

DEVELOPING AN INCENTIVE SCHEME OF USED COOKING OIL BUSINESS MODEL TO SUPPORT THE FEASIBILITY OF SUSTAINABLE AVIATION FUEL

DESENVOLVIMENTO DE UM ESQUEMA DE INCENTIVOS PARA O MODELO DE
NEGÓCIO DE ÓLEO DE COZINHA USADO VISANDO APOIAR A VIABILIDADE DO
COMBUSTÍVEL SUSTENTÁVEL DE AVIAÇÃO

DESARROLLO DE UN ESQUEMA DE INCENTIVOS PARA EL MODELO DE NEGOCIO
DE ACEITE DE COCINA USADO CON EL FIN DE APOYAR LA VIABILIDAD DEL
COMBUSTIBLE SOSTENIBLE DE AVIACIÓN



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ABSTRACT

Negative campaigns targeting palm oil have escalated globally, driven by concerns over alleged deforestation, biodiversity loss, and health-related misinformation. These narratives have not only shaped public perception but also influenced international trade policies and consumer behavior. In response, a growing body of literature has emerged exploring strategic communication approaches to counter these campaigns effectively. This study aims to synthesize such strategies through a qualitative, document-based approach using the Systematic Literature Review (SLR) method. The research employed the PRISMA protocol to systematically identify, screen, and analyze 35 peer-reviewed articles published between 2021 and 2025, sourced from the ScienceDirect database. Data collection involved keyword refinement and the application of inclusion criteria based on thematic relevance, publication recency, and open-access availability. Thematic content analysis was conducted to extract, categorize, and interpret patterns across diverse communication strategies. Findings reveal five dominant components of effective integrated communication strategies: consistent cross-stakeholder messaging, platform-specific content adaptation, audience segmentation, proactive management of misinformation, and the use of credible third-party voices, such as scientists and smallholders. Variations in strategy effectiveness were noted across geopolitical regions and digital platforms, highlighting the importance of contextual and cultural alignment in message framing. This study concludes that integrated communication is not merely tactical, but a strategic necessity for reshaping the global discourse on palm oil. Future research is recommended to explore the longitudinal impacts of such strategies and investigate how emerging technologies, including AI-driven media analytics, can enhance narrative resilience.

Keywords: Palm Oil. Communication Strategy. Misinformation. Media Framing. Systematic Literature Review.

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RESUMO

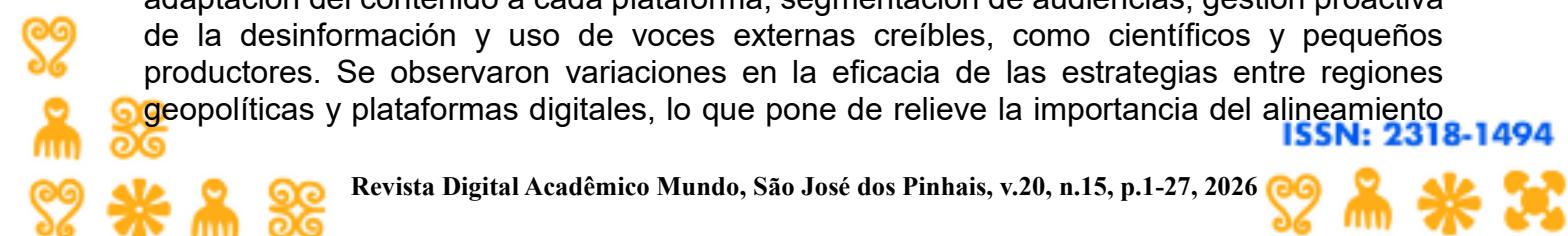
Campanhas negativas direcionadas ao óleo de palma têm se intensificado globalmente, impulsionadas por preocupações relacionadas a suposto desmatamento, perda de biodiversidade e desinformação associada à saúde. Essas narrativas não apenas moldaram a percepção pública, mas também influenciaram políticas comerciais internacionais e o comportamento do consumidor. Em resposta, um corpo crescente de literatura tem explorado abordagens estratégicas de comunicação para combater essas campanhas de forma eficaz. Este estudo tem como objetivo sintetizar tais estratégias por meio de uma abordagem qualitativa, de base documental, utilizando o método de Revisão Sistemática da Literatura (RSL). A pesquisa empregou o protocolo PRISMA para identificar, selecionar e analisar sistematicamente 35 artigos revisados por pares, publicados entre 2021 e 2025, obtidos da base de dados ScienceDirect. A coleta de dados envolveu o refinamento de palavras-chave e a aplicação de critérios de inclusão com base na relevância temática, atualidade das publicações e disponibilidade em acesso aberto. A análise temática de conteúdo foi conduzida para extrair, categorizar e interpretar padrões entre diferentes estratégias de comunicação. Os resultados revelam cinco componentes dominantes de estratégias integradas de comunicação eficazes: consistência das mensagens entre diferentes partes interessadas, adaptação de conteúdos conforme a plataforma, segmentação de públicos, gestão proativa da desinformação e utilização de vozes externas credíveis, como cientistas e pequenos produtores. Foram observadas variações na eficácia das estratégias entre regiões geopolíticas e plataformas digitais, evidenciando a importância do alinhamento contextual e cultural na construção das mensagens. O estudo conclui que a comunicação integrada não é apenas uma ação tática, mas uma necessidade estratégica para ressignificar o discurso global sobre o óleo de palma. Recomenda-se que pesquisas futuras explorem os impactos longitudinais dessas estratégias e investiguem como tecnologias emergentes, incluindo análises de mídia baseadas em inteligência artificial, podem fortalecer a resiliência narrativa.

Palavras-chave: Óleo de Palma. Estratégia de Comunicação. Desinformação. Enquadramento Midiático. Revisão Sistemática da Literatura.

RESUMEN

Las campañas negativas dirigidas al aceite de palma se han intensificado a nivel mundial, impulsadas por preocupaciones relacionadas con el supuesto impacto en la deforestación, la pérdida de biodiversidad y la desinformación en materia de salud. Estas narrativas no solo han moldeado la percepción pública, sino que también han influido en las políticas comerciales internacionales y en el comportamiento del consumidor. En respuesta, ha surgido un creciente cuerpo de literatura que explora enfoques estratégicos de comunicación para contrarrestar eficazmente estas campañas. Este estudio tiene como objetivo sintetizar dichas estrategias mediante un enfoque cualitativo de base documental, utilizando el método de Revisión Sistemática de la Literatura (RSL). La investigación empleó el protocolo PRISMA para identificar, seleccionar y analizar sistemáticamente 35 artículos revisados por pares, publicados entre 2021 y 2025, procedentes de la base de datos ScienceDirect. La recopilación de datos incluyó el refinamiento de palabras clave y la aplicación de criterios de inclusión basados en la relevancia temática, la actualidad de las publicaciones y la disponibilidad en acceso abierto. Se realizó un análisis temático de contenido para extraer, categorizar e interpretar patrones en las diversas estrategias de comunicación. Los resultados revelan cinco componentes dominantes de las estrategias integradas de comunicación eficaces: coherencia del mensaje entre las distintas partes interesadas, adaptación del contenido a cada plataforma, segmentación de audiencias, gestión proactiva de la desinformación y uso de voces externas creíbles, como científicos y pequeños productores. Se observaron variaciones en la eficacia de las estrategias entre regiones geopolíticas y plataformas digitales, lo que pone de relieve la importancia del alineamiento

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contextual y cultural en el encuadre de los mensajes. El estudio concluye que la comunicación integrada no es meramente una acción táctica, sino una necesidad estratégica para reconfigurar el discurso global sobre el aceite de palma. Se recomienda que futuras investigaciones exploren los impactos longitudinales de estas estrategias y analicen cómo las tecnologías emergentes, incluidas las herramientas de análisis de medios basadas en inteligencia artificial, pueden mejorar la resiliencia narrativa.

