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Health Branding Strategies and Consumer Perception of Vaccines in the Global Market

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Abstract. Today, vaccines play a vital role in preventing and controlling global pandemics, and public understanding of vaccine branding has become a key factor influencing their acceptance in the health market. This paper investigates how vaccines are health-branded in the global market and analyzes the impact of branding strategies on consumer trust, perceived efficacy, and behavioral response. By integrating public health frameworks with marketing theories, this study explores the branding trajectories of several COVID-19 vaccines, including Pfizer-BioNTech, Sinovac, and AstraZeneca, within different cultural and national contexts. Through detailed case study analysis, the paper reveals how vaccine branding extends beyond traditional marketing, becoming a critical tool in public health governance. Effective branding shapes health communication, reduces vaccine hesitancy, and directly influences immunization rates. This paper found that key factors, such as governmental endorsement, expert-supported messaging, platform-specific promotional campaigns, and public discourse, significantly affect individuals' risk perception and trust in health authorities, leading to varied levels of vaccine acceptance even for the same product. The study concludes that vaccine branding must align with public health goals rather than be driven by commercial profit. It calls for the integration of behaviorally informed strategies and culturally adaptive communication in future global immunization campaigns. By leveraging social media for proactive public education and narrative shaping, vaccine producers and health authorities can more effectively guide public opinion. This paper contributes to interdisciplinary dialogue across global health governance, risk communication, and strategic brand management, particularly during times of health crisis.

Keywords: Vaccine Hesitancy, Health Branding, Risk Communication, Public Health Trust, COVID-19

1. Introduction

For decades, vaccines have been regarded as one of the most successful public health interventions. However, with the mass rollout of COVID-19 vaccines and the rapid proliferation of social media platforms, new challenges have begun to emerge. The dual nature of social media has reshaped how the public perceives the safety and efficacy of vaccines. Many "non-experts" impersonate medical authorities online, using platforms such as Instagram, Twitter, and TikTok to exaggerate the side

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effects of vaccines and even spread harmful false information. This makes it easier for the general public to believe negative statements and ignore scientifically accurate information.

Meanwhile, vaccine manufacturers and official public health agencies have often failed to respond promptly or effectively to these waves of public opinion, allowing anti-vaccine sentiment to spread unchecked and further exacerbating vaccine hesitancy. This has further intensified the problem of vaccine hesitancy. Research shows that in regions such as Asia, social media users who rely on these platforms for vaccine-related information are 3 to 4 times more likely to experience hesitancy or delay vaccination [1]. Other studies point out that "the spread of vaccine misinformation on social media outpaces the ability to counter it," and that existing countermeasures are insufficient to restore lost public trust [2].

Currently, a substantial body of literature has examined the information on social media on vaccine hesitancy. Systematic review studies emphasize that negative and emotionally polarized content about COVID-19 vaccines is very common on the internet, and this type of content is significantly negatively correlated with public willingness to receive vaccinations [3]. Further studies emphasize that low-credibility content is often shared more widely than authoritative information, with “super-spreaders” playing a critical role in amplifying misinformation [4]. In addition, a systematic review pointed out that users who rely on social media to obtain vaccine information usually have a lower willingness to get vaccinated because negative posts have a higher dissemination efficiency on these platforms than positive content. Wilson et al.'s study, published in BMJ Global Health, also emphasized that global social media dissemination is closely related to online false information activities, which in turn affect public awareness and attitudes towards vaccine safety.

In the field of vaccine brand communication, existing research mostly focuses on the traditional dimensions of commercial brand marketing, such as technology path promotion, price strategy, etc., while paying less attention to brand trust building in public health scenarios. The "Vaccine Trust Framework" proposed by scholars such as Kaufman breaks down trust into multiple sub-dimensions, providing a theoretical basis for measuring brand influence. Adhikari et al. pointed out that in the context of COVID-19, "trust" is the basis for determining vaccine acceptance willingness. However, these studies have not deeply integrated brand communication strategies with public health needs, and have not provided actionable solutions for vaccine brands to cope with social media public opinion crises.

