

The Cross-Border Circulation of Frames: Corporate Narratives and International Media Representations of China's AI Health Product "Ant Afu"

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Abstract

Artificial intelligence (AI) health products represent a significant technological advancement; however, the construction of their global image and its interaction with corporate narratives remain unclear. Employing the Chinese AI health product "Ant Afu" as a case study, this research draws on interpretive package theory and a framing-interaction perspective to identify the dynamics between corporate and international media frames. It further examines the interaction patterns and influencing factors between corporate official narratives and the reporting frameworks adopted by mainstream international media. Through a mixed-methods analysis of 90 media samples from Chinese, U.S., and international outlets, this study identifies distinct patterns of frame reinforcement, reconstruction, and transformation. Findings indicate that international media reliance on conflict and economic consequences frames drives media bias, while the integration of corporate inclusive frames and causal attribution elements serves as a key predictor of positive coverage. This study provides empirical evidence regarding the construction of meaning in the transnational dissemination of health-tech products within non-Western contexts, offering critical insights for the global communication of such innovations.

Keywords

AI health products, Ant Afu, framework interaction, interpretive package, inclusive frame

1. Introduction

In recent years, the worldwide AI industry has been rapidly transitioning from general-purpose large language models to domain-specific applications. The healthcare sector, characterized by its data-intensive nature and essential societal function, has emerged as a primary focus of this shift and is increasingly framed within the discourse of the "global AI race" [1]. Since 2025, the global market for AI-driven healthcare products has witnessed a surge in commercial deployments. As illustrated in Table 1, international media outlets have begun conducting comparative assessments of national AI competitiveness. Furthermore, Gartner projections indicate that by 2027, over 50% of enterprise generative AI models will evolve into domain-specific implementations.

The geographic distribution of these healthcare AI solutions remains uneven, with significant variation in their functional positioning. Driven by tech conglomerates and established healthcare firms, the U.S. accounts

for over 50% of the global market share with its comprehensive service platforms. In contrast, Europe and select Asian economies prioritize niche applications targeting specific disease areas or diagnostic stages, exhibiting distinct “point-specific tool-based” characteristics. Meanwhile, China - exemplified by versatile health assistants such as “Ant Afu” - has rapidly emerged as a significant market force in Asia.

Table 1: A List of Major Global Health-Related Artificial Intelligence Products (2025–2026)

No.	Product Name	Release Date	Product Positioning	Manufacturer	Manufacturer's Location
1	olivia	2025-01-21	Personal Health AI Agent	Tempus AI	Chicago, USA
2	Healthy4U	2025-06-09	Preventive Healthcare AI Assistant	Healthy4U	Tel Aviv, Israel
3	Vocca	2025-09-25	AI Administrative Assistant for Healthcare Organizations	Vocca	Paris, France
4	Nia	2025-10-14	Cardiac Health AI Assistant	Hello Heart	California, USA
5	Ello	2025-10-22	Mental Health AI Companion	HelloBetter	Berlin, Germany
6	Dot	2025-12-11	Health Insurance AI Assistant	Included Health	California, USA
7	AQ /Ant Afu/ 蚂蚁阿福	2025-06-26 2025-12-15	General AI Health Assistant	蚂蚁集团	Hangzhou, China
8	ChatGPT Health	2026-01-07	General AI Health Assistant	Open AI	California, USA
9	Claude for Healthcare	2026-01-11	AI Security Platform for Healthcare Organizations	Anthropic	California, USA
10	Amazon Health AI /One Medical Health AI	2026-03-10	Personal Health AI Agent	Amazon / One Medical	Washington State, USA
11	Barti & Quinn	2026-04-06	AI Operations Platform for Ophthalmology Clinics	Barti	California, USA
12	Medipal AI	2026-04-23	AI Operations and Management Platform for Healthcare Organizations	Medipal	Seoul, South Korea

Ant Group, a prominent entity in this area, launched its AI health assistant, AQ, in June 2025, subsequently rebranding it as “Ant Afu” in December of the same year. The regional pilot version, “Anzhen’er,” debuted at the World Health Assembly in May 2026, marking it as one of China’s inaugural health-focused AI products to garner international recognition. Following the launch of ChatGPT Health by OpenAI in early 2026, international media intensified their scrutiny of this vertical sector. This development elevated the profile of “Ant Afu” relative to other domestic digital health offerings and established a comparative analytical framework alongside concurrent coverage of ChatGPT Health.