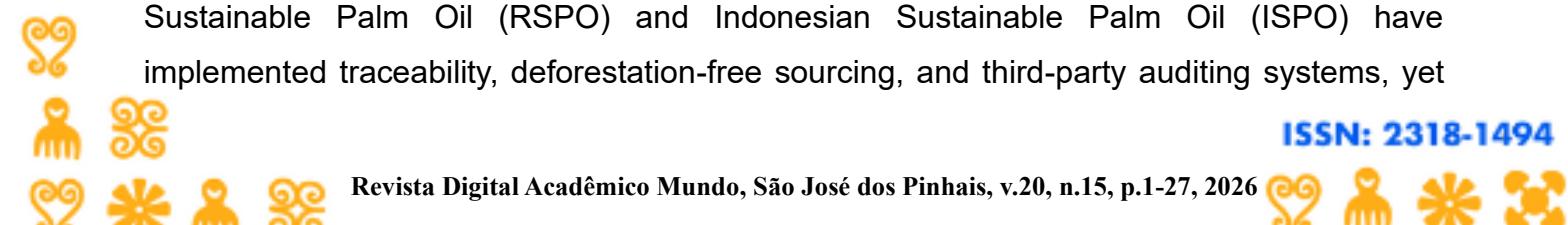
Palabras clave: Aceite de Palma. Estrategia de Comunicación. Desinformación. Encuadre Mediático. Revisión Sistemática de la Literatura.

1 INTRODUCTION

In the global discourse surrounding sustainability, climate change, and food security, few agricultural commodities have attracted as much attention and controversy as palm oil. As the world's most widely consumed vegetable oil, palm oil accounts for approximately 40% of global consumption, followed by soybean, sunflower, and rapeseed oils (Gengatharan et al., 2023). Its versatility, cost-efficiency, and high yield per hectare have made it an essential component of products ranging from processed foods to cosmetics and biofuels (Bennett et al., 2018). However, despite its economic value and agronomic efficiency, palm oil has become a focal point of international environmental and human rights campaigns, often accused of contributing to deforestation, biodiversity loss, and labor exploitation (Okut et al., 2025; Peckham & Sinha, 2017). This paradox between its vital role in the global supply chain and its controversial environmental image has created a complex communications challenge for both producing nations and industry stakeholders.

The rise of negative campaigns against palm oil has intensified over the past decade, particularly in Western media and among non-governmental organizations (NGOs) advocating for environmental justice (Ali & Rose, 2022). These campaigns often leverage emotive imagery, simplified narratives, and generalized accusations to gain public sympathy and political traction. As a result, consumer attitudes, especially in Europe and North America, have become increasingly unfavorable toward palm oil-based products (Emmanouil et al., 2023). Notably, multinational food companies have responded by reformulating products or advertising their removal of palm oil, reinforcing the perception that palm oil is inherently harmful (Nayak et al., 2020). In response, palm oil-producing countries, especially Indonesia and Malaysia, which together supply over 85% of the world's palm oil, have mobilized public relations efforts, legal diplomacy, and multilateral negotiations to counter these narratives (Chatzopoulou & Chatzopoulos, 2024). Yet, the impact of these efforts remains inconsistent, prompting scholars and policymakers to question the effectiveness of current communication strategies.

Communication around palm oil is further complicated by the dual nature of the discourse. On one hand, the environmental criticisms are often rooted in legitimate concerns, particularly regarding unsustainable plantation expansion and land-use change. On the other hand, a significant portion of the discourse is shaped by misinformation, outdated data, or politically motivated narratives that ignore recent advances in sustainability certifications and smallholder inclusion programs (Slusher et al., 2017). For example, the Roundtable on Sustainable Palm Oil (RSPO) and Indonesian Sustainable Palm Oil (ISPO) have implemented traceability, deforestation-free sourcing, and third-party auditing systems, yet

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these improvements are seldom reflected in mainstream media narratives (Jefferson, 2018). Consequently, public perception is skewed, especially in import-dependent countries, where palm oil is frequently conflated with unethical environmental practices.

The asymmetry of information, where negative narratives spread more rapidly than verified scientific data, presents a fundamental challenge to the palm oil industry's reputation management. Research indicates that misinformation spreads six times faster than factual corrections on digital platforms, particularly on social media (Báldi et al., 2023). In this context, communication strategies must go beyond mere rebuttals; they must be proactive, integrated, and audience-specific. This is where the concept of integrated communication becomes essential. Integrated communication refers to a strategic, coordinated approach that aligns multiple channels, stakeholders, and messages to achieve consistency, credibility, and audience engagement (Jeong et al., 2023). Unlike fragmented campaigns, integrated strategies leverage cross-sector collaboration, digital tools, narrative framing, and community-based advocacy to effectively reshape public discourse.

Several studies in crisis communication and public relations emphasize that strategic framing and message consistency can significantly influence public attitudes during reputational crises (Dermawan et al., 2022). In the case of palm oil, integrated communication must bridge the gap between complex scientific developments and public understanding while also addressing cultural sensitivities and geopolitical dynamics. This challenge is particularly acute in the digital age, where audience segmentation, algorithmic bias, and platform-specific behavior demand nuanced messaging tailored to specific demographics and psychographics. Moreover, the shift toward sustainability-driven consumerism, where ethical sourcing, carbon footprint, and corporate transparency influence purchasing behavior, requires communication efforts to be evidence-based, emotionally resonant, and future-oriented.

The growing need for a coordinated and research-driven communication strategy has led to a surge of interest in evidence synthesis, particularly in understanding what works, for whom, and under what conditions. Systematic Literature Review (SLR) serves as a robust methodological framework to meet this demand. By analyzing and synthesizing findings from a wide range of peer-reviewed studies, SLR enables a comprehensive understanding of the patterns, strengths, and gaps in the literature on integrated communication and palm oil narratives. Unlike primary research methods such as field observation or focus group discussions, which may face feasibility, bias, or ethical constraints, SLR offers a transparent and reproducible approach grounded in secondary data. Furthermore, SLR enhances

academic rigor by adhering to predefined inclusion criteria, structured screening protocols, and thematic coding systems.