Although existing research has clearly identified the destructive effect of false information on vaccine trust on social media and the key impact of brand trust on vaccination willingness, there are still two core gaps: firstly, the lack of comparative research on vaccine brand communication strategies across countries and technology paths, which cannot reveal the differences in brand trust construction under different cultural backgrounds; The second issue is the failure to effectively integrate public health communication with health brand strategies. Existing achievements mostly focus on the "consequences" of false information, without proposing systematic brand solutions.

This study aims to fill the above-mentioned gap by adopting an interdisciplinary perspective of public health communication and social marketing. Three representative COVID-19 vaccine brands, Pfizer BioNTech, Sinovac, and AstraZeneca, are selected as research objects to analyze their response strategies in the social media public opinion storm. The focus is on exploring the actual effects of three measures, namely "government endorsement, expert-led communication, and crisis response," on offsetting negative comments and improving vaccination rates. Finally, a health brand communication model integrating "political leadership, communication strategy, and brand

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management" is proposed to provide strategic references for public health institutions and vaccine manufacturers to respond to social media public opinion challenges.

2. Comparison of global COVID-19 vaccine core brand cases

2.1. Basis for case selection

This study selected three major brands —Pfizer BioNTech, Sinovac, and AstraZeneca —based on three main considerations. Firstly, there are significant differences in technological paths, covering mRNA vaccines, inactivated virus vaccines, and adenovirus vector vaccines, which can reflect the brand communication focus under different technological backgrounds. Secondly, the target market covers a comprehensive range, including high-income countries, developing countries, and low-to middle-income countries, which can reflect the influence of cultural and economic backgrounds on brand strategy. Thirdly, there are differences in public opinion response, such as Pfizer's transparent response, Sinovac's government-dependent response, and AstraZeneca's crisis lag, which provide rich samples for comparative analysis.

2.2. Core features of the three major brands

Pfizer BioNTech adopts the mRNA technology pathway and targets high-income countries such as Europe and the United States. Its core brand positioning revolves around advanced technology, efficient protection, and European and American regulatory endorsement. Its main channels of dissemination include the US CDC, European EMA, mainstream media, scientific journals, and expert interviews. The trust foundation comes from early pharmaceutical brand awareness and clinical data transparency. Sinovac's CoronaVac is an inactivated virus vaccine targeting developing countries such as China. Its core brand positioning emphasizes mature technology, low cold chain demand, and cost-effectiveness. Its dissemination relies on official media, government deployment notices, medical systems, and short video platforms. Its trust foundation is closely related to the endorsement of the national public health system. AstraZeneca Oxford adopts adenovirus vector technology, mainly targeting low-and middle-income countries. Its core brand positioning emphasizes cost-effectiveness, global equity, and sufficient production capacity. Its dissemination channels cover the WHO, GAVI, UN agencies, NGOs, and community offline education. Its trust foundation comes from international organization cooperation and public welfare attributes.

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3. Analysis of the branding strategies

3.1. Analysis of the strategies of the vaccine brand

Table 1. Rules to format sections

4Ps	Elements	Strategies
Product	Technical Pathways, Stability, Brand Recognition	Pfizer- mRNA innovation. Sinovac- proven reliability. AstraZeneca- balance and accessibility.
Pirce	Financial cost, side effects, time cost	Although most vaccines are free or government-subsidized for recipients, the “risk of side effects” has become a psychological cost.
Place	Vaccination sites, supply chain, convenience	Sinovac- local medical clinics in many developing countries. AstraZeneca- NGOs and international mechanisms.
Promotion	Information dissemination channels, spokespersons, and crisis public relations	Brands utilize experts, media outlets, and social platforms for communication, along with crisis response strategies during turbulent times.

Based on the analysis of the health belief model, the core mechanism of the above strategies lies in "emphasizing technological advantages to enhance perceived benefits, transparent side effect data to reduce perceived barriers, simplifying the vaccination process to provide action prompts, and government endorsement to enhance self-efficacy", ultimately influencing public vaccination decisions. Adhikari et al.'s research also confirmed that these four mechanisms explain 58% of vaccine acceptance willingness (see Table 1) [5].