While existing scholarship has identified a pervasive “threat narrative” in international media coverage of Chinese technology [2, 3], it has largely neglected the specific narrative ecology emerging within the health-tech domain. Addressing this gap, the present study investigates how international media construct narratives around Chinese AI health products within a sensitive socio-technical context that intersects professional and public spheres. Drawing on interpretive package theory and a framing-interaction perspective, this research analyzes the reporting frameworks and examines their dynamic interplay with corporate official narratives. Utilizing “Ant Afu” as a case study, this paper addresses three central research questions:

- 1) What frames has Ant Group established through its corporate official narrative concerning “Ant Afu”?
- 2) What frames have international media employed in their reportage of “Ant Afu”?
- 3) What are the underlying mechanisms and factors driving the transnational circulation and interaction of these frames?

This study aims to integrate the framing-interaction perspective into the field of digital health, foregrounding the process of meaning-making in international media representations of non-Western health-tech products. By elucidating the interactional mechanisms between media discourse and corporate narratives, this research addresses key limitations in the current literature -- specifically, its static analytical stance and lack of transnational comparative scope. Ultimately, the findings seek to map the international communication landscape for Chinese AI health products, offering strategic insights for technology firms in non-Western

contexts to optimize external narratives and enhance cross-cultural communicative efficacy amidst complex geopolitical and cultural environments.

2. Literature Review and Theoretical Framework

2.1 Corporate Strategic Communication and Global Media Representations of Chinese Technology Firms

Strategic communication is an overarching paradigm encompassing micro-level practices -- such as interpersonal, organizational, and media engagement -- as well as macro-level dimensions, including political economy, security, and social governance [4]. Within the domain of international communication, strategic communication is inextricably linked to national strategies and global geopolitics. Consequently, corporate strategic communication has evolved beyond a narrow, profit-centric orientation focused solely on short-term sales. Contemporary practice seeks to cultivate a sustainable operational ecosystem through the coordination of internal and external resources, positioning corporate actors as contributors to the construction of China's national image [5]. Surveying the literature, Qin et al. [6] observe that while international scholarship predominantly approaches this topic through a strategic marketing lens, recent Chinese research has emphasized the role of enterprises in mediating national identity and soft power. Focusing on Huawei, Zheng et al. [7] employed the framework of "substance, spirit, form, and image" to demonstrate how corporate strategy facilitates national cultural policy. Nevertheless, these studies largely conceptualize corporate narratives as unidirectional outputs of external promotion, failing to situate them within the complex, dialogic ecology of transnational communication or to examine their interactive dynamics with the international public sphere.

Digital platform enterprises have rapidly consolidated their position within the global market [8]. As China's economic and industrial influence has expanded, the global visibility and strategic salience of its technology firms have increased [9], establishing them as critical agents in global strategic communication. However, Western media representations of Chinese technology frequently exhibit a pronounced "securitization" bias. Current research indicates that international coverage prioritizes narratives of geopolitical rivalry, economic contestation, and uncertainty, leading to the undue politicization of technological development [2]. Analyzing coverage in *The New York Times*, Zheng [3] identified persistent misrepresentations rooted in the "technology threat theory." These framing tendencies are attributable to structural factors, including anxieties regarding China's rise, U.S.-China trade tensions, ideological divergence, and institutional biases within news reporting. While the politicization and stigmatization of Chinese tech firms pose significant challenges to corporate strategic communication, systematic analysis of the mechanisms shaping corporate official narratives -- and their interaction with international media frames -- remains limited.