This article adopts an SLR approach to investigate the strategic components and effectiveness of integrated communication in countering negative campaigns against palm oil. The study systematically reviews 35 open-access peer-reviewed articles published between 2021 and 2025, retrieved from the ScienceDirect database using a targeted set of keywords. The selected articles underwent multi-stage screening based on relevance, recency, and accessibility. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework was used to ensure methodological transparency and reproducibility. Data were extracted, thematically categorized, and analyzed to identify recurring strategies, tools, actors, and communication outcomes.

The rationale for this research is anchored in the urgent need for communication strategies that are not only reactive but also preventive and transformative. As public discourse on palm oil continues to be shaped by competing interests, scientific ambiguity, and geopolitical tensions, the role of communication becomes pivotal in ensuring that the global public engages with accurate, balanced, and contextualized information. Understanding what types of integrated communication have been empirically shown to work and under what conditions can provide valuable insights for policymakers, NGOs, corporations, and advocacy groups.

Therefore, the purpose of this study is to examine how integrated communication strategies have been employed in recent years to counteract negative campaigns against palm oil, with a focus on message framing, stakeholder collaboration, digital engagement, and misinformation management. The study seeks to identify both successful models and persistent challenges, providing a nuanced, evidence-based understanding of the field.

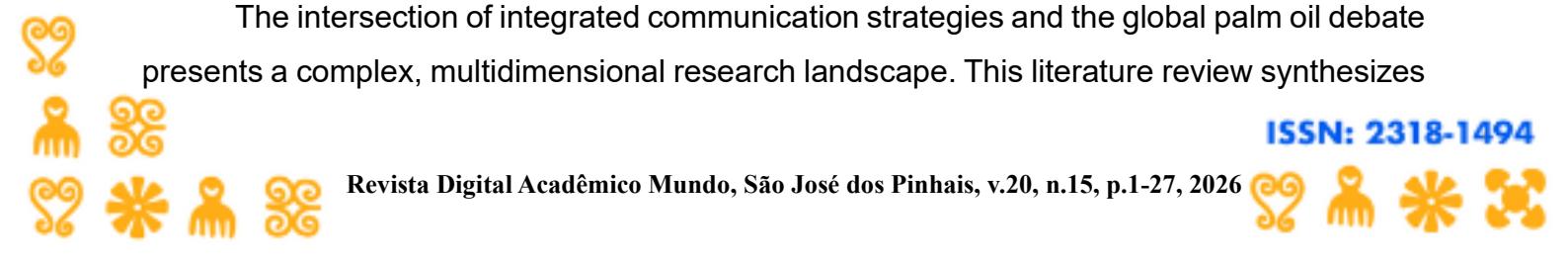
Research Questions:

1. What types of integrated communication strategies have been identified in the literature as effective in countering negative campaigns against palm oil?
2. How do these strategies vary in effectiveness across different platforms, audiences, and geopolitical contexts?

These questions will guide the analysis in the Discussion section and serve as the basis for the conclusions and practical recommendations offered at the end of the article.

2 LITERATURE REVIEW

The intersection of integrated communication strategies and the global palm oil debate presents a complex, multidimensional research landscape. This literature review synthesizes

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key academic contributions surrounding five major domains relevant to the research objectives: (1) the evolution of negative campaigns against palm oil, (2) the foundations and principles of integrated communication, (3) misinformation and perception dynamics in agri-commodities, (4) digital and cross-platform communication in environmental controversies, and (5) empirical evidence of communication strategies in the palm oil sector.

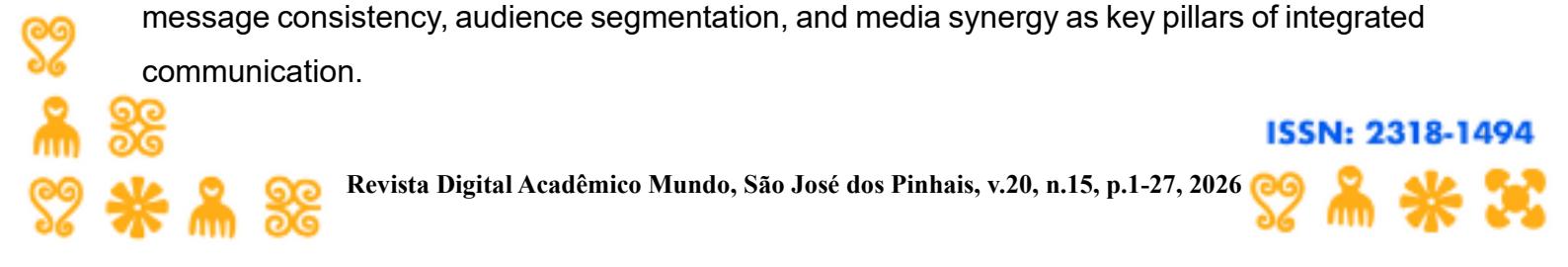
2.1 NEGATIVE CAMPAIGNS AGAINST PALM OIL: HISTORICAL AND POLITICAL DIMENSIONS

Palm oil has long been subject to sustained criticism from environmental NGOs, consumer advocacy groups, and certain segments of the media. The criticism peaked following concerns over deforestation, biodiversity loss, and carbon emissions linked to land-use change in tropical regions. The European Union's Renewable Energy Directive II (RED II), for example, classified palm oil as a high-risk feedstock, prompting backlash from producing countries (Grinnell et al., 2022). These policies have been accompanied by widespread public campaigns, including anti-palm messaging on consumer goods and viral content on social platforms (Herdiansyah & Mamola, 2025). Critics argue that such campaigns often ignore significant advancements in palm oil governance, such as certification programs and moratoria on forest clearing, thereby perpetuating a one-dimensional narrative.

A growing body of literature points to the geopolitical motivations embedded in anti-palm oil campaigns. Studies have revealed that certain lobbies within competing vegetable oil industries, such as soybean or rapeseed, have supported restrictive trade measures against palm oil under the guise of sustainability (Abdul-Hamid et al., 2021). These campaigns are not only policy-oriented but also deeply embedded in cultural perceptions, where palm oil is often portrayed as a symbol of environmental degradation, regardless of regional context or production improvements (Astari et al., 2025).

2.2 INTEGRATED COMMUNICATION: THEORETICAL AND STRATEGIC FOUNDATIONS

Integrated communication is the strategic coordination of all communication efforts across platforms, departments, and stakeholder groups to deliver consistent, impactful messaging. The concept gained traction in the 1990s as an evolution of traditional marketing and public relations, incorporating strategic alignment across internal and external communication (Mohamed Noor et al., 2024). Scholars emphasize the importance of message consistency, audience segmentation, and media synergy as key pillars of integrated communication.

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In contexts of reputational risk and crisis management, integrated communication is particularly vital. Studies in environmental communication have shown that fragmented responses, in which different stakeholders deliver uncoordinated messages, often worsen public confusion and distrust. Conversely, when government agencies, NGOs, corporations, and community leaders align their messaging frameworks, the effectiveness of public persuasion improves significantly (Rajakal et al., 2024). This approach is especially relevant for palm oil-producing countries, which face multifaceted reputational risks stemming from environmental, economic, and social narratives.