3.2. Key success factors of crisis management

The differences in response strategies of vaccine brands directly affect brand trust when facing public opinion crises such as "side effect rumors and false information". From the practice of the three major brands, response speed is the primary factor. Pfizer can jointly release reports with regulatory agencies within 24 hours, while Sinovac relies on a unified government approach, resulting in a response delay of 1-3 days. AstraZeneca, due to insufficient coordination among multiple countries, lags behind in some regions by even more than 5 days. Research shows that a response delay of more than 3 days can lead to a decrease in trust of more than 20% [6]. Transparency is equally crucial. Pfizer will publicly disclose clinical data and the incidence of side effects, while Sinovac mainly relies on "official conclusions" with limited data disclosure. AstraZeneca's initial data is vague and later supplemented with disclosure. Data transparency can reduce the public's "panic index" of side effects by 35% [7]. The role of third-party endorsement cannot be ignored. Pfizer invites independent experts and regulatory agencies to interpret that Sinovac relies on government and state-owned hospital endorsements, AstraZeneca collaborates with the WHO to issue safety statements, and third-party authoritative endorsements have a 50% higher level of trust than brand self-certification. Localized adaptation also affects the effectiveness of crisis response. Pfizer will adjust communication language based on local media culture. Sinovac mainly uses official language and lacks localization. AstraZeneca ignores cultural taboos in some regions. Localized communication can increase information acceptance by 45%. AstraZeneca has a low vaccination rate in the Middle East due to insufficient cultural adaptation.

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3.3. Dual impact mechanism of social media

Social media plays both the role of an "information amplifier" and a "trust disruptor" in vaccine brand communication. From a negative impact perspective, there are significant differences in communication efficiency. Aleksandric et al. found through Twitter sentiment analysis that the number of anti-vaccine comments in various states of the United States is significantly negatively correlated with vaccination rates, and negative information spreads 2.3 times faster than positive information [6]. Super spreaders play a prominent role in the spread of false information. Sharma et al. found that only 0.5% of anti-vaccine "super spreaders" on Twitter contribute to 68% of the spread of false information, and these accounts often enhance their persuasiveness through "conspiracy theory narratives" [8]. The public's cognitive bias further exacerbates the negative impact. A survey on Chinese social media shows that the public's memory retention rate of "vaccine side effects" is much higher than that of "vaccine protection effects", and negative information is more likely to be taken out of context and spread again.

From a positive value perspective, social media has the advantage of disseminating authoritative information in a decentralized manner. Hong et al.'s research on South Korea shows that integrating social marketing concepts into social media communication, such as short video science popularization and live doctor Q&A sessions, can increase the willingness of vaccine-hesitant individuals to receive vaccinations by 30% [9]. From another aspect, social media needs to combine local culture and vaccine information to have a positive effect. Zaini and Hoang suggest that, despite Sinovac achieving widespread availability through multilateral aid mechanisms, public perception varied significantly based on the communication methods used. In Indonesia and the Philippines, social media communication is led by local influencers, religious leaders, and community figures, who promote vaccine awareness and uptake by introducing vaccines with cultural messages. They use familiar dialects, localized digital content, and community-based testimonials to bridge the trust gap with the local community effectively. For instance, Indonesia’s use of religious leaders on platforms like YouTube and TikTok helped integrate vaccination within Islamic principles, increasing acceptance among rural Muslim populations [10]. These culture-based vaccine promotion campaigns helped mitigate the initial hesitancy from geopolitical narratives, indicating that there are some opportunities to enhance vaccine trust through cultural perspectives.