The transnational circulation of corporate narratives necessitates their recontextualization via international media, rendering them susceptible to the influence of prevailing media reporting frameworks. Consequently, a framing analysis is indispensable for deconstructing how international media organize and present official narratives concerning Chinese technology firms. Rooted in the sociology of news, framing theory posits that media construct public understandings of social reality through the "selection, emphasis, and presentation" of events [10]. Building on this, Tuchman [11] conceptualizes frames as byproducts of standardized news production routines, while Gamson & Modigliani [12] advanced the "interpretive package" approach, delineating frames into two core components: the "framing devices," which include symbolic representations like metaphors and imagery, and the "reasoning devices," which refer to the underlying logic and attributional chains. This theory provides robust analytical tools for examining the interaction between corporate narratives and media frameworks across multiple levels, thereby elucidating the mechanisms of meaning construction inherent in transnational communication.

Employing the Chinese AI health product "Ant Afu" as a case study, this research adopts Gamson & Modigliani's [12] interpretive package framework while integrating Entman's [13] classification. Specifically, Entman's model disaggregates "reasoning devices" into four dimensions: problem definition, causal interpretation, moral evaluation, and treatment recommendation. Based on this integrated theoretical synthesis, the study proposes the following hypotheses:

H1: International media coverage will concurrently employ positive frames centered on “health and inclusivity” and negative frames represented by “conflict”.

H2: The degree of congruence between international media frames and corporate official narratives is positively correlated with the likelihood of favorable coverage.

2.2 Health Disparities and Framework Interaction Mechanisms in Digital Health Communication

While no singular definition of health communication commands universal consensus, scholarly discourse broadly characterizes it as the strategic dissemination of health information across diverse media platforms to modulate public perceptions and behaviors regarding illness and wellness [14]. With the deepening integration of digital technologies, the field has shifted from an initial focus on information diffusion to an examination of the socio-technical dynamics between technology and society. Current literature reveals a divided focus: Chinese scholarship tends to foreground the “digital divide” and technology adoption barriers among older adult populations [15, 16, 14, 17], whereas international research emphasizes the risks of digital health products, particularly insufficient clinical validation and the potential for exacerbating health inequities [18, 19]. Collectively, these studies suggest that the proliferation of digital health constitutes a complex process of meaning construction involving multiple stakeholders -- including technologists, users, and regulatory bodies -- mediated by ethical considerations and power asymmetries. Yet, despite this progress, existing research remains largely confined to problem identification.

In response to these challenges, scholars have expanded their analytical purview to address the structural inequalities inherent in digital health communication, offering critiques grounded in governance logic and the political economy of data. Cross et al. [20] argue that contemporary health communication often functions as an instrument of neoliberal governance, obscuring the socio-economic determinants of health by privileging individual responsibility. Complementing this, Lupton [21], through the lens of data political economy, exposes the “commodified” nature of patient data in the Web 2.0 era, wherein such data are appropriated and monetized by platforms without equitable compensation. Building on these critiques, Richardson et al. [22] introduced the concept of Digital Determinants of Health (DDoH), incorporating variables such as technological access, digital literacy, and community infrastructure into a holistic analytical framework aimed at addressing equity concerns. Nevertheless, while current research has identified various hazards related to techno-power and health ethics across disparate national contexts, relevant debates remain circumscribed within single-country analytical frameworks. Consequently, global health communication scholarship remains limited, and robust explications of the underlying transnational communication mechanisms are deficient.

While Zhou & Gong [23] acknowledge health communication as a conduit for transcending ideological barriers, the majority of Chinese scholarship remains reliant on Western theories, lacking original theoretical frameworks for global discourse. Only a nascent body of work has begun to explore pathways for constructing a global discourse system centered on health. Chen & Lian [24], for instance, advocate leveraging the “inclusive” attributes of Chinese health narratives alongside digital twin technologies to steer global health governance toward a “proactive health” paradigm. However, such proposals often presuppose technological universality, neglecting critical variables such as cultural incompatibility and divergent data privacy regimes encountered during transnational technology transfer. This study contends that a rigorous examination of these impediments to the transnational diffusion of corporate narratives necessitates a dynamic analytical perspective. This perspective necessitates conceptualizing frames not as static entities, but as emergent outcomes of interaction, negotiation, and strategic maneuvering among heterogeneous actors, thereby illuminating the process of meaning-making.