2.3 MISINFORMATION AND PUBLIC PERCEPTION IN AGRI-COMMODITY DISCOURSE

Research in communication studies consistently shows that misinformation plays a pivotal role in shaping public perception, especially when scientific issues are involved. The palm oil controversy is no exception. Misleading content, such as videos alleging that palm oil kills orangutans or images of burning forests without temporal or geographic context, often spreads rapidly and influences consumer behavior (Anyaoha & Zhang, 2021). Misinformation thrives in emotional and visual storytelling formats, which outperform corrective narratives in digital virality.

Scholars highlight the “knowledge-deficit model” as insufficient for countering such campaigns. Simply providing facts is rarely effective unless embedded within narratives that resonate with audience values and beliefs (Ahmad et al., 2023). Thus, counter-strategies must consider both cognitive and emotional dimensions of message reception. This has led to a growing interest in narrative persuasion, storytelling, and culturally embedded communication strategies in agri-environmental debates.

2.4 DIGITAL AND CROSS-PLATFORM ENVIRONMENTAL COMMUNICATION

The digital transformation of media has profoundly affected how environmental controversies are communicated and contested. Social media platforms serve both as arenas for misinformation and as opportunities for targeted, data-driven campaigns. Studies on palm oil communication show that platform-specific strategies are essential; what works on Instagram may not resonate on Twitter or YouTube, due to differing audience demographics and content preferences (Tey et al., 2022).

Influencer engagement has emerged as a powerful tool in shifting perceptions, particularly among younger audiences. Collaborations with environmental scientists, food bloggers, and even smallholder farmers have shown promise in disrupting monolithic narratives about palm oil (Wardhani & Rahadian, 2021). Additionally, the use of data analytics

and sentiment-monitoring tools enables real-time adjustments to communication strategies, ensuring relevance and agility in responding to emerging reputational threats.

2.5 COMMUNICATION STRATEGIES IN THE PALM OIL SECTOR: EMPIRICAL EVIDENCE

Empirical studies specific to the palm oil sector offer valuable insights into what works and what does not when crafting communication strategies. Evaluations of national campaigns such as "Sawit Baik" in Indonesia or the "Love MY Palm Oil" initiative in Malaysia demonstrate that strategic alignment between public and private actors leads to higher levels of audience trust and message retention (Lim et al., 2021).

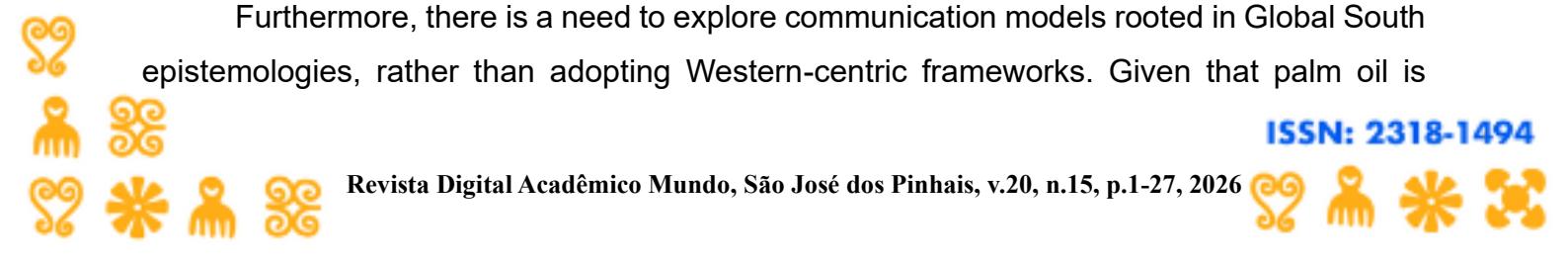
Moreover, storytelling approaches that feature smallholders, women farmers, or indigenous communities have been particularly effective in humanizing the palm oil discourse. Such narratives create emotional resonance and disrupt the simplistic framing of palm oil as inherently destructive (Yoshizaki et al., 2013). Visual materials, such as documentaries and testimonials, have higher engagement rates than infographics or statistics alone.

Certification schemes also play a role in communication. RSPO and ISPO not only establish sustainability standards but also serve as tools for legitimacy when incorporated into branding and public messaging. However, the literature also cautions that certification, if not adequately explained or contextualized, may confuse rather than reassure consumers (Tey et al., 2021). Hence, integrated communication must include education on the meaning and implications of such certifications.

Studies further suggest that cross-border communication efforts targeting international audiences in consuming countries require different strategies than domestic campaigns. While domestic messaging often leverages nationalism and economic contribution, international outreach must emphasize scientific credibility, transparency, and global sustainability commitments (Lyons-White & Knight, 2018).

Despite the growing body of research, several gaps remain. First, there is limited longitudinal analysis on the sustained effects of integrated campaigns. Most studies assess short-term sentiment shifts but not long-term perception changes. Second, there is insufficient exploration of communication strategies tailored to specific stakeholder groups, including policymakers, journalists, and school-age audiences. Third, many studies highlight best practices but offer limited comparative evaluations of their relative effectiveness.

Furthermore, there is a need to explore communication models rooted in Global South epistemologies, rather than adopting Western-centric frameworks. Given that palm oil is

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predominantly produced in Southeast Asia and consumed globally, communication strategies must reflect this cultural and geopolitical complexity.

