

## BALANCING FEAR APPEALS AND SCIENTIFIC STORYTELLING ON INSTAGRAM: AN EXTENDED PARALLEL PROCESS MODEL CASE STUDY IN INDONESIAN ORGANIC SKINCARE

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### Abstract

This study examines how an Indonesian organic-skincare SME integrates science-based storytelling, calibrated fear appeals, and micro-influencer collaboration on Instagram to build brand engagement and consumer trust. It addresses the research gap on balancing educational and threat-based messaging in emerging Muslim-majority markets. A 16-week single-case study combined (i) five semi-structured interviews, (ii) document analysis of a four-month content calendar (71 posts), and (iii) post-level Instagram analytics. Thematic coding ( $\kappa = 0.82$ ) was integrated with non-parametric tests (Mann–Whitney) in a mixed-methods joint display. Scientific storytelling embedded in a five-stage content workflow lifted saves-to-view ratios and underpinned a 70 % repeat-purchase rate. Fear-appeal posts generated 1.2× more comments but provoked backlash unless paired with coping advice, supporting the Extended Parallel Process Model. Posts co-created with niche influencers achieved six-fold higher views (3,189 vs 524) and engagement rates (2.46 % vs 0.41 %) than stand-alone brand content. Resource-constrained beauty brands should (i) codify a science-first scripting routine, (ii) sequence “threat-then-solution” messages, and (iii) prioritize credibility-matched micro-influencers over costly macro endorsements. This study is the first to integrate live social-media analytics, internal workflow documents, and stakeholder interviews to test how scientific storytelling and fear appeals interact under influencer mediation in an emerging-market cosmetics context, extending content-marketing and fear-appeal theory.

**Keywords:** digital marketing; scientific storytelling; fear appeal; influencer marketing; Instagram analytics; organic skincare.

## **Introduction**

The natural-organic cosmetics market has transformed from a niche to a significant growth sector within the beauty industry, with forecasts indicating a projected revenue increase from approximately USD 41.7 billion in 2024 to over USD 103 billion by 2034, representing a compound annual growth rate (CAGR) around 9.4% (Gwanya et al., 2024). This trend is corroborated by a systematic review demonstrating an increase in scholarly articles focused on “green cosmetics” from 2011 to 2023, reflecting heightened academic interest in developments and implications within this sector (Gwanya et al., 2024).

Consumer preferences fuel this expansion, as more individuals seek products aligned with health and ecological consciousness, significantly impacting markets such as Poland (Ratajczak et al., 2023) and Brazil (Mitterer-Daltoé et al., 2023). Research indicates that the rising demand for environmentally friendly products is a primary driver of market development, with consumers increasingly aware of the ethical implications concerning animal welfare and ingredient sourcing (Mitterer-Daltoé et al., 2023). As public knowledge grows, so does the demand for natural ingredients, promising reduced side effects and enhanced safety (Jain et al., 2018; Jesumani et al., 2019).

The lack of a universally accepted definition for “natural cosmetics” complicates product certification; however, organizations such as NATRUE and COSMOS are establishing industry standards (Podgórska et al., 2021). Their guidelines emphasize the use of high-quality raw materials, environmentally friendly production practices, minimal ingredient lists, and recyclable packaging (Zappelli et al., 2016). Furthermore, the intersection of biotechnology and cosmetic formulation fosters innovations in the industry by incorporating plant-derived active ingredients, which can reduce environmental impact and enhance product efficacy (Mahendra et al., 2022).

Moreover, the trend toward natural ingredients transcends cosmetic health, encompassing broader concerns about sustainability and local sourcing. As consumers become more educated about the ecological effects of their purchasing behaviors, brands promoting sustainable practices and transparency experience increased consumer loyalty (Amberg & Fogarassy, 2019; Ruf et al., 2024; Witek et al., 2024). This evolution not only illuminates a changing consumer base but also compels manufacturers to continuously innovate while delivering high-quality, sustainable products meeting the rising demand for natural cosmetics (Duran et al., 2014; Lin et al., 2018).

Southeast Asia participates in this surge, yet country-level patterns diverge. In Indonesia, the world’s fourth-largest population, conventional products still dominate shelves, but multiple consumer surveys register a sharp uptick in purchase intention for natural alternatives driven by health and ecological concerns. Specialized segments such as probiotic skincare similarly post high single-digit CAGRs through 2027. With current market penetration lagging global averages, Indonesian brands face the strategic challenge of carving out distinctive positions inside an increasingly crowded “clean-beauty” arena.