The interactive essence of framing theory is rooted in the symbolic interactionist tradition pioneered by Goffman, who emphasized the centrality of “situational definitions” in interpersonal communication, defining a frame as “a cognitive schema through which individuals define situations” [25]. This context-bound interaction perspective demands a nuanced analysis of how frames evolve across disparate contexts and intersect with contingent variables in news production. Synthesizing insights from sociology and frame semantics, international scholars conceptualize framing as a dynamic process of negotiation, co-construction, and contestation [26, 27]. Chinese communication scholars have made significant contributions to this

discourse, notably through the concepts of “frame interaction” among networked actors [28, 29], as well as detailed examinations of frame dynamics within a constructivist paradigm [25].

Despite growing scholarly interest in technological inclusion and health safety, the intersection of corporate narratives and global media frames in digital health remains under-theorized. Addressing this gap, this study delineates three modes of interaction: frame reinforcement, frame reconstruction, and frame transformation. Drawing on Benford and Snow’s [26] seminal concepts of “frame amplification” and “frame transformation,” this study defines frame reinforcement as the media’s clarification and validation of existing corporate frames. Conversely, frame transformation involves the creation of novel framing structures through the introduction of new information and causal attributions. Situated between these poles, frame reconstruction entails the strategic rearrangement and reinterpretation of original frame elements. Based on this typology, the study proposes the following hypotheses:

H3: *The interaction mechanisms between corporate frames and international media frames comprise three distinct categories: reinforcement, reconstruction, and transformation.*

H4: *Higher congruence between international media and corporate narratives regarding the “inclusive frame” increases the likelihood of frame transformation, rather than mere reinforcement.*

3. Study Design and Methods

3.1 Sample Data Sources

The study’s sample spans from January 1, 2025, to May 1, 2026, encompassing the complete product release cycle of “Ant Afu.” Data were retrieved from the LexisNexis professional database and the Google search engine. The final sample consists of 90 items, comprising one core sample and three reference samples.

3.1.1 Core Sample

The core sample consists of 30 items, categorized into two primary data sources: (1) Corporate Official Releases (n=10): Utilizing keywords “AQ” and “Ant Afu,” a search was conducted on Business Wire -- the official news release platform of Ant Group. This yielded 10 English-language press releases pertaining to Ant Group’s AI health initiatives, all of which were included in the analysis. (2) International media reports (n=20): Searches were executed via LexisNexis and Google using keywords such as “Ant Afu,” “Ant AQ,” and “China AI health.” Inclusion criteria required articles to: (a) originate from major international media outlets headquartered outside mainland China; (b) maintain a substantive focus on the target products; and (c) demonstrate significant audience reach and journalistic influence. Duplicate entries and syndicated content were excluded, resulting in a final selection of 20 articles.

3.1.2 Reference Sample

To facilitate comparative analysis and validate the observed framework interaction mechanisms across varied geopolitical contexts, three reference samples totaling 60 articles were compiled: (1) International media coverage of ChatGPT (Health) (n=29); (2) U.S. media coverage of ChatGPT (Health) (n=12); (3) Chinese media coverage of Ant Afu (n=19)

3.2 Methodology

This study adopted a mixed-methods design, integrating quantitative content analysis with qualitative framing analysis to systematically investigate the mechanisms of interaction and meaning construction between international media and corporate official narratives.

For the quantitative phase, individual news reports serve as the unit of analysis. Descriptive statistics were computed using SPSS to characterize the structural attributes of the sample. Subsequently, correlation analyses were conducted to examine the relationships among key variables and empirically test the study’s hypotheses. During the qualitative analysis phase, the analysis focused on the coding categories of “reasoning devices” and “frame interactions.” Through sampling of representative cases, this study reconstructs narrative logic chains via close textual reading. This approach clarifies how international media shape perceptions of Chinese AI health products through dynamic interactions with corporate framing strategies.