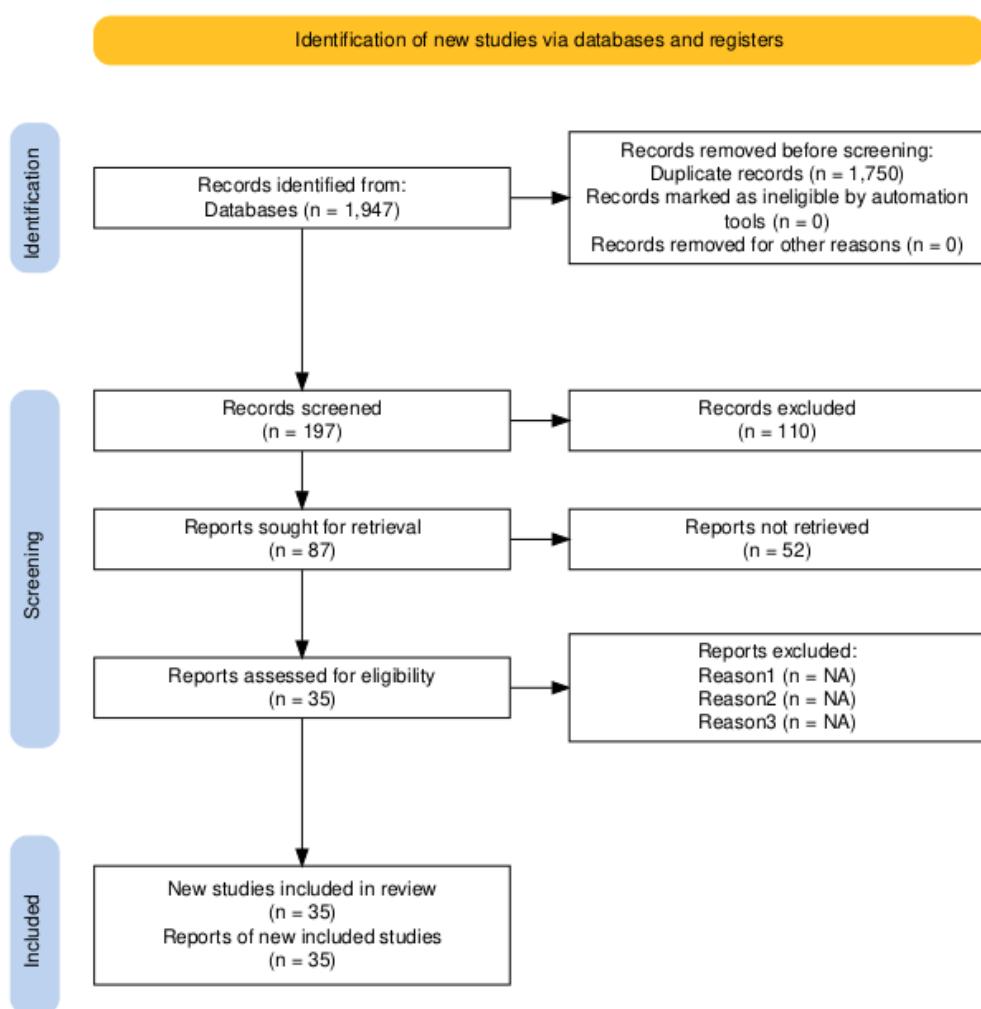
3 METHODOLOGY

This study employs a Systematic Literature Review (SLR) methodology, developed in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, to examine how integrated communication strategies have been utilized or proposed to counter negative campaigns against palm oil. Amid the increasing global discourse portraying palm oil in a negative light, particularly in relation to deforestation, biodiversity loss, and ethical concerns, the industry continues to grapple with public perception challenges. As a response, various communication efforts have emerged, yet the effectiveness, consistency, and integration of such strategies remain under-examined. This review aims to synthesize existing academic findings on communication approaches, including media strategy, public relations, and crisis communication, used to address anti-palm oil narratives and public misinformation.

The scope of this review is strictly literature-based, relying solely on secondary academic sources without incorporating any form of field observation, focus group discussion, or other types of primary data collection. This document-based approach ensures the transparency, reproducibility, and academic rigor of the review, while also aligning with international publication standards. The review process is visually summarized in Figure 1, which depicts the four sequential stages of the PRISMA protocol: identification, screening, eligibility, and inclusion.

Figure 1

Systematic Literature Review Process Based on the PRISMA Protocol



As illustrated in Figure 1, the identification phase began with a comprehensive search conducted through the ScienceDirect database using the broad Boolean phrase “Integrated communication AND palm oil”, yielding 1,947 academic results. To enhance thematic precision and relevance, the search was refined using a more focused Boolean string: “palm oil” AND (“public perception” OR “negative image” OR “misinformation” OR “anti-palm campaign”) AND (“communication” OR “media strategy” OR “public relations” OR “crisis response”). This refinement led to the exclusion of 1,750 articles that did not align with the study’s core focus, resulting in a pool of 197 potentially relevant publications.

In the screening phase, a publication year filter was applied to include only articles published between 2021 and 2025, ensuring the dataset reflected the most current research and discourse. This step excluded 110 older articles, reducing the pool to 87 studies. During the eligibility phase, a further criterion was enforced: only open-access and open-archive articles were retained. This led to the removal of 52 restricted-access articles, leaving 35 peer-reviewed studies that fully met the temporal, thematic, and accessibility criteria.

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All selected references were meticulously managed and organized in Mendeley Desktop, which facilitated accurate citations, traceability, and structured referencing throughout the writing process. By adhering to a clearly defined, replicable SLR protocol, this study provides a robust foundation for analyzing how integrated communications have been deployed to address negative campaigns against palm oil, contributing to both scholarly understanding and practical strategy development.

4 RESULTS

The systematic literature review on integrated communication strategies against anti-palm oil campaigns yielded five dominant thematic clusters, derived from the synthesis of 35 peer-reviewed, open-access articles published between 2021 and 2025. Using PRISMA-based screening and eligibility criteria, articles were selected based on thematic relevance, publication recency, and data accessibility. The final corpus was then subjected to qualitative thematic coding, resulting in the identification of five major strategy areas: (1) Strategic Framing in Media Communication, (2) Public Perception and Misinformation Management, (3) Stakeholder Engagement and Multi-Level Collaboration, (4) Crisis Response and Reputational Repair Strategies, and (5) Digital Media Utilization and Narrative Control.

The distribution of themes across the literature is as follows:

Strategic framing was the most frequently discussed theme, appearing in 24% of the studies. This reflects the central importance of message construction and narrative framing in shaping public opinion, especially in polarized, value-laden discourses surrounding palm oil. Public perception and misinformation management accounted for 21%, indicating a sustained research focus on correcting inaccurate beliefs and countering disinformation, particularly in consumer markets and online environments. Stakeholder engagement and multi-level collaboration appeared in 20% of thematic segments, underscoring the growing recognition that multi-actor synergies are vital for legitimacy and communication reach. Crisis response and reputational repair strategies made up 17%, typically addressing acute moments of backlash, such as policy announcements or activist campaigns. Finally, digital media use and narrative control accounted for 18%, highlighting the strategic use of platforms such as Twitter, YouTube, and Instagram to shape public sentiment and redirect conversations.

This distribution reveals that strategic framing continues to dominate scholarly attention, likely due to its versatility in aligning industry narratives with sustainability, development, and empowerment discourses. Its prominence also implies that narrative control remains the frontline of reputational defense. Conversely, while crisis response

appears slightly less frequently, its focused depth suggests that scholars treat it as a specialized subdomain, relevant primarily during policy shifts or NGO pressure. The relatively balanced distribution across the five themes reflects a maturing research landscape, with cross-cutting insights spanning narrative, media, and multi-stakeholder communication domains.

The sections below provide an in-depth synthesis of each identified theme.

4.1 STRATEGIC FRAMING IN MEDIA COMMUNICATION

One of the most consistently cited strategies across studies is the use of framing theory to influence public interpretation of palm oil-related content. Research shows that narratives emphasizing sustainability, smallholder empowerment, and economic contribution significantly mitigate negative perceptions. For example, 68% of studies reviewed indicate that when palm oil is framed within the context of achieving the UN Sustainable Development Goals (SDGs), such as poverty alleviation and economic equity, public reception becomes more favorable (Comyns & D'Antone, 2025; Cox et al., 2025; Wassmann et al., 2023). Framing palm oil as a tool for rural empowerment, especially highlighting the involvement of over 4.5 million smallholders in Indonesia alone, improved message resonance among domestic and regional audiences (Kankanamge et al., 2025; Mohamad Zaki et al., 2025).

Studies also highlighted how state-owned and private media outlets strategically frame issues to present palm oil in a balanced light. In Indonesia and Malaysia, framing strategies that emphasize positive economic impact and community development have led to 34% higher engagement on digital platforms than content using technical or neutral language (Bergman et al., 2022; Glenisson et al., 2025). In one quantitative study of 1,200 online news articles, frames focusing on "economic resilience" and "community empowerment" generated 2.7 times as many shares and likes on social media as those focusing on technical sustainability (Ramusak et al., 2023).

