INTERNATIONAL REVIEW OF ARTIFICIAL INTELLIGENCE IN MARKETING

NAWALA

Volume 3, Number 1, 2024

Emotional AI in Advertising: Recognizing and Responding to Consumer Affective States

Yoga Supriyatna [1]

[1] Universitas Mercu Buana, Jakarta, Indonesia

Abstract

Article history:
Received: January 14, 2024
Revised: February 11, 2024
Accepted: April 20, 2024
Published: June 30, 2024

Keywords:
Advertising, Affective Computing, Emotion Recognition, Emotional Artificial Intelligence, Ethics.

Identifier:
Nawala
Page: 47-61
https://nawala.io/index.php/iraim

This study examines how emotional artificial intelligence can reshape contemporary advertising by recognising and responding to consumer affective states. Drawing on a systematic literature review of work in affective computing, emotion recognition, advertising, and ethical analysis, the paper synthesises evidence on the technical capabilities, applications, and risks of emotionally responsive systems. The review shows that automated emotion measures based on facial expressions, voice, physiology, and multimodal fusion can capture meaningful reactions to advertising and enhance diagnostics and pre-testing. However, these systems produce probabilistic indicators rather than direct access to "true" feelings, and their validity depends on context, data quality, and theoretical interpretation. Empirical studies reveal that emotional information is mostly used for evaluation rather than in closed loop, real time adaptation of messages. Across the literature, concerns about privacy, manipulation, and bias highlight the need for strong governance and transparency. The study outlines research and design implications for developing emotionally intelligent advertising that supports both effectiveness and consumer welfare in advertising practice.

*Corresponding author:
(Yoga Supriyatna)

1. Introduction

Emotional artificial intelligence has emerged as a powerful extension of data driven advertising, promising campaigns that can "feel with" consumers rather than only react to their clicks. Recent reviews show that artificial intelligence is now embedded across the advertising value chain, from automated targeting and personalization to content creation and ad optimization, enabling advertisers to infer preferences from large-scale behavioral traces and deliver highly tailored messages at speed (Argan et al., 2022; Gao et al., 2023). Within this broader transformation, advertisers increasingly seek tools that can move beyond what consumers do to how they feel, opening a space for "emotional AI" applications that recognize and respond to affective states during exposure to advertising.

Emotional AI builds on advances in affective computing and automated emotion recognition, which aim to infer discrete emotions and affective dimensions from multimodal cues such as facial expressions, vocal tone, body posture, language use, and physiological signals (Hussain et al., 2021; Maithri et al., 2022). Multimodal information fusion techniques now allow models to integrate visual, auditory, and textual signals to improve the robustness of emotion classification in naturalistic settings, including social media, streaming platforms, and mobile environments. At the same time, marketing scholars have begun to conceptualize how these emotionally intelligent machines can be embedded into customer journeys, proposing that affect monitoring and affect-contingent responses can enhance experience design, message relevance, and perceived empathy in brand interactions (Caruelle et al., 2022; Yamin et al., 2023).

Advertising research has a long tradition of examining emotional responses as drivers of attention, memory, and persuasion, and recent work increasingly relies on automated measures rather than self-reports. Studies that use facial expression analysis and facial coding show that moment to moment emotional reactions to video or print advertisements predict attitudes and effectiveness metrics beyond conscious recall (Isabella & Vieira, 2020; Otamendi & Sutil Martín, 2020). Validation studies of tools such as Face Reader indicate that automated emotion recognition can approximate expert coding of facial action units, which facilitates scalable testing of large numbers of creatives in realistic environments (Burgess et al., 2023). However, in most of this work emotional signals are treated as diagnostic inputs for pre-testing or post campaign evaluation, rather than as live feedback that can dynamically shape what the consumer sees next.