3.4. Driving factors of public perception

Based on the previous analysis, the public's perception of vaccine brands is mainly driven by three dimensions, and the influence weights of each dimension vary. The weight of the trust dimension accounts for 45%, including trust in government policy credibility, expert professional authority, and brand transparency. Kaufman's "Vaccine Trust Framework" has confirmed that these three sub-dimensions jointly determine the overall level of trust [7]. The weight of the information dimension accounts for 30%. The "closeness" of information channels, such as the difference between community doctors and official announcements, and the "interactivity" of content forms, such as the difference between short videos and text, significantly affect the perception effect. Social media research shows that the information understanding rate of "interactive content" is 50% higher than that of "one-way announcements" [4]. The emotional dimension accounts for 25% of the weight, and the "emotional resonance" in brand communication, such as "protecting family" and "community responsibility", is more likely to affect decision-making than "technical parameters". In Africa, AstraZeneca's "vaccine to protect children" narrative has increased the vaccination rate of parents by 28%.

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4. Strategic implications for vaccine health brand communication

4.1. Health brand communication chain model

Based on the analysis of three major brand cases and core influencing factors, this study proposes a five-link health brand communication chain model (see Figure 1), with each link anchored to the previous analysis conclusions and clarifying the theoretical support and practical path. The core goal of building scientific identity is to establish the credibility of technology, safety, and effectiveness, supported by the theory of perceived benefits in the health belief model. In practice, it can be promoted by publicly disclosing clinical data, such as Pfizer's quarterly safety reports, inviting third-party organizations, such as the WHO, for technical certification, and creating "technology popularization animations" to lower the understanding threshold. The localization brand positioning process focuses on adapting to the culture and needs of the target market, based on the market segmentation principles in social marketing theory. High-income countries can emphasize "technological innovation" and refer to Pfizer's strategy; Developing countries highlight "convenience and cost-effectiveness" and draw on Sinovac's experience; low-income countries strengthen their "public welfare attributes" and continue AstraZeneca's approach. The establishment of the risk communication mechanism aims to proactively respond to rumors of side effects and false information, following the transparency principle of crisis public relations theory. Specifically, a 24-hour public opinion monitoring team can be established to quickly identify negative signs, collaborate with experts to release a "side effect science popularization guide" to avoid an information vacuum, and promptly remove the "super spreaders" false information linkage platform.

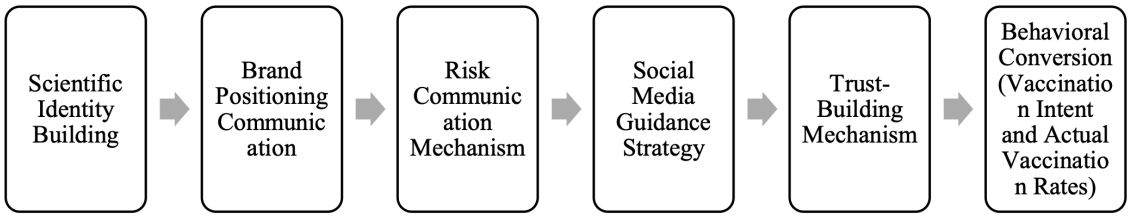

Figure 1. Health brand communication chain model

The precise operation of social media focuses on balancing negative control and positive communication, relying on the interactive principle of media communication theory. It is necessary to choose a target audience gathering platform, such as TikTok, commonly used by young people, and WeChat, preferred by the elderly, to cultivate "grassroots opinion leaders", including community doctors and local internet celebrities, and produce "emotional content" such as "stories of vaccine recipients". The trust behavior conversion process is dedicated to transforming brand trust into actual vaccination behavior, based on the behavioral intention theory in planned behavior theory. The goal can be achieved by simplifying the vaccination process, such as online appointment and on-site vaccination, providing "vaccination incentives" such as small gifts and health manuals, and promoting "vaccination role models" at the community level to strengthen social recognition.

4.2. Collaborative path between public health institutions and brands

The deep collaboration between public health institutions and vaccine brands is the key to addressing the challenges of social media public opinion, which can be promoted in three stages: "prevention before, response during, and optimization after the event". The pre-prevention phase is

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initiated before vaccine promotion. Public health institutions and brands need to jointly develop communication plans, with public health institutions providing policy support and authoritative endorsement, brands providing communication resources and channels, and a clear division of labor content. At the same time, jointly establish a 'public opinion response team', anticipate possible crisis scenarios, and develop standardized response scripts. In addition, it is necessary to cooperate in cultivating "multi-level opinion leaders", including national experts, provincial doctors, and community bloggers, to ensure that there are credible information disseminators in different regions.

