps, including limited cross-platform standardization, sample bias, and a lack of longitudinal evidence (Sarkar, 2025; López-Rodríguez et al., 2024; Górska-Warsewicz, 2024). Future research directions emphasize AI-enhanced analytics, improved bias correction in sentiment metrics, the development of multilevel calibration tools (Zhang & Moe, 2017; Ragul & Kesavaraj, 2025), and emerging lines of inquiry addressing sector-specific analyses, ethical considerations, and the impact of new technologies such as augmented reality on brand awareness formation (Bharat et al., 2025; Basheer et al., 2024; Agarwal & Alami, 2024).

Beyond descriptive categorization, the reviewed literature reveals clear patterns in the robustness and comparability of brand awareness indicators across platforms. Text-based sentiment indicators, e-WOM volume, and network-based reputation measures emerge as the most robust metrics, as they can be operationalized consistently across diverse social media environments and are less constrained by platform-specific affordances. In contrast, engagement-based metrics such as likes, shares, views, and proprietary reach indicators are highly platform-dependent, limiting their comparability and interpretive validity across ecosystems.

Theoretically, these patterns are best explained through an integrated lens combining brand equity theory, which positions awareness as a foundational construct, customer engagement frameworks that account for observable interaction behaviors, and real-time branding models that capture the dynamic and algorithm-driven nature of digital awareness formation. Uses and gratifications theory further explains cross-platform variability by highlighting how user motivations and platform affordances shape exposure and perception. Together, these frameworks provide a more coherent explanation of observed measurement practices than any single theory in isolation.

D. CONCLUSION

This review synthesizes existing evidence showing that the measurement of brand awareness on social media has shifted from predominantly survey-based approaches toward the use of digital indicators such as engagement metrics, sentiment analysis, social network analysis, and artificial intelligence-based techniques. Across the fifty studies reviewed, computational approaches are consistently reported to improve the granularity and timeliness of capturing initial brand perceptions,

particularly within dynamic and interconnected social media ecosystems. At the same time, the synthesized evidence reveals persistent conceptual and methodological fragmentation, most notably the absence of standardized metric operationalization across platforms and limited theoretical coherence in explaining brand awareness formation in an integrated manner.

From a theoretical perspective, the literature draws on consumer behavior theory, brand equity, uses and gratifications, and customer engagement frameworks; however, these perspectives are often applied partially and implicitly rather than as unified explanatory models. Methodologically, while big data analytics and machine learning dominate recent studies, the reviewed evidence also points to unresolved challenges related to data bias, platform-specific metric comparability, and a lack of longitudinal designs. Based on these gaps, future research should prioritize (1) the development of cross-platform calibration frameworks to improve metric comparability, (2) longitudinal studies that capture the temporal dynamics of brand awareness, (3) systematic bias detection and correction in sentiment and engagement metrics, (4) the integration of multiple theoretical perspectives into coherent explanatory models, and (5) sector- and technology-specific investigations, including the effects of emerging formats such as immersive and augmented media. Collectively, these directions are necessary to strengthen both theoretical advancement and the practical relevance of digital brand awareness measurement.

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