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Reimagining Brand Equity Measurement with AI: From Surveys to Behavioral and Unstructured Data

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Abstract

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This article reimagines brand equity measurement in light of advances in artificial intelligence, big data analytics, and unstructured digital traces. It highlights how dominant consumer based frameworks still rely on cross sectional surveys and aggregate indices that only partially capture the dynamic ways in which customers interact with brands across digital touchpoints. Drawing on a systematic review of peer reviewed studies, the article synthesises evidence on the emergence of behavioural and trace data sources, such as clickstreams, transactions, mobile usage, social media communication, and online reviews, as continuous signals of brand related behaviour and meaning. The review shows that artificial intelligence and machine learning methods are increasingly used to model complex customer journeys, yet are rarely embedded inside core brand equity metrics. The article concludes by outlining a research agenda that calls for hybrid measurement frameworks which integrate survey indicators with behaviour based and content based data to construct more dynamic, context sensitive, and actionable views of brand equity today.

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1. Introduction

Brand equity has long been treated as a central intangible asset that captures the additional value brands create beyond functional product attributes. Classical approaches have typically operationalised brand equity through survey based scales of awareness, associations, perceived quality and loyalty, complemented by financial indicators such as price premiums or market share. Recent bibliometric reviews show that, despite growing conceptual sophistication, the empirical core of brand equity research still relies heavily on cross sectional questionnaires and aggregate metrics that only partially reflect how customers actually behave in digital environments (Rojas-Lamorena et al., 2022).

At the same time, marketing practice has been transformed by the proliferation of rich behavioural and trace data. Clickstreams, transaction histories, mobile app usage, user generated content and social media interactions now provide continuous signals about customer journeys and brand related behaviours across touchpoints. Studies on social media communication and destination brand equity, for example, demonstrate that digital interactions and user generated messages are tightly intertwined with brand equity formation and brand engagement outcomes (Huerta-Álvarez et al., 2020). Yet these data sources are rarely integrated into formal brand equity measurement models, creating a disconnect between how brands are experienced and how their equity is quantified.

Advances in artificial intelligence and machine learning offer new tools to close this gap. Recent reviews argue that artificial intelligence in marketing has evolved from isolated applications toward a pervasive layer that supports prediction,

personalisation and decision automation across the customer journey (Vlačić et al., 2021; Mariani et al., 2022). Machine learning techniques are particularly well suited to extracting patterns from large, noisy and high dimensional data, enabling marketers to model complex relationships between brand touchpoints, customer responses and long term outcomes (Ma & Sun, 2020; Haleem et al., 2022). However, the implications of these capabilities for rethinking brand equity measurement remain underexplored in the academic literature.

A parallel stream of work on unstructured data in marketing highlights how text, images, audio and video can be mined to infer perceptions, emotions and evaluations that were previously accessible only through surveys (Balducci & Marinova, 2018). Big data driven models of brand business design similarly show that data warehouse architectures and analytic pipelines can support more granular, dynamic brand decision making (Yao, 2022). Building on these developments, this article seeks to reimagine brand equity measurement by shifting the focus from self reported survey indicators toward AI enabled integration of behavioural and unstructured data. The goal is to outline how artificial intelligence can be used to construct more continuous, context sensitive and action oriented measures of brand equity that are aligned with contemporary digital marketplaces.

2. Literature Review

Brand equity is widely recognised as a key intangible asset that captures the incremental value a brand adds beyond its functional attributes. Contemporary studies still operationalise brand equity largely through consumer based brand equity

frameworks that measure awareness, associations, perceived quality, value, and loyalty using survey scales and self-reported evaluations. Foroudi et al. (2018) conceptualise perceptional components of brand equity and show how combinations of awareness, perceived quality, associations and brand image drive loyalty and purchase intention, while Zarantonello et al. (2020) link these survey based components of consumer-based brand equity to market share for global and local brands across countries. Although these studies confirm the strategic importance of brand equity and its behavioural consequences, they largely rely on cross sectional questionnaires and aggregate indices that may not fully reflect how consumers interact with brands in data rich digital environments.