The response phase focuses on responding to public opinion crises when they occur. Public health institutions such as the CDC are the first to release authoritative conclusions, and brands cooperate with data support to avoid information confusion caused by "fighting on their own". Invite independent institutions such as universities and the WHO to conduct "side effect investigations" and enhance persuasiveness by publicly disclosing the results on social media. Adjust communication strategies based on the characteristics of public opinion in different regions, such as collaborating with religious leaders to interpret vaccine safety in religious areas.

The post-optimization phase is carried out after the crisis. Through social media public opinion analysis and public trust research, evaluate the effectiveness of the response, summarize the experience, and clarify which channels have the most effective dissemination. Optimize social media content based on public feedback, such as changing "textual science popularization" to "animated short films". Regularly post "vaccine protection effectiveness data" and "vaccination stories" on social media to avoid a decrease in trust over time.

5. Conclusion

This paper underscores that vaccine brand promotion is not only a marketing strategy but also a method for conveying the message of public health and an effective strategy for responding to a global pandemic. Under COVID-19 circumstances, vaccine branding became a multifaceted mechanism that impacts public credibility, shapes the perception of vaccine safety, and ultimately determines collective health behaviors. Through a comparative analysis of three representative brands, from Pfizer-BioNTech to Sinovac and AstraZeneca, this paper finds that building vaccine trust is based on the interplay of transparency, responsiveness, timeliness, and cultural adaptability. First, transparent data disclosure and crisis management strategies significantly reduce public concerns about vaccine side effects and enhance confidence in immunization programs. Second, institutional and expert support, like government backing and healthcare providers' involvement, can serve as critical credibility anchors, particularly in the social media environment that is saturated with misinformation. Third, a timely response to some misconceptions or rumors from some anti-vaccine groups is essential, especially on today's social media platforms. Rumors are hard to break and are easy to lose credibility. Lastly, integrating localized communication approaches is beneficial, like tailored to cultural values, language, and emotional resonance. This way of communicating can enhance message relevance and audience engagement. Emotional narratives emphasizing community protection and family well-being prove especially effective in promoting vaccination uptake. Theoretically, this study bridges the gap between strategic communication and public health governance by introducing the Health Brand Communication Chain model. This framework provides vaccine manufacturers and health authorities with a structured approach to jointly manage the information ecosystem, prevent crises, and build enduring trust. It extends existing Health Belief and Planned Behavior Models by positioning brands as mediators between perceived risk, efficacy and behavior. However, this study also has some limitations. The analysis focuses on COVID-19 vaccines, which may not fully represent future health crises or non-academic contexts, especially for

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prescription medicine, which only the United States and Switzerland can promote them with using advertisements. The dynamic of social media and regional variations in regulatory transparency also limit the generalizability of findings. Furthermore, empirical validation through quantitative sentiment tracking or field experiment remains a necessary step for future research. In the future, the proposed framework can be extended to other health products, such as influenza vaccines, antimicrobial resistance vaccines, and parasitic disease vaccines. To prepare for future pandemics, anticipated brand communication and coordinated crisis response plans should be established before vaccine rollouts to prevent misinformation from shaping early public opinion. In counties or communities with historically low trust in health institutions, community-engaged communication, which is triggered by local leaders, grassroots organizations, and healthcare practitioners, should take precedence over purely digital or offline campaigns. By institutionalizing proactive branding strategies within public health preparedness frameworks, the global health system can not only combat misinformation more effectively but also cultivate enduring public trust that is not limited to vaccine products. As a whole, this paper redefines vaccine branding as the cornerstone of modern health diplomacy, integrating behavioral science, communication strategies, and public health policy to build a more informed, resilient and collaborative global health ecosystem.

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