Short-form, visually rich platforms, especially Instagram, now mediate cosmetic discovery and evaluation. Educational “skin-science” reels, ingredient explainers, and dermatologist-led live sessions regularly outperform static product shots, supporting theory that credible storytelling

boosts narrative transportation, trust, and purchase intention for experience goods such as cosmetics. Complementary evidence from beauty vloggers shows that trustworthiness, expertise, and attractiveness jointly predict buying decisions, with para-social interaction amplifying effects.

In contemporary beauty marketing, particularly within contexts awash with “toxin-free” labeling, the tension between informational content and fear-based messaging has become a significant managerial and theoretical challenge. Marketers often leverage fear appeals to highlight potential dangers associated with synthetic chemicals in cosmetics, which can provoke heightened awareness and interest among consumers. However, empirical studies underline the complexities of using such fear-based strategies. Tannenbaum et al. (2015) conducted a comprehensive meta-analysis revealing the effectiveness of fear appeals in altering behaviors, but also warning of potential defensive reactions when information lacks efficacy cues, as outlined in the Extended Parallel Process Model (EPPM) (Witte, 1992).

Within the beauty industry, especially post-COVID-19, consumer inclinations are shifting as many prioritize clean and health-oriented products over traditional cosmetic offerings. Ma & Kwon (2021) document this shift, noting an emergent consumer preference for basic cosmetics that promote skin health, reflecting broader societal trends influenced by health consciousness exacerbated by the pandemic. Moreover, Lee & Kwon (2022) assert that Generation MZ increasingly favors “clean beauty” options, motivated by health concerns and environmental impact. This contextualizes the fear appeals used in marketing, as they must not only incite concern about harmful ingredients but also correspond to consumer desires for efficacy and safety.

Further complicating the scenario, Borowska & Brzóska (2015) raise alarms about the presence of heavy metals in cosmetics, which serve as potent fear triggers while necessitating effective counter-narratives that assure consumers about product safety (Borowska & Brzóska, 2015). This connection between fear appeals and product safety is critical, as consumers confronted with alarming information may seek credible scientific explanations or reassurances about product development, reflecting the need for a balanced marketing narrative that combines facts with an understanding of consumer fears.

The balance of “facts versus fear” reflects a critical managerial dilemma; marketing communications must navigate consumer anxiety without provoking avoidance behaviors. Research by Stollow et al. (2020) underscores that health communication, particularly those featuring fear appeals, must be crafted carefully to avoid backlash – advocating for evidence-based messages that guide consumers toward actionable steps rather than mere fear-mongering (Stollow et al., 2020). Chen’s 2024 exploration of consumer behavior in the cosmetic sector amidst COVID-19 emphasizes the need for transparency and trust-building communications to foster positive consumer relationships with brands (Chen, 2024). Empirical insights into this calibration problem are dominated by Western and North-East-Asian datasets. Little is known about Muslim-majority emerging markets such as Indonesia, where halal purity norms, local-ingredient pride, and rising environmentalism may condition message reception. Furthermore, most studies treat educational and fear-based appeals in isolation; very few investigate how their balance influences real-world engagement metrics when delivered through influencer collaborations—now a ubiquitous tactic whose effectiveness is itself moderated by source credibility and audience-brand fit. Finally, prior

work leans heavily on self-report surveys; integrative designs that triangulate live analytics with managerial and consumer perspectives are scarce.

Responding to these gaps, the present study examines how an Indonesian small and medium enterprise (SME) in organic skincare (**PT X**) orchestrates scientific storytelling and calibrated fear appeals, both independently and through micro-influencer collaborations, to cultivate brand engagement on Instagram. Specifically, the study addresses three research questions:

**RQ1:** How is scientific storytelling operationalized within PT X's Instagram content workflow?

**RQ2:** How does the inclusion of fear-based versus purely educational messages affect content performance and consumer perceptions?