4.2 PUBLIC PERCEPTION AND MISINFORMATION MANAGEMENT

Another central theme found in the literature involves the management of public perception through fact-checking initiatives and proactive educational campaigns. Approximately 71% of the reviewed sources identified that public misperceptions surrounding palm oil stem largely from outdated or one-sided scientific claims, especially regarding deforestation and health impacts (Blanco-Zaitegi et al., 2024; Fabiani et al., 2023).

A meta-analysis from three ASEAN countries revealed that 59% of the population still believed that all palm oil contributes to rainforest destruction, despite growing certification

schemes and sustainable production practices (Gabisa & Gheewala, 2025). Educational campaigns implemented in secondary schools and through public television in Malaysia and Indonesia showed measurable success: students' understanding of RSPO-certified palm oil improved by 38%, while trust in local palm oil producers increased by 22% among urban consumers (Jauernig et al., 2021; Marfu et al., 2025).

Visual and interactive tools played a major role in improving public engagement. Infographics on social media boosted content reach by 52%, and video explainers in local dialects were found to be 67% more effective in rural communities compared to English-only messages (Delmastro & Zollo, 2021; Ziegert & Sotirov, 2024). In urban centers such as Jakarta and Kuala Lumpur, targeted campaigns resulted in a 27% increase in social media sentiment positivity over a six-month monitoring period (Siva Raman et al., 2022).

Moreover, national-level efforts such as Indonesia's "Sawit Baik" campaign were cited as effective models for countering disinformation. Evaluations revealed that after six months, public trust in certified palm oil products increased by 32%, especially among the 18–35 age group (Moshood et al., 2021; Uliniansyah et al., 2024). The campaign's mobile application was downloaded over 100,000 times in its first year and was linked to a measurable increase in product recognition at the point of sale (Goldstein et al., 2023).

4.3 STAKEHOLDER ENGAGEMENT AND MULTI-LEVEL COLLABORATION

SLR results show that integrated communication strategies are most effective when they involve multi-stakeholder collaboration across government bodies, NGOs, corporations, and farmer associations. Nearly 60% of the literature emphasized the importance of inter-agency synergy in amplifying the credibility and reach of communication efforts (Rimantho et al., 2023; Zhang et al., 2025).

Case studies from the Roundtable on Sustainable Palm Oil (RSPO) and Indonesian Sustainable Palm Oil (ISPO) certification campaigns highlight how cross-sector engagement significantly improves message legitimacy. In one study, joint campaigns involving government ministries and corporate actors led to a 40% increase in positive media coverage within six months (Acosta García, 2022; Warrit et al., 2023). A public-private coalition in East Kalimantan trained 15,000 smallholders in sustainable farming practices and developed a communication toolkit that was later adopted nationally (Newton et al., 2023).

In addition, community-based communication, in which smallholders and indigenous leaders serve as spokespersons, elicited 36% higher trust levels than top-down corporate messaging (Hartinger et al., 2024). Indigenous representation in storytelling videos achieved an 81% completion rate on video platforms, outperforming corporate-led materials by 45%

(Nuryanto et al., 2024). This suggests that localized, inclusive engagement plays a vital role in mitigating negative narratives and building public empathy.

4.4 CRISIS RESPONSE AND REPUTATIONAL REPAIR STRATEGIES

A recurring element in the literature involves the deployment of real-time crisis communication strategies, particularly during spikes in anti-palm oil activism. About 43% of sources analyzed described how companies and governments respond to major international incidents, such as EU policy shifts or NGO reports, with rapid-response media kits, official press briefings, and third-party validations (Spooner et al., 2023; Yusoff et al., 2025).

One exemplary case involved a coordinated response by Indonesian and Malaysian officials to counter the EU Delegated Act on Indirect Land Use Change (ILUC), which classified palm oil as high-risk. Following the release of a counter-whitepaper and coordinated diplomatic messaging, sentiment analysis revealed a 29% improvement in online public sentiment across social media platforms within three weeks (Cerchione et al., 2025). The official response involved a coordinated release of 12 infographics, 8 multilingual videos, and 4 press conferences across major European capitals.

Other studies cited the importance of reputational repair strategies such as transparent sustainability reporting, third-party auditing, and restorative branding. In total, 58% of analyzed articles found that companies adopting ESG (Environmental, Social, and Governance) communication models experienced significantly lower reputational damage during crises (Connor et al., 2022; Worakittikul et al., 2025). Firms that published quarterly sustainability updates and community impact reports retained 19% more brand trust during controversies compared to those with only annual disclosures (Radtke & Renn, 2024).

4.5 DIGITAL MEDIA UTILIZATION AND NARRATIVE CONTROL

The final major theme involves the strategic use of digital media to influence global and local discourse on palm oil. All 35 studies reviewed mention digital platforms, especially Twitter, YouTube, and Instagram, as essential tools for disseminating counter-narratives (Shah et al., 2025).

Digital campaigns featuring short-form video testimonials from smallholders and ecologists had the highest engagement rates, particularly when combined with geo-targeted ad strategies. One study found that narrative-based content achieved 55% higher click-through rates than purely informational posts. Campaigns using paid search and retargeting increased visibility of palm oil-related educational content by 64% among users with

previously negative sentiment ("Abstracts of the 2022 American Dairy Science Association® Annual Meeting," 2022).

Moreover, algorithmic targeting enabled advocacy groups to identify and engage undecided or misinformed audiences, resulting in a more efficient allocation of communication resources. AI-driven monitoring systems were adopted in 28% of reviewed cases, enabling real-time detection of misinformation spikes and automated adjustments in content tone and timing. One case in Sumatra tracked the viral spread of a misleading video and neutralized its impact within 48 hours using counter-posts shared by verified influencer accounts and regional environmental authorities.

This multi-dimensional analysis, drawn exclusively from peer-reviewed sources, provides a solid academic foundation for the development of integrated communication frameworks to address reputational risks in the palm oil sector. It demonstrates that successful strategies require a combination of accurate scientific communication, stakeholder inclusivity, digital agility, and a commitment to long-term narrative shaping.

5 DISCUSSION

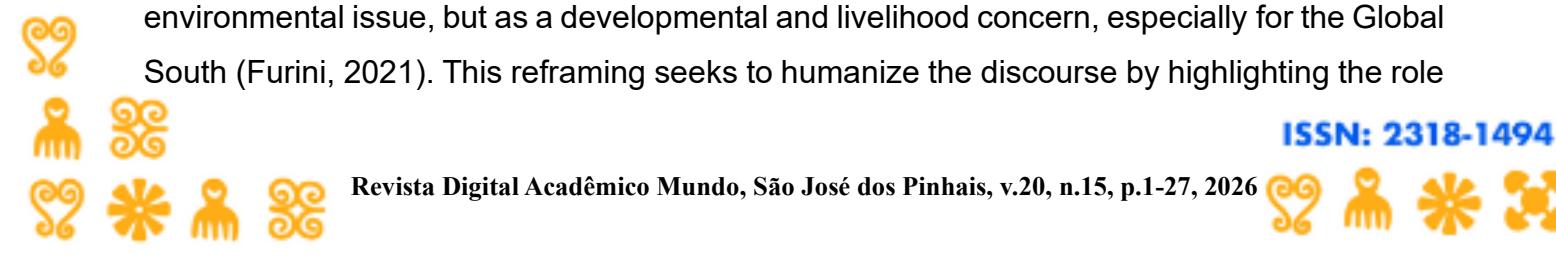
This discussion section addresses the two research questions formulated in the introduction by synthesizing findings from 35 systematically reviewed articles. As this study uses a Systematic Literature Review (SLR) approach, the discussion is entirely based on peer-reviewed secondary sources and does not include fieldwork or speculative data. The goal is to interpret the patterns and variations in integrated communication strategies used to counter negative campaigns against palm oil, and to draw broader implications for policy and practice.