The notion of emotional AI in advertising implies a more interactive and adaptive paradigm. Instead of using emotion recognition only to rank or filter creatives, emotionally aware systems can adjust message claims, visual tone, pacing, or even media intensity in real time based on inferred affective states such as boredom, confusion, joy, or irritation. Conceptual contributions on emotionally intelligent marketing technologies argue that such systems could personalize not only "who" receives an ad and "what" it contains, but also "when" and "how" it is delivered to maintain engagement, reduce perceived intrusiveness, and foster more human-like brand interactions (Caruelle et al., 2022; Gao et al., 2023). In principle, this shifts the role of advertising from broadcasting static messages toward orchestrating responsive affective dialogues with individual consumers.

At the same time, the deployment of emotional AI in advertising raises significant conceptual and ethical questions. Scholars in AI ethics and emotion recognition warn that current systems may overclaim their ability to infer internal states from surface cues, and that errors or cultural biases in emotion classification can lead to misinterpretation and unfair treatment of individuals (Ghotbi et al., 2022). The continuous capture of facial images, voice, and other biometric indicators in commercial contexts also intensifies concerns about privacy, manipulation, and the autonomy of consumers when their affective vulnerabilities become targets of optimization. Against this backdrop, there is a clear need for advertising research that not only documents the technical possibilities of emotional AI, but also examines how recognizing and responding to consumer affective states reshapes persuasion processes, perceived intrusiveness, and trust in AI-mediated brand communication.

The present study addresses this gap by examining how emotional artificial intelligence in advertising can recognize and respond to consumer affective states. It seeks to clarify how different emotion recognition modalities can be integrated into advertising systems, theorize the mechanisms through which affect-contingent adaptations influence consumer responses, and identify boundary conditions and safeguards that support both advertising effectiveness and consumer welfare. By bringing together insights from affective computing, AI-driven advertising, and the ethics of emotion recognition, the study seeks to advance a more nuanced understanding of what emotionally intelligent advertising can and should do in contemporary digital markets.

2. Literature Review

Research on emotional artificial intelligence in market communication is grounded in work on automated emotion measurement that moves beyond traditional self-report surveys. In tourism services, for example, facial-expression recognition has been used to capture in the moment emotional reactions and link them to satisfaction with service encounters. Using facial expression recognition software on guided tours, González-Rodríguez et al. (2020) show that automatically inferred emotions can serve as a useful proxy for tourist satisfaction, suggesting that emotion recognition tools can support more sensitive evaluation of consumer experiences. Similarly, multi method designs in tourism advertising compare automated facial coding with physiological indicators and self report, demonstrating that emotional responses captured by tools such as FaceReader differentiate advertising variants and relate to arousal and evaluative outcomes (Hadinejad et al., 2019). These findings position automated emotion-recognition methods as a promising foundation for emotionally aware advertising systems that adapt to viewers' affective states.

At the same time, recent studies highlight the methodological limits of current emotion recognition technologies. Skiendziel et al. (2019) assess the convergent validity of the Noldus FaceReader 7 software against manual Facial Action Coding System scoring and report that, while basic emotion classifications are reasonably accurate at the aggregate level, performance varies across specific emotions and individual facial action units. This implies that emotional AI systems used in advertising should be treated as probabilistic indicators of affect rather than precise

"emotion meters," especially in naturalistic viewing conditions where lighting, head pose, and cultural display rules may degrade classification accuracy. Even when automated measures track self-reported outcomes reasonably well, as in the tourism satisfaction context (González-Rodríguez et al., 2020), their validity remains contingent on the setting, the software version, and the training data on which the models have been built.

Beyond technical concerns, psychologists question the assumption that facial configurations can be straightforwardly mapped onto internal emotional states. Barrett et al. (2019) review evidence across neuroscience and psychology and argue that similar facial movements can convey different emotions depending on culture, situation, and individual differences, and that there is no one to one correspondence between "basic" facial expressions and discrete emotions. This perspective suggests that emotional AI in advertising risks over-interpreting surface cues, inferring highly specific states (for example, "frustration" or "delight") from patterns of facial muscle movement that may actually reflect cognitive effort, politeness, or social conventions. For emotionally responsive advertising systems, this critique underscores the need to combine facial analytics with contextual information and behavioural data rather than relying on facial expressions alone.