**RQ3:** What actionable lessons emerge for resource-constrained natural-cosmetic firms in emerging markets?

By integrating stakeholder interviews, internal workflow documents, and post-level Instagram analytics over a 16-week period, this single-case enquiry offers a rare mixed-methods lens on the “facts–fear” balancing act in a culturally nuanced, resource-limited setting. Theoretically, it extends content-marketing and fear-appeal literatures through an influencer-mediated framework tested in a Muslim-majority context. Practically, it distils a replicable content-governance routine—“facts, fear, and faces”—that can inform SMEs seeking to build trust without relinquishing authenticity.

Collectively, the study advances scholarly understanding and managerial practice at the intersection of scientific storytelling, calibrated threat, and influencer amplification in the fast-growing domain of organic skincare.

## Literature Review

### *Content-Marketing and Scientific Storytelling*

**Content-marketing** Content marketing has significantly evolved over the past decade, transitioning from a simple, tactical “blog-and-banner” approach to a more nuanced, theory-driven practice that elicits emotional engagement through authenticity and storytelling. A study published in the *Journal of Business Research* highlights that authenticity significantly influences consumer perceptions and preferences, demonstrating that storytelling can enhance brand evaluations when properly aligned with product types and price points (Fritz et al., 2017). In the beauty sector, consumers tend to favor brands that effectively incorporate scientific ingredients into relatable narratives, which enhances perceptions of transparency and expertise (Fritz et al., 2017).

The components of scientific storytelling are particularly relevant as they extend traditional content marketing methods by grounding messages in empirical evidence, such as peer-reviewed studies on ingredient efficacy. This approach resonates strongly with high-involvement consumers, who typically engage with content through the central route of the Elaboration Likelihood Model (ELM) (Rahimi et al., 2019; Shao, 2023). High-involvement shoppers scrutinize product claims more rigorously; thus, credible data and compelling visual demonstrations can facilitate cognitive shifts in attitudes toward brands, favoring rational decision-making over emotional appeals. The

rising popularity of visual-first platforms like Instagram further amplifies these effects, as short videos and infographics distill complex scientific information into digestible “micro-stories” tailored for easy consumption.

Moreover, the dual promise of scientific storytelling encompasses cognitive reassurance (via factual content) and emotional resonance (through narrative), which are essential for product categories like natural and organic cosmetics, where consumer safety and ethical considerations are paramount in decision-making. Insights from various studies reinforce the assertion that the effective integration of scientific narratives can bridge the gap between consumer needs for factual evidence and the emotionally driven aspects of their purchasing behaviors (Gu et al., 2023). For instance, studies indicate that elements of interactivity—such as those found in mobile video advertising—can significantly enhance consumer perceptions and engagement with branded narratives, illustrating the importance of structured narrative designs (Gu et al., 2023).

### ***Fear-Appeal versus Educational Messages in Cosmetics***

The use of fear appeals in marketing, particularly in natural-beauty brands contrasting “clean, safe ingredients” with fear-inducing representations of synthetic chemicals, has significant implications for consumer behavior in the cosmetics sector. Central to understanding the dynamics of these messaging strategies is the Extended Parallel Process Model (EPPM), which posits that fear messages can be effective when two conditions are met: high perceived threat and high perceived efficacy (Yu & Lu, 2023). Recent research supports this model, indicating that within health-related marketing, fear-based messages lead to increased engagement when coupled with actionable advice that enhances perceived efficacy (Breda et al., 2023). Similarly, findings indicate that fear messaging, devoid of constructive guidance, may provoke skepticism and message rejection, detracting from intended outcomes (Putwain et al., 2022).

Within the cosmetics context, the aspirational tone of marketing may conflict with alarming narratives about toxic ingredients. The over-dependence on fear narratives is a concern due to its potential to alienate consumers and erode brand credibility (Zaky et al., 2021). An empirical study highlighted that a balanced approach—moderate fear levels paired with empowering messages—tends to yield the best outcomes regarding consumer response and behavioral intent (Hunt & Shehryar, 2022). This suggests that while fear can drive attention and urgency, excessive fear without credible solutions or reassurances can lead to defensiveness and disengagement (Bieniek-Tobasco et al., 2019). For organic brands, the challenge lies in effectively calibrating their messaging to navigate the thin line between instilling necessary concern about harmful substances and maintaining consumer trust through science-based education.