Given the nascent global presence of “Ant Afu” as an AI health innovation, comprehensive international coverage remains limited. To mitigate selection bias and enhance the robustness of the findings, the study initially performed descriptive and correlational analyses on the pooled dataset ($n = 90$), which integrates both core and reference samples. This macro-level analysis establishes a baseline overview of the international public opinion landscape, providing essential contextual grounding for the subsequent, in-depth investigation of frame interaction mechanisms, which is conducted on the international media subset of the core sample that focuses specifically on Ant Afu ($n = 16$).

3.3 Coding Scheme Development and Reliability Testing

Guided by framing theory and tailored to the specific research questions and sample characteristics, a multi-tiered, systematic coding schema was developed.

3.3.1 Theoretical Foundations and Structural Dimensions.

The coding framework synthesizes established typologies from the literature. First, it incorporates the “general frames” [30, 31], encompassing conflict, human interest, economic consequences, attribution of responsibility, and morality frames. Second, building upon De Vreese’s [32] distinction between general frames and issue-specific frames, this study introduced two secondary-level categories pertinent to the health-tech domain: “health and safety” and “inclusive” frames, drawing on extant digital health communication research. Finally, the schema integrated Gamson & Modigliani [12] “interpretive package” model, establishing two primary categories: “framing devices” and “reasoning devices.”

Synthesizing these theoretical frameworks, the final coding protocol comprised six dimensions (see Appendix for the full coding scheme), including (1) basic information; (2) content characteristics; (3) sources; (4) general frames; (5) framing devices; and (6) reasoning devices.

3.3.2 Coder Reliability Test

Coder reliability was assessed using Cohen’s Kappa (κ). The majority of coding categories achieved a κ coefficient of 0.81 or higher, indicating excellent inter-coder agreement. While certain categories exhibited lower, yet acceptable, levels of consistency—specifically “secondary themes” ($\kappa=0.470$), “media journalist sources” ($\kappa=0.440$), and “solutions” ($\kappa=0.533$) -- these values were deemed tolerable given the complexity of the categories. Post-hoc analysis attributed the reduced reliability in “secondary themes” and “solutions” to their nature as multi-coded variables with diffuse conceptual boundaries. The low frequency of “media journalist sources” in the sample resulted in a marginal distribution, naturally depressing the Kappa statistic. All discrepancies identified during the reliability test were resolved through consulting the original text and re-evaluating the coding definitions.

Table 2: Kappa Coefficients and Consistency Test Results among Content Analysis Coders

Node Name		Kappa Coefficient	Agreement Rate
Content	Core Theme	0.826	85.7%
Characteristics	Secondary Themes	0.470	50.0%
	Media Tone	1.000	100.0%
Sources	Dimensions of Bias	0.669	71.4%
	Official Corporate Sources	1.000	100.0%
	Academic Sources	1.000	100.0%
	Government and Regulatory Sources	1.000	100.0%
	Third-party Organization Sources	0.851	92.8%
	User and Patient Sources	1.000	100.0%
	Media Journalist Sources	0.440	85.7%
	Primary Sources	0.780	85.7%
	Proportion of Corporate Sources	0.724	78.5%
	Conflict Frame	1.000	100.0%
General Frame	Human Interest Frame	1.000	100.0%
	Economic Consequences Frame	1.000	100.0%
	Morality Frame	1.000	100.0%
	Attribution of Responsibility Frame	1.000	100.0%
	Health and Safety Frame	0.641	78.5%
	Inclusive Frame	0.776	85.7%

Node Name		Kappa Coefficient	Agreement Rate
Framing Devices	Core Metaphors	0.908	92.8%
	Iconic Examples	0.904	92.8%
	Core Descriptors	1.000	100.0%
	Visual Imagery	0.920	92.8%
Reasoning Devices	Problem Definition	0.659	78.5%
	Causal Attribution	0.607	71.4%
	Moral Evaluation	1.000	100.0%
	Treatment Recommendations	0.533	71.4%
Frame Interaction	Acceptance of the Company's Core Frame	1.000	100.0%
Measurement	Acceptance of the Company's Frame Elements	0.774	81.25%
	Types of Frame Interaction	0.901	93.75%

4. Results

4.1 Analysis of the Overall Sample

This study subjected the 90 valid samples to a multi-dimensional coding procedure, followed by descriptive statistical analyses of their fundamental attributes, content distribution, and structural characteristics.