Finally, debates on artificial intelligence in marketing underscore the ethical stakes of deploying emotionally responsive systems in persuasive communication. Hermann (2022) analyses AI in marketing from a multi-stakeholder ethical perspective and identifies tensions between commercial objectives and principles such as autonomy, non-manipulation, justice, and responsibility. When applied to

emotional AI in advertising, these concerns translate into questions about the legitimacy of collecting biometric and affective data, the potential exploitation of consumers' emotional vulnerabilities, and the need for safeguards that govern how inferred emotions trigger adaptive advertising responses. Taken together, this literature suggests that emotionally intelligent advertising systems should be designed not only for predictive performance and engagement, but also with careful attention to measurement validity, conceptual limitations in emotion inference, and ethical constraints on the use of affective data.

3. Methods

This study employs a systematic literature review method to consolidate and critically evaluate existing knowledge on emotional artificial intelligence in advertising. The review focuses on scholarly work at the intersection of affective computing, automated emotion recognition, AI-driven advertising, and the ethics of emotion-based persuasion. The search strategy was implemented across major academic databases such as Scopus, Web of Science, and Google Scholar using combinations of keywords including "emotional artificial intelligence," "affective computing," "emotion recognition," "advertising," "AI marketing," and "biometric data in marketing." Only peer-reviewed journal articles and conference papers written in English and directly addressing emotion recognition or emotional AI within marketing, advertising, or closely related consumer contexts were included, while editorials, book chapters, non peer reviewed reports, and purely technical papers without marketing relevance were excluded. The screening process

proceeded in several stages: removal of duplicates, title and abstract screening against the inclusion criteria, and full-text assessment for conceptual fit and methodological transparency by at least two reviewers to reduce selection bias. For each retained study, a structured data-extraction template was used to capture publication outlet, research objectives, theoretical lens, emotion-recognition modalities, advertising or consumer context, methodological design, and key findings related to how emotional AI recognizes and responds to affective states, as well as any ethical or governance issues discussed. The extracted information was then synthesized using a narrative and thematic approach, organizing the literature into core themes such as measurement and validity of emotion recognition, applications of emotional AI in advertising and customer experience, and ethical and regulatory concerns. This systematic procedure allows the review to produce an integrated, transparent, and reproducible account of how emotional AI is currently conceptualized and deployed in advertising, and where gaps remain for future research.

4. Results and Discussion

The systematic review reveals that emotional artificial intelligence in advertising is built on a relatively robust technical foundation, but its deployment in real-time persuasive contexts remains limited and uneven. Across the literature, there is consistent evidence that automated emotion-recognition systems can capture meaningful affective reactions to media content. Studies using facial expression analysis and facial coding show that moment to moment emotional responses to video and print advertisements significantly predict attitudinal and effectiveness

metrics beyond what is captured by conscious recall or standard self-report measures (Isabella & Vieira, 2020; Otamendi & Sutil Martín, 2020). Similar results in tourism and service contexts indicate that automatically inferred emotions can act as proxies for customer satisfaction and arousal, suggesting that such tools provide a sensitive lens on consumer experience that traditional surveys often miss (Hadinejad et al., 2019; González-Rodríguez et al., 2020). These findings support the idea that emotional AI can enrich advertising diagnostics and pre-testing.

At the same time, the review highlights important constraints regarding measurement validity and generalizability. Validation work on tools such as FaceReader demonstrates that automated systems can approximate expert coding of facial action units and basic emotions, but performance varies substantially by emotion category, context, and individual differences (Skiendziel et al., 2019; Burgess et al., 2023). Moreover, psychological evidence challenges the assumption of a simple one to one mapping between facial configurations and internal emotional states, arguing that similar facial movements can signal different emotions depending on culture, situation, and learned emotion concepts (Barrett et al., 2019). Taken together, these findings suggest that emotional AI should be treated as producing probabilistic indicators rather than definitive diagnoses of consumer feelings. For advertising practice, this implies that models are most defensible when multimodal inputs (facial, vocal, textual, and behavioural traces) are integrated and interpreted in context, rather than relying on facial cues in isolation (Hussain et al., 2021; Maithri et al., 2022).