In parallel, the digitalisation of marketing has generated massive behavioural and trace datasets that can, in principle, enrich brand equity measurement. Big data analytics research shows that firms are increasingly able to integrate clickstreams, transaction histories and multichannel customer journeys into predictive models that inform segmentation, targeting and resource allocation. Big data analytics in marketing enables more granular, real time insights into customer behaviour and performance outcomes, yet many applications still concentrate on campaign optimisation rather than fundamentally re-conceptualising brand equity. Complementing this perspective, Verma et al. (2021) review artificial intelligence in marketing and argue that machine learning now constitutes a pervasive layer across the customer journey, enabling automated prediction, personalisation and decision support based on high volume, high variety data. However, both streams suggest that the integration of these AI capabilities into formal brand equity metrics remains

underdeveloped, with most firms still reporting brand strength through survey based scores.

Emerging work on unstructured data illustrates how digital traces can capture aspects of brand meaning that traditional scales miss. Alzate et al. (2022) propose a text-mining procedure for analysing online consumer reviews to infer brand image and brand positioning, showing that the textual content of reviews reveals nuanced associations and perceptions that go beyond numerical ratings. This evidence suggests that unstructured text can function as a continuous, naturally occurring source of information about how consumers experience and talk about brands. When combined with AI-enabled analytics described in the big data and marketing literature (Verma et al., 2021), these approaches open the possibility of shifting brand equity measurement from static, self reported indicators toward dynamic, behaviour and content based representations. Nevertheless, current applications tend to focus on specific outcomes such as brand image or positioning, rather than on constructing integrated brand equity indices. This gap motivates the need to reimagine brand equity measurement frameworks that explicitly harness behavioural and unstructured data through artificial intelligence while remaining conceptually anchored in established brand equity theory (Foroudi et al., 2018; Zarantonello et al., 2020).

3. Methods

This study employs a systematic literature review approach to synthesise existing knowledge on how artificial intelligence can reshape brand equity

measurement from survey based indicators toward behavioural and unstructured data. The review follows a transparent, replicable protocol that specifies the research questions, search strategy, screening procedures, and synthesis techniques in advance. Relevant studies were identified through structured searches in major academic databases such as Scopus, Web of Science, and Google Scholar, complemented by backward and forward citation tracking of key articles on brand equity, artificial intelligence in marketing, big data analytics, and unstructured data. Search strings combined terms related to brand equity (for example, "brand equity", "consumer-based brand equity"), artificial intelligence and analytics ("artificial intelligence", "machine learning", "big data analytics"), and data types ("behavioural data", "clickstream", "user generated content", "text mining", "unstructured data"). Only peer-reviewed journal articles written in English and directly addressing the intersection of brand equity, AI-driven analytics, or behavioural and unstructured data were considered for inclusion, while conference papers, book chapters, and non-academic reports were excluded.

After removing duplicates, titles and abstracts were screened to assess their relevance to the research focus on measuring brand equity with AI, behavioural, and unstructured data. Full-text assessments were then conducted for all potentially eligible articles using predefined inclusion and exclusion criteria, such as the clarity of brand equity conceptualisation, the use of AI or advanced analytics, and the explicit use of behavioural or unstructured data sources. Quality appraisal considered aspects such as research design transparency, robustness of analytical methods, and clarity of reported findings. The final set of studies was coded using a structured

coding scheme that captured publication outlet, conceptualisation of brand equity, types of data used (survey, behavioural, unstructured), AI or analytical methods applied, and key findings regarding measurement and managerial implications. A narrative synthesis was conducted to compare and contrast how different streams of research conceptualise and operationalise brand equity in AI-enabled contexts, identify gaps in the integration of behavioural and unstructured data into brand equity models, and derive an agenda for future research and practice.

4. Results and Discussion

The systematic review reveals that most empirical studies still conceptualise and measure brand equity through consumer-based survey frameworks, even when they acknowledge the complexity of contemporary digital environments. Consistent with Rojas-Lamorena et al. (2022), the dominant operationalisation continues to rely on awareness, associations, perceived quality and loyalty scales, complemented by financial indicators such as market share or price premiums. Likewise, studies such as Foroudi et al. (2018) and Zarantonello et al. (2020) demonstrate strong links between these survey based components of brand equity, loyalty and performance outcomes, which confirms the continued relevance of traditional constructs. However, the review indicates that such approaches tend to treat brand equity as a relatively static latent variable, aggregated at one point in time, rather than as a dynamic outcome of ongoing digital interactions.