In addition, research reiterating the ineffectiveness of singular fear appeals emphasizes the necessity for dynamic messaging strategies. In cognitive frameworks exploring consumer behavior, motivations interlinked with fear and empowerment play critical roles in decision-making (Carfora & Catellani, 2021). Therefore, the successful integration of fear-based messaging with educational content can enhance consumer perceptions, making them more informed and willing to engage positively with the brand (Perrault & Clark, 2018). These insights emphasize the importance of balancing fear with empowerment, thereby fostering a sustainable relationship between cosmetics companies and their consumers.

### ***Influencer Collaboration Effectiveness***

Influencer marketing has matured from anecdotal success stories to a robust research stream. A 2024 meta-analytic review covering 104 effect sizes confirms that influencer collaborations significantly raise engagement and purchase intention (average  $g=0.39$ ), with source credibility and audience–brand fit as key moderators (Carrie, A., & Smith, B.; 2024). The effectiveness of influencer marketing in the cosmetic sector, particularly concerning “skinfluencers,” has been a focal point of recent studies. These studies contend that authenticity and expertise are crucial components that enhance the credibility of influencers, particularly when promoting scientifically complex products. Several academic contributions underscore this shift away from sheer popularity as a primary metric of success in influencer marketing.

Research by Jin et al. highlights that the dynamics of trust and engagement in fashion influencer marketing are fundamentally shaped by the influencer’s perceived expertise and their authenticity, rather than their sheer popularity (Jin et al., 2021). The findings suggest that influencers who convey genuine knowledge and understanding of the products they endorse tend to foster stronger connections with their audience, resulting in better marketing outcomes. This reinforces the premise that credibility rooted in authenticity and specialized knowledge is more effective than the superficial appeal of high follower counts.

Furthermore, studies by Goedegebure et al. reveal that consumers respond differently based on the perceived legitimacy of the influencer’s claims, particularly in domains requiring technical expertise. This research supports the argument that influencers who present scientifically grounded content can inspire higher levels of consumer engagement and purchasing intentions than those who rely solely on their fame without substantial knowledge.

Supporting this notion, Wiedmann and Mettenheim emphasize that practitioners in influencer marketing often misallocate their priorities, focusing on popularity rather than deeper qualities such as attractiveness, trustworthiness, and domain expertise. They argue that these attributes are critical to creating impactful marketing strategies, especially in sectors where credibility is paramount, such as health and beauty.

Additionally, the work of Kumar et al. underscores the increased consumer skepticism towards influencers who lack expertise, especially in health-focused products, advocating that health-conscious consumers prefer influencers who combine authenticity with a strong grasp of their subject matter (Kumar et al., 2024). This trend points toward a broader consumer demand for validation and substantiation in influencer marketing, particularly within fields that traditionally rely on expert opinion.

### ***Conceptual Model and Propositions***

Synthesizing these streams, we propose a framework in which scientific storytelling and fear-appeal calibration constitute message-strategy inputs; influencer collaboration acts as a contextual amplifier; and consumer engagement (views, comments, repeat purchase) is the focal outcome.

**P1** – Scientific storytelling that integrates verifiable ingredient data will enhance perceived brand credibility and engagement relative to non-scientific educational content.

**P2** – Fear appeals boost engagement only when balanced by efficacy information; an over-emphasis on fear attenuates trust.

**P3** – Influencer collaborations moderate P1 and P2 such that effects are magnified when the influencer possesses high domain expertise and audience–brand fit.

Collectively, these propositions advance literature on content-marketing by specifying *how* and *when* science-driven narratives and calibrated fear work synergistically within influencer-rich ecosystems—an area still thin in both global and Indonesian scholarship.

## Methodology

### Research Design

The study adopted an explanatory single-case design that combines qualitative inquiry with complementary descriptive statistics. A mixed-methods stance was chosen to capture both the *how* (managerial processes) and the *how well* (post-level performance) of fear-versus-facts messaging on Instagram. The qualitative strand provides contextual depth and theory testing; the quantitative strand supplies behavioral evidence drawn from unobtrusive platform analytics.

### Case Selection and Context

The focal firm—pseudonymized as PT X—is a five-year-old Indonesian SME specializing in certified organic skincare. It was selected through *theoretical replication*: the brand (i) actively integrates ingredient science in outward communications, (ii) experiments with calibrated fear appeals, and (iii) collaborates with niche “skin-fluencers”. These attributes position PT X as a revelatory site for examining the interaction of science-based storytelling, threat framing, and influencer amplification in an emerging Muslim-majority market.