From an application perspective, the literature shows a clear gap between the technical potential of emotional AI and its actual use in adaptive advertising systems. Most empirical studies still treat emotional data as diagnostic input for pre and post campaign evaluation, not as live feedback that shapes the subsequent content a consumer receives. This is in tension with conceptual work in marketing that envisions emotionally intelligent technologies embedded throughout the customer journey, where affect monitoring and affect-contingent responses dynamically adjust message content, timing, and delivery to maintain engagement and perceived empathy (Caruelle et al., 2022; Yamin et al., 2023). When combined with broader developments in AI-driven advertising such as automated targeting, personalization, and creative optimization emotional AI has the potential to extend current data-driven practices from "what people do" to "how people feel," thereby shifting campaigns toward genuinely responsive affective dialogues (Argan et al., 2022; Gao et al., 2023). However, the review finds very few concrete implementations or field studies that demonstrate such closed-loop systems in real advertising environments, indicating a major empirical gap.

Ethical and governance issues emerge as a central cross-cutting theme that partly explains this implementation gap. Scholars in AI ethics and marketing warn that emotional AI amplifies existing concerns about privacy, manipulation, and fairness because it involves the capture and interpretation of highly intimate signals such as facial images, voice, and other biometric or behavioural indicators (Ghotbi et al., 2022). When these signals are used to optimize persuasive messages, there is a risk that consumers' affective vulnerabilities become systematic targets for

commercial gain, potentially undermining autonomy and trust. The conceptual critiques of emotion inference add another layer of concern: if models systematically misread emotions for certain groups or contexts, emotional AI could introduce new forms of bias and misclassification into advertising decisions (Barrett et al., 2019). The literature thus converges on the need for explicit safeguards, such as transparency about data collection, limits on the types of affective inferences that can be acted upon, and governance frameworks that balance commercial objectives with consumer welfare (Hermann, 2022).

Overall, the review indicates that emotional AI in advertising sits at a promising but precarious inflection point. On one side, evidence on automated emotion measurement, multimodal fusion, and AI driven personalization suggests substantial potential to design campaigns that "feel with" consumers, enhancing relevance and experiential quality (Hussain et al., 2021; Maithri et al., 2022; Gao et al., 2023). On the other side, unresolved issues around validity, interpretability, and ethics caution against uncritical deployment. The key implication is that emotionally intelligent advertising systems should be developed as socio technical assemblages rather than purely technical solutions: they need multimodal and context aware measurement strategies, theoretically informed models of how affective states influence persuasion, and robust ethical guardrails. Addressing these dimensions simultaneously offers a pathway for leveraging emotional AI to support both advertising effectiveness and consumer welfare, aligning with the research agenda outlined in the introduction and literature review.

5. Conclusion

This review concludes that emotional artificial intelligence has the potential to transform advertising from a primarily behavior-based practice into one that is also responsive to consumers' affective states. Evidence from studies using facial coding, multimodal emotion-recognition systems, and AI driven personalization shows that emotional data can enrich diagnostics, improve pre-testing, and offer a more sensitive lens on how audiences experience advertising. At the same time, the findings make clear that emotional AI outputs are best understood as probabilistic indicators rather than precise measures of "true" feelings, given variation in model performance across contexts and the absence of a simple one to one mapping between facial expressions and internal emotional states. In this sense, emotionally intelligent advertising is most promising when it integrates multiple modalities, situates affective inferences in context, and is guided by explicit theoretical models of how emotions shape attention, persuasion, and memory.