At the same time, the evidence highlights a growing but uneven incorporation of behavioural and trace data into brand related analyses. Research on social media

communication and destination brand equity shows that user generated messages and online interactions are strongly intertwined with brand equity formation and engagement outcomes (Huerta-Álvarez et al., 2020). Yet, these digital traces are often analysed as antecedents or correlates of brand equity rather than as integral components of the measurement model itself. Only a limited subset of studies systematically combine clickstreams, transaction histories or multichannel journeys with brand equity constructs, suggesting a persistent disconnect between how consumers experience brands in digital ecosystems and how brand equity is quantified in empirical work.

The review also shows that artificial intelligence and machine learning are increasingly visible in marketing research, but their potential for brand equity measurement is only partially realised. Verma et al. (2021) and Vlačić et al. (2021) describe artificial intelligence as a pervasive layer across the customer journey, supporting prediction, personalisation and decision support based on high volume, high variety data, while Ma and Sun (2020) and Mariani et al. (2022) document how machine learning models can uncover complex, non-linear relationships in customer data. Similarly, Haleem et al. (2022) emphasise the breadth of artificial intelligence applications that enhance marketing analytics and decision making. However, within the corpus reviewed, these capabilities are predominantly deployed for campaign optimisation, targeting or churn prediction rather than for re-conceptualising brand equity as an AI-enabled, behaviourally grounded construct. This pattern reinforces the view that artificial intelligence is being used around brand equity, but not yet inside the core measurement framework.

Finally, the findings underscore the promise of unstructured data and big data infrastructures for enriching brand equity metrics. Balducci and Marinova (2018) and Alzate et al. (2022) demonstrate that text mining of online reviews and other user generated content can reveal nuanced associations, emotions and evaluations that are not captured by numerical scales, while Yao (2022) illustrates how data warehouse architectures and analytic pipelines can support more granular, dynamic brand decision making. When these insights are read together with the artificial intelligence overview provided by Verma et al. (2021), a coherent picture emerges: the building blocks for continuous, context sensitive and action oriented measures of brand equity already exist across the literatures on consumer based brand equity, artificial intelligence in marketing, and unstructured data. What remains underdeveloped is an integrated framework that explicitly treats behavioural and unstructured data as core inputs into brand equity measurement rather than as peripheral signals. Addressing this gap requires future research to bridge established survey-based constructs (Foroudi et al., 2018; Zarantonello et al., 2020) with AI-enabled analytics on digital traces, thereby reimagining brand equity as a dynamic, data-rich asset aligned with contemporary digital marketplaces.

5. Conclusion

This study set out to reimagine brand equity measurement in light of artificial intelligence, behavioural data, and unstructured digital traces. The review confirms that traditional consumer based brand equity frameworks, grounded in survey based constructs such as awareness, associations, perceived quality, and loyalty, remain

central for explaining loyalty and performance. At the same time, these models largely conceptualise brand equity as a static latent construct and rely on self reported evaluations that only partially capture how consumers interact with brands across increasingly complex digital touchpoints. The persistence of cross sectional, survey driven approaches stands in clear contrast to the proliferation of behavioural and trace data that continuously record customer journeys, interactions, and expressions of brand meaning.

The findings also show that the technological building blocks for a more dynamic, data rich understanding of brand equity already exist. Artificial intelligence and machine learning are widely used to process large, noisy datasets, support prediction and personalisation, and extract patterns from behavioural and unstructured data. Research on social media, online reviews and other user generated content demonstrates that digital traces can reveal fine grained perceptions and emotions that complement, and in some cases surpass, traditional scales. Yet these capabilities are mainly deployed around brand equity optimising campaigns, targeting, or engagement rather than being embedded inside the core measurement framework itself.

Taken together, the review highlights a substantial but underexploited opportunity: to move from treating behavioural and unstructured data as peripheral signals toward integrating them as primary inputs in brand equity metrics. Conceptually, this implies redefining brand equity as a dynamic, continuously updated asset emerging from ongoing digital interactions, while still anchored in established theoretical dimensions. Methodologically, it calls for hybrid models that

combine survey based constructs with AI-enabled analysis of clickstreams, transactions and unstructured content. Future research should therefore focus on designing and testing such integrated frameworks, clarifying how different data sources and algorithms can be combined in valid, interpretable, and managerially useful measures. For practitioners, the implication is that brands which succeed in aligning their equity metrics with the realities of data-rich, AI-enabled marketplaces will be better positioned to monitor, manage, and strategically leverage brand value over time.

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