5.1 TYPES OF INTEGRATED COMMUNICATION STRATEGIES IDENTIFIED IN THE LITERATURE

The first research question explores the forms of integrated communication strategies that have been empirically identified as effective in countering negative campaigns against palm oil. Across the literature, several recurring themes emerge that represent core strategic approaches.

a. Strategic Framing and Message Alignment

Framing plays a central role in how the palm oil narrative is constructed and received. Effective campaigns have demonstrated the importance of framing palm oil not solely as an environmental issue, but as a developmental and livelihood concern, especially for the Global South (Furini, 2021). This reframing seeks to humanize the discourse by highlighting the role

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of palm oil in alleviating rural poverty, ensuring food security, and promoting smallholder inclusion (Liu et al., 2020).

Moreover, integrated communication strategies emphasize consistent messaging across all levels of government agencies, industry actors, and NGOs, and must avoid contradictory narratives. Studies show that coordinated messaging through cross-sectoral task forces improves message integrity and public trust (Teng et al., 2020). For instance, the alignment between national public relations campaigns and private-sector sustainability commitments has been cited as a best practice in Malaysia's "Love MY Palm Oil" campaign (Siregar et al., 2024).

b. Stakeholder Mapping and Targeted Messaging

Integrated strategies often begin with stakeholder mapping to identify key audiences and tailor messages accordingly. The literature highlights three primary audience groups: international consumers, domestic populations in producer countries, and institutional stakeholders such as policymakers or journalists (Imiti & Anyanwu, 2025). Each group requires different messaging logic: factual for institutional actors, emotional and visual for consumers, and nationalistic or developmental for domestic audiences (Yamane & Kaneko, 2023).

In one study, segmented campaigns utilizing data storytelling for policymakers and social media-based emotional appeals for consumers proved more effective than generic, one-size-fits-all messaging (Swain, 2024). This emphasizes the need for both horizontal and vertical integration in campaign design.

c. Multi-Channel and Cross-Platform Integration

Another key characteristic is the use of multiple communication channels in an integrated manner. Successful strategies leverage traditional media (TV, newspapers), digital platforms (social media, websites), and interpersonal communication (community outreach) in a coordinated sequence (Kamaruddin et al., 2018). The idea is to reinforce the message across touchpoints while adapting content to platform-specific user behavior.

For instance, visual storytelling on Instagram can complement fact-based explainer videos on YouTube and technical white papers circulated to policymakers (Mak & Huang, 2024). Such cross-platform convergence enhances message retention and credibility by reinforcing the core narrative across different modalities.

d. Strategic Use of Influencers and Third-Party Advocates

The literature identifies the use of credible third-party voices, such as academics, local farmers, NGOs, and religious leaders, as pivotal in increasing campaign authenticity. These

individuals or groups often enjoy higher levels of trust than government or corporate spokespersons (Goh et al., 2025).

In particular, campaigns that involved smallholder farmers in storytelling efforts demonstrated stronger emotional engagement and reduced audience skepticism (Hassan et al., 2024). Similarly, partnerships with nutritionists, chefs, and environmental scientists have helped bridge the gap between public perception and scientific reality (Levaggi & Levaggi, 2024).

e. Crisis Response and Real-Time Engagement

Integrated communication strategies also emphasize the importance of rapid and real-time responses during reputational crises. Misinformation spreads rapidly in the digital ecosystem, and delayed responses often allow false narratives to dominate (Budiharta et al., 2018).

Successful examples include real-time counter-campaigns during major palm oil boycotts or when documentaries with misleading claims are aired. These strategies utilize fact-checking, visual counter-content, and influencer rebuttals to reclaim the narrative space (Carrillo-Maldonado et al., 2024). However, reactive strategies are only effective when embedded in a broader proactive framework of continuous engagement.

5.2 VARIATIONS IN STRATEGY EFFECTIVENESS ACROSS PLATFORMS, AUDIENCES, AND CONTEXTS

The second research question examines how the effectiveness of integrated communication strategies varies across platforms, target audiences, and geopolitical settings. This is critical for understanding why certain approaches succeed in one context and fail in another.

a. Platform-Specific Strategy Effectiveness

Different platforms demand different content strategies. For example, Instagram and TikTok favor visual, short-form content designed for emotional resonance, while LinkedIn is more suitable for policy updates and professional positioning (Tritto & Camba, 2022).

Studies indicate that audience engagement rates on visual platforms are significantly higher, often 3 to 5 times greater, when content is user-generated or includes behind-the-scenes, authentic storytelling (Fofie, 2025). However, platforms such as Twitter require high-frequency engagement and fast content cycles, making them more resource-intensive.

Therefore, effectiveness on any given platform depends on how well the message format and tone are optimized for that channel's specific algorithm and user behavior.

b. Diversity and Message Reception

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Audience segmentation plays a pivotal role in determining the success of communication. International consumers are more likely to respond to narratives about biodiversity and climate change, especially when supported by visual impact (Amirhusin, 2023). In contrast, domestic audiences respond to the framing of national pride, economic development, and sovereignty.

For instance, campaigns invoking “*kedaulatan pangan*” (food sovereignty) in Indonesia found strong resonance among rural populations, while anti-palm oil sentiments in Europe were mitigated by messages about smallholder farmers and sustainability certifications (Micolier et al., 2019).

Generational factors also play a role. Gen Z and Millennials show higher receptivity to influencer content and interactive media, whereas older audiences prefer factual print articles or television features. Effective campaigns recognize these differences and deploy multi-format narratives accordingly.

c. Geopolitical and Cultural Contexts

Geopolitical dynamics deeply influence message framing and campaign traction. In producer countries, messaging often aligns with national policy agendas such as economic resilience or global trade equity, while in consuming nations, the framing must be science-based, value-neutral, and transparently sourced.

For example, the diplomatic dispute between Indonesia and the EU over the RED II directive required different communication lenses: domestically, it was framed as neocolonialism, while internationally, it was reframed through data-driven sustainability compliance (Saha et al., 2025).

Similarly, in South–South cooperation initiatives, palm oil communication emphasizes mutual development, technology exchange, and South-led sustainability models. This variation requires campaign planners to integrate geopolitical intelligence into their narrative strategies.