4.1.1 Distribution of Fundamental Attributes

With the exception of corporate press releases -- exclusively sourced from Business Wire -- the sample was predominantly composed of comprehensive news reports, with business and financial media constituting the second-largest category. Notably, in the U.S.-based samples concerning ChatGPT Health, political opinion outlets (e.g., The Hill, New York Observer) emerged as the secondary dominant source, a trend absent in the core sample of "Ant Afu." Coverage of Ant Afu in the U.S. press remained largely influenced by business-oriented reporting.

Geographically, U.S. media outlets produced the highest volume of reports on Ant Afu, followed by media from other regions; conversely, coverage of ChatGPT Health exhibited greater geographic diversity, marked by a significant proportion of reports originating from the United Kingdom and other international outlets. Regarding political orientation, coverage in Chinese media and certain non-Western outlets displayed no discernible partisan bias. In contrast, international reporting on Ant Afu predominantly adopted neutral or conservative stances, whereas coverage of ChatGPT Health maintained a generally neutral tone.

Table 3: Distribution of Media Types, Location and Political Orientation in the Sample

Category		Core Sample		Reference Group 1		Reference Group 2		Reference Group 3	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Media Type	General	7	35%	25	86.21%	8	66.67%	13	68.42%
	Business and Finance	5	25%	3	10.34%	1	8.33%	6	31.58%
	Technology	4	20%	0		0		0	
	Health and Medicine	3	15%	0		0		0	
	Political	1	5%	1	3.45%	3	25%	0	
	Commentary								
Location	China	/		0		/		100%	
	United States	7	35%	/		100%		/	
	United Kingdom	2	10%	10	34.48%	/		/	
	EU countries	5	25%	5	17.24%	/		/	
	Other	6	30%	14	48.28%	/		/	
	Political Orientation	6	30%	4	13.79%	0		100%	
Political Orientation	No clear political orientation								
	Liberal	2	10%	14	48.28%	8	66.67%	/	
	Conservative	4	20%	2	6.9%	0		/	
	Neutral	8	40%	9	31.03%	4	33.33%	/	

Significant variations emerged in genre composition across regions. U.S. media favored news analysis, supplemented by news reports. International media prioritized news reports, with analysis occupying a secondary role. Chinese media focused almost exclusively on news reports, with limited inclusion of feature stories. Across all datasets, news commentary and editorials constituted a marginal fraction. Structurally, the length distribution of news samples was largely uniform: medium-length reports dominated all categories, followed by long-form pieces, while short-form content remained minimal.

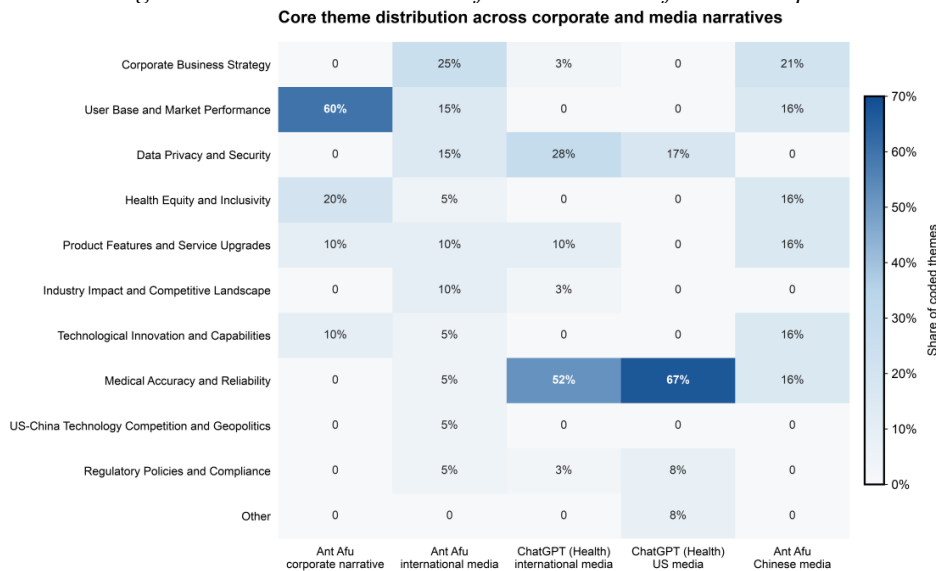
Table 4: Distribution of Sample Article Types and Lengths