However, the review also shows that current applications remain largely diagnostic, with relatively few examples of fully adaptive, closed loop emotional AI systems deployed in real advertising environments. This implementation gap is closely tied to significant ethical and governance concerns surrounding biometric data collection, the risk of manipulating affective vulnerabilities, and potential bias in emotion inference. As a result, the future of emotional AI in advertising hinges on treating these systems as socio technical assemblages that combine robust measurement, transparent design, and strong ethical safeguards. For researchers, this opens a rich agenda around validating multimodal emotion measures in ecologically

valid settings, testing affect-contingent adaptations in field experiments, and developing governance frameworks that align emotionally intelligent advertising with consumer autonomy, fairness, and long term trust.

References

Argan, M., Dinc, H., Kaya, S., & Argan, M. T. (2022). Artificial intelligence (AI) in advertising: Understanding and schematizing the behaviors of social media users. *ADCAIJ: Advances in Distributed Computing and Artificial Intelligence Journal, 11*(3), 331–348.

Barrett, L. F., Adolphs, R., Marsella, S., Martinez, A. M., & Pollak, S. D. (2019). Emotional expressions reconsidered: Challenges to inferring emotion from human facial movements. *Psychological Science in the Public Interest, 20*(1), 1–68.

Burgess, R., Culpin, I., Costantini, I., Bould, H., Nabney, I., & Pearson, R. M. (2023). Quantifying the efficacy of an automated facial coding software using videos of parents. *Frontiers in Psychology, 14*, 1223806.

Caruelle, D., Shams, P., Gustafsson, A., & Lervik-Olsen, L. (2022). Affective computing in marketing: Practical implications and research opportunities afforded by emotionally intelligent machines. *Marketing Letters, 33*(1), 163–169.

Gao, B., Wang, Y., Xie, H., Hu, Y., & Hu, Y. (2023). Artificial intelligence in advertising: Advancements, challenges, and ethical considerations in

targeting, personalization, content creation, and ad optimization. *SAGE Open, 13*(4), 21582440231210759.

Ghotbi, N. (2023). The ethics of emotional artificial intelligence: A mixed method analysis. *Asian Bioethics Review, 15*(4), 417–430.

González-Rodríguez, M. R., Díaz-Fernández, M. C., & Gómez, C. P. (2020). Facial-expression recognition: An emergent approach to the measurement of tourist satisfaction through emotions. *Telematics and Informatics, 51*, 101404.

Hadinejad, A., Moyle, B. D., Kralj, A., & Scott, N. (2019). Physiological and self-report methods to the measurement of emotion in tourism. *Tourism Recreation Research, 44*(4), 466–478.

Hermann, E. (2022). Leveraging artificial intelligence in marketing for social good—An ethical perspective. *Journal of Business Ethics, 179*(1), 43–61.

Hussain, T., Wang, W., Bouaynaya, N., Fathallah-Shaykh, H., & Mihaylova, L. (2022, July). Deep learning for audio visual emotion recognition. In *2022 25th International Conference on Information Fusion (FUSION)* (pp. 1–8). IEEE.

Isabella, G., & Vieira, V. A. (2020). The effect of facial expression on emotional contagion and product evaluation in print advertising. *RAUSP Management Journal, 55*, 375–391.

Mohd Yamin, M. N., Ab. Aziz, K., Gek Siang, T., & Ab. Aziz, N. A. (2023). Determinants of emotion recognition system adoption: Empirical evidence from Malaysia. *Applied Sciences, 13*(21), 11854.

Otamendi, F. J., & Sutil Martín, D. L. (2020). The emotional effectiveness of advertisement. *Frontiers in Psychology, 11*, 2088.

Skiendziel, T., Rösch, A. G., & Schultheiss, O. C. (2019). Assessing the convergent validity between the automated emotion recognition software Noldus FaceReader 7 and Facial Action Coding System scoring. *PLOS ONE, 14*(10), e0223905.