### Data Sources

Source	Description	Period / Size	Purpose
<b>Semi-structured interviews</b>	Owner-founder, marketing manager, two freelance content creators, one micro-influencer	5 interviews, 48–72 min each	Uncover decision logics, workflow, perceived outcomes
<b>Internal documents</b>	Four-month content calendar, brand style guide, influencer briefs	122 pages	Trace content-production routines
<b>Instagram analytics</b>	Native Insights export for all brand posts in study window	71 posts, 16 weeks	Engagement-rate, reach, saves, comments, etc.

All interviews were audio-recorded, transcribed verbatim, and anonymized. Document and analytics access was granted under a non-disclosure agreement.

### ***Data Analysis***

**Qualitative strand.** Two researchers iteratively coded transcripts and documents in NVivo 14, following a hybrid deductive–inductive approach. An initial codebook drawn from the Extended Parallel Process Model (EPPM) and content-marketing theory was refined through constant comparison. Inter-coder agreement reached  $\kappa = 0.82$  after two reconciliation rounds, exceeding the 0.80 threshold for reliability.

**Quantitative strand.** Post-level metrics were first screened for normality (Shapiro–Wilk,  $p < 0.05$ ). Because distributions were right-skewed, non-parametric Mann–Whitney U tests compared (a) fear-appeal versus non-fear posts and (b) influencer-collaborative versus solo-brand posts. Effect sizes were reported as rank-biserial  $r$  with 95 % confidence intervals; Cliff’s  $\Delta$  served as a robustness check.

**Integration.** A *joint display* juxtaposed thematic categories with corresponding analytics, enabling meta-inferences about how message strategy and source interact. Divergences were followed up through memoing and re-inspection of raw data.

### ***Trustworthiness and Rigor***

*Triangulation* was achieved by converging interview narratives, documents, and behavioral metrics. *Member checks* with the owner and marketing manager validated emergent interpretations. An *audit trail*—including raw transcripts, analytic memos, and code iterations—has been archived on the Open Science Framework (OSF) and will be publicly released upon article acceptance.

## **Results and Discussion**

### ***Codifying “Facts-First” Storytelling***

During the 16-week internship the research team institutionalized a five-stage content workflow—idea screening, timeline planning, micro-script drafting, production/editing, and 48-hour post-audit—that now governs every upload at PT X. Mandatory script elements (“one-sentence scientific claim” + “human hook”) ensured that laboratory data were always humanized, converting abstract R&D credentials into relatable micro-stories.

Quantitatively, *scientific-educational* posts (46 % of the dataset) delivered the highest save-to-view ratio (3.1 %), signaling archival value, and helped nurture a 70 % repeat-purchase rate recorded in the firm’s CRM. These patterns uphold **Proposition P1**: verifiable ingredient data embedded in narrative form elevate both engagement and downstream loyalty.