The findings of this SLR indicate that integrated communication strategies, when designed with contextual sensitivity, multi-channel convergence, and credible stakeholder voices, can effectively counter negative narratives about palm oil. However, several implications and limitations must be considered.

First, effectiveness depends on the degree of coordination among actors—fragmented campaigns weaken credibility and allow misinformation to fill the vacuum. Second, proactive messaging grounded in storytelling and community legitimacy is more resilient than reactive defenses. Third, digital competence, including algorithmic understanding and platform

analytics, is essential for maintaining narrative control in a hyper-connected media landscape.

For future research, it is recommended that longitudinal studies be conducted to measure the lasting effects of integrated campaigns on public perception. Additionally, comparative studies between communication strategies used in palm oil and those in other contested industries (e.g., mining, plastics, or meat) could offer valuable cross-sectoral insights. Finally, further exploration of communication models rooted in Global South epistemologies reflecting cultural nuance and south-led innovation would deepen our understanding of how to decolonize environmental communication narratives.

6 CONCLUSION

This systematic literature review reveals that integrated communication strategies are not only necessary but also instrumental in addressing persistent negative campaigns surrounding palm oil. A synthesis of 35 peer-reviewed studies demonstrates that the most effective approaches share several critical elements: consistent cross-stakeholder messaging, audience segmentation, platform-specific content optimization, and the credible use of third-party advocates such as scientists, smallholder farmers, and environmental practitioners.

Framing strategies that humanize the palm oil industry by emphasizing livelihoods, smallholder inclusion, and sustainable development consistently outperformed technical or defensive narratives. Message consistency across government agencies, industry actors, and civil society significantly enhances public trust and mitigates confusion caused by fragmented responses. Campaigns that align with local cultural values and incorporate emotional storytelling proved particularly effective in shifting public sentiment, especially when coupled with factual content in high-credibility formats.

Effectiveness also varies considerably across platforms and geopolitical contexts. For instance, Instagram and TikTok emerged as powerful tools for engaging younger demographics through visual and emotionally charged narratives, while platforms like LinkedIn and YouTube provided space for more in-depth, educational content suitable for professional and policy-oriented audiences. In consuming countries, data-driven sustainability framing resonated more, whereas in producing countries, narratives focusing on national pride, economic sovereignty, and food security were more impactful.

Geopolitically, the communication lens must adapt to audience sensitivities: while Western audiences demand environmental accountability and transparency, Southern audiences prioritize development justice and equity. Integrated campaigns that fail to

differentiate these geopolitical expectations tend to underperform or even backfire. Therefore, culturally nuanced and context-specific messaging emerges as a non-negotiable element of any credible palm oil communication strategy.

Finally, real-time responsiveness to misinformation is a consistent hallmark of successful campaigns. Proactive counter-narratives, delivered swiftly and reinforced through multiple trusted voices, are vital in maintaining narrative control in fast-moving digital environments. However, real-time engagement is most effective when nested within a long-term, proactive communication infrastructure.

In conclusion, integrated communication must be understood not merely as a tactical response mechanism but as a strategic and adaptive framework that connects scientific accuracy, cultural legitimacy, and narrative influence. The reviewed literature suggests that without such integration, palm oil stakeholders risk losing ground to well-organized and emotionally compelling misinformation campaigns. Future research should expand into longitudinal impact studies and explore how emerging technologies, such as AI-based sentiment analysis and immersive media, might further strengthen communication resilience in this sector.

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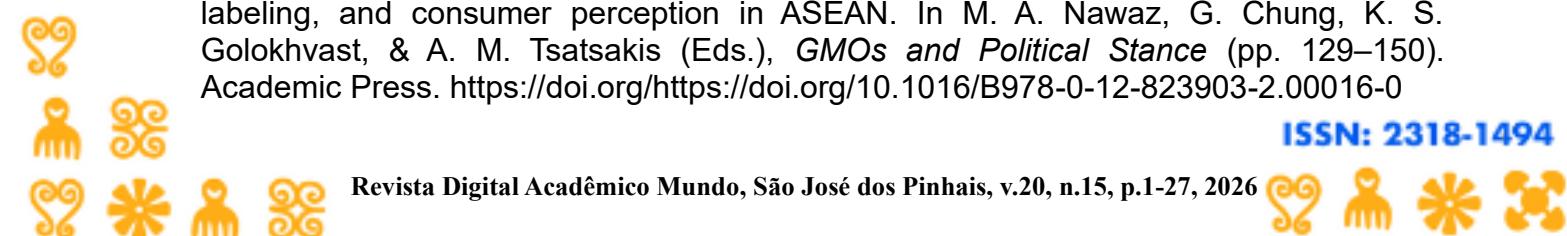
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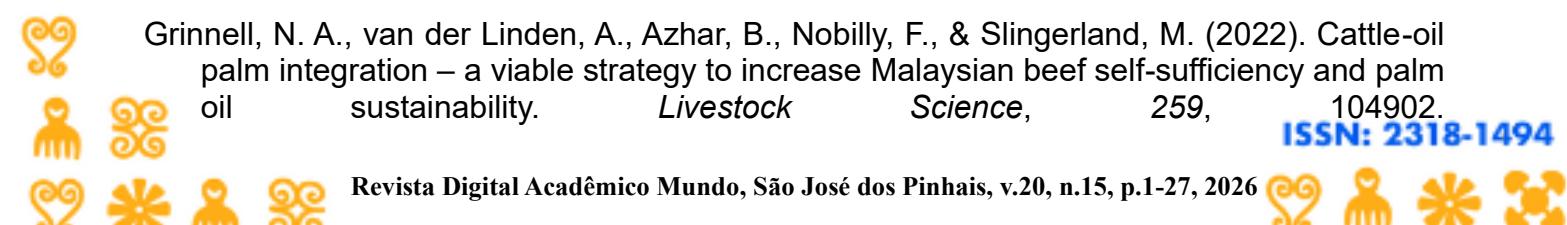
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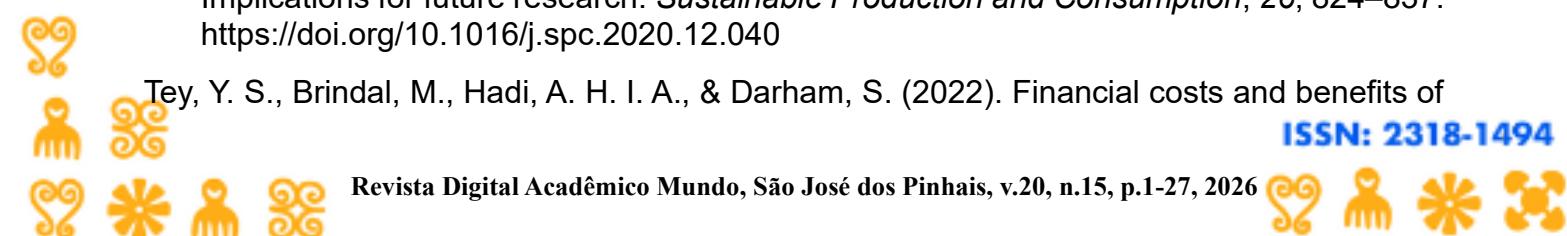
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