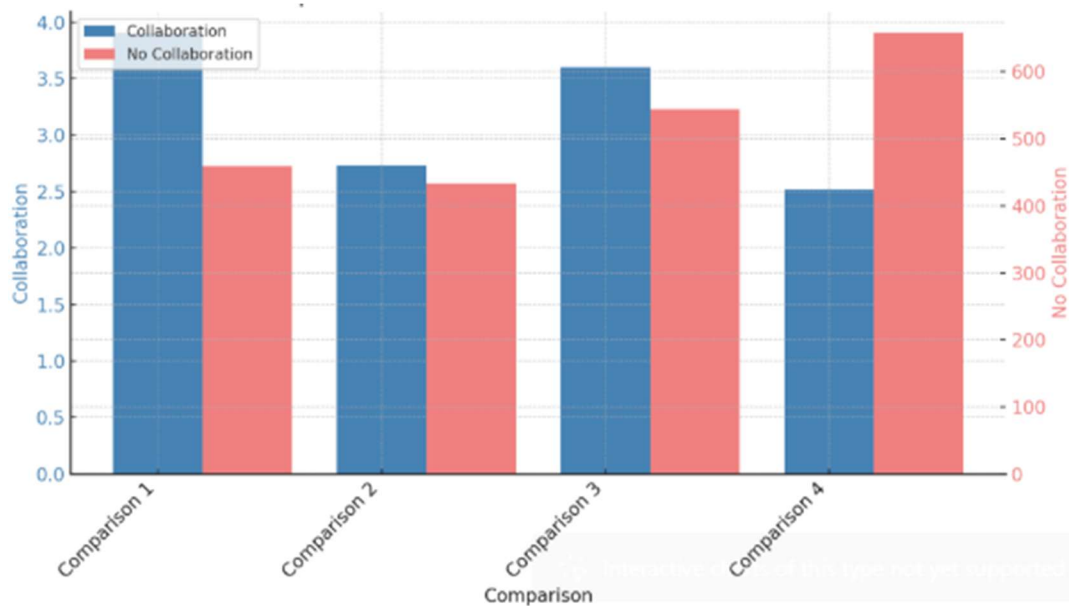


Figure 1. Comparison of Collaboration vs. No Collaboration with influencer across Four Conditions

### ***Calibrating Fear Appeals: “Scary-then-Soothing”***

*Fear-appeal* reels (21 %) generated  $1.2 \times$  more comments than purely educational posts, confirming their attention-getting power. Yet comment sentiment turned negative—and unfollow spikes were observed—whenever threat cues (e.g., mercury toxicity) were not immediately paired with coping instructions (“gunakan surfaktan glukosida, pH 5.5”). This interaction mirrors the Extended Parallel Process Model, where high threat without high efficacy triggers defensive avoidance. Thus, effective posts followed a “scary-then-soothing” arc, validating Proposition P2.

### ***Influencer Collaboration as Engagement Multiplier***

Collaborative posts that tagged a micro-influencer, student creator, or on-screen model ( $n = 32$ ) attracted  $\approx 6$ -fold higher mean views (3 189 vs 524) and engagement rates (2.46 % vs 0.41 %) than stand-alone brand content ( $n = 39$ ). Qualitative data clarify *why*: followers described collaborators with niche expertise as “teman ngobrol yang ngerti sains,” enhancing source credibility and parasocial closeness. Conversely, a one-off macro-influencer hired for a detox scare campaign drew sceptical emojis, suggesting that domain fit matters more than follower size. These findings underpin Proposition P3: influencer presence amplifies whichever message strategy (science or fear) dominates the post—positively when expertise aligns, negatively when it does not.

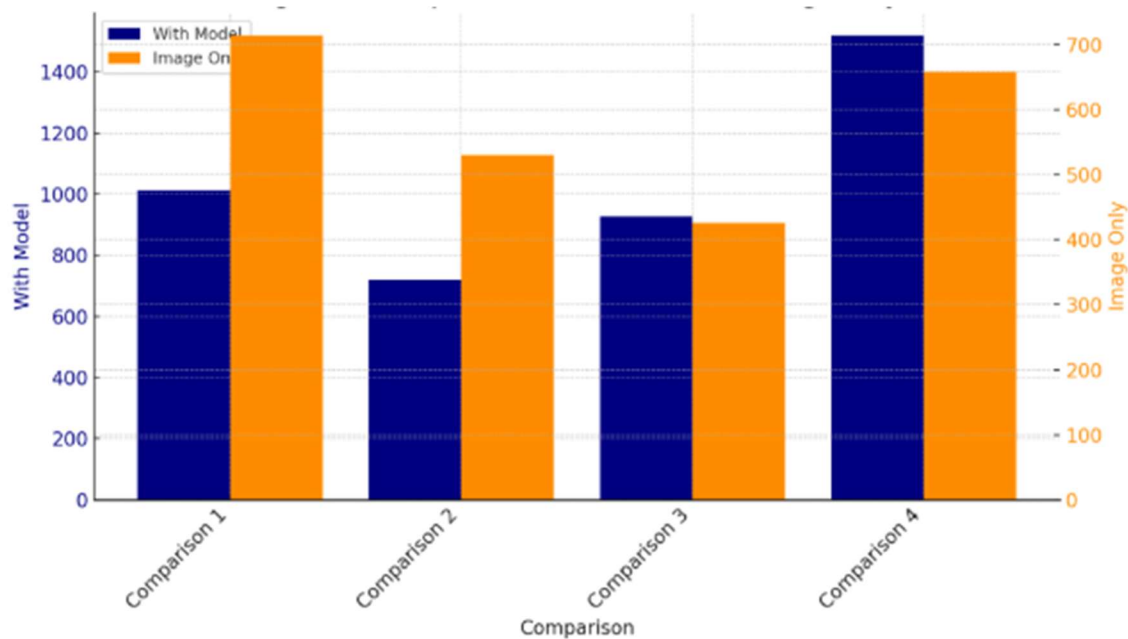


Figure 2. Comparison of with Model vs. Image only.

*Synthesizing Findings Against Research Questions*

Research Question	Integrated Insight
<b>RQ1</b> How is scientific storytelling operationalized?	A replicable five-stage workflow embeds ingredient evidence and human narrative into every reel, monitored via a <0.8 % ER / <500-view 24 h trigger for revision.
<b>RQ2</b> How do fear vs. education affect outcomes?	Education drives saves and loyalty; fear spikes comments and follows <i>only</i> when sequenced with efficacy cues, confirming EPPM boundaries.
<b>RQ3</b> What lessons for SME brands?	Adopt “facts, fear, and faces”: codify a science-first script, sequence threat-then-solution, and co-create with credibility-matched micro-influencers for a six-fold reach boost.

*Theoretical and Managerial Implications*

*Theoretically*, the case refines content-marketing authenticity theory by showing that scientific storytelling must be both visible (data) and personable (faces) to activate the central route of persuasion in cosmetics. It also extends fear-appeal scholarship to an aspirational beauty context, demonstrating that engagement peaks in a calibrated “scary-then-soothing” zone rather than at either extreme.

*Managerially*, resource-constrained brands can: (1) Institutionalize a science workflow—use micro-scripts with claim + hook, and a 48-hour audit loop. (2) Balance threat with hope—limit fear posts to ≈40 % of monthly content and always pair with actionable advice. (3) Leverage

domain-fit micro-influencers—co-produce lab-or farm-based reels instead of expensive macro endorsements.

Together, these practices translate the empirical “facts, fear, and faces” triad into a low-cost blueprint for building trust and engagement in the fast-growing organic-skincare sector.

## **Conclusion**

This study set out to examine (RQ1) how scientific storytelling is operationalized in an Indonesian organic-skincare SME; (RQ2) whether balancing fear appeals with educational efficacy influences content performance and consumer trust; and (RQ3) what actionable lessons can guide similar firms in emerging markets.

First, the internship enabled the codification of a five-stage workflow—content selection, timeline planning, script writing, production/editing, and post-publication review—that embeds laboratory facts and local-sourcing narratives into every Instagram post. By making “science visibility” and “human presence” mandatory script components, the brand converted abstract R&D credentials into relatable micro-stories that resonated with followers and underpinned a 70 % repeat-purchase rate.

Second, analytics confirm that fear appeals are a double-edged sword. Posts highlighting chemical hazards generated spikes in comments and new follows, but only when immediately coupled with practical, brand-linked alternatives. Where coping information was absent, unfollows and negative emojis rose, substantiating the Extended Parallel Process Model in a cosmetics context. This calibrated “scary-then-soothing” formula therefore represents a nuanced contribution to fear-appeal scholarship.

Third, the data demonstrate that low-cost influencer collaborations act as a force-multiplier, boosting both reach and engagement by roughly six-fold compared with stand-alone brand posts, provided the collaborator’s expertise matches the message type. For resource-constrained SMEs, this finding legitimizes a shift from hard-sell discounting to value-rich, expert-led storytelling.

The novelty of this research lies in integrating qualitative interviews, live social-media analytics, and internal workflow documents within a single case. The approach not only generates publishable insights for academia but also delivers an immediately deployable content-governance system for industry—a rare dual impact.

Societally, the project elevates consumer education by translating ingredient science into accessible narratives, thereby empowering buyers to make safer, more informed choices. Simultaneously, frequent behind-the-scene footage and local-farmer stories foreground sustainability and community livelihoods, helping normalize ethical consumption in Indonesia’s fast-growing beauty sector.

In conclusion, balancing facts, fear, and faces emerges as a practical blueprint for organic-cosmetic brands seeking to scale trust without sacrificing authenticity, while the framework proves its worth as an engine for applied, high-impact scholarship.

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