Category		Core Sample		Reference Group 1		Reference Group 2		Reference Group 3	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Article Type	News Report	7	35%	13	44.82%	3	25%	14	73.68%
	News feature	3	15%	2	6.89%	0		3	15.79%
	News Analysis	6	30%	11	37.93%	5	41.67%	1	5.26%
	Editorial/Column	1	5%	0		2	16.67%	0	
	News commentary	3	15%	3	10.34%	2	16.67%	1	5.26%
Length	Short (<300 words)	0		1	3.45%	0		2	10.53%
	Medium (300–1,000 words)	15	75%	20	68.97%	7	58.33%	15	78.95%
	Long (>1,000 words)	5	25%	8	27.59%	5	41.67%	2	10.53%

4.1.2 Content Distribution and Framing Emphasis

Corporate official media reports prioritized “user base and market performance,” frequently deploying quantitative indicators and industry rankings within headlines and leads to establish corporate dominance. In contrast, international and Chinese media focused predominantly on “corporate business strategy.” International media emphasized financial investment in healthcare and global expansion, whereas Chinese media highlighted state-led initiatives to leverage AI for optimizing local healthcare delivery.

Although “health equity and inclusivity” constituted a marginal theme in corporate official discourse, it emerged as a substantial narrative component within the main text of both international and Chinese media coverage. Furthermore, Western media foregrounded “data privacy and security” concerns, alongside “medical accuracy and reliability,” with the latter being particularly salient in reports concerning ChatGPT (Health).

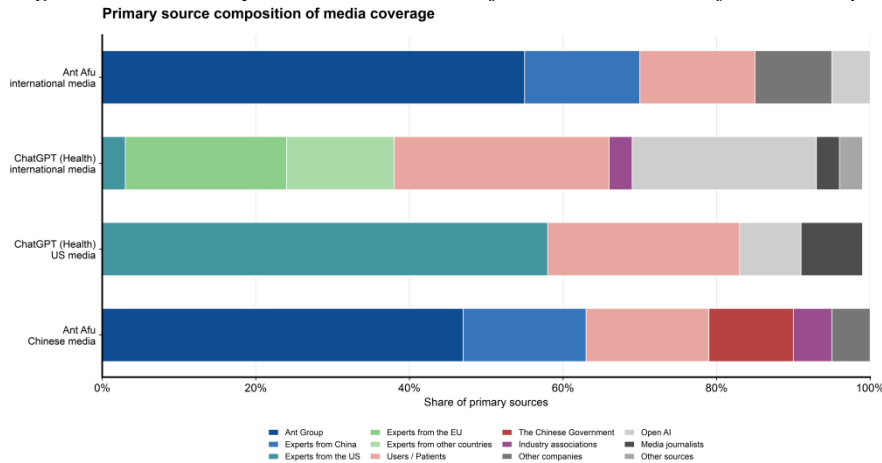
Figure 1: Thematic Distribution of the Core and Reference Samples

Significant tonal disparities were observed across samples. Coverage of “Ant Afu” originating from corporate and Chinese media was overwhelmingly favorable. International media coverage of Ant Afu was predominantly positive (70%). Conversely, coverage of ChatGPT (Health) by international and U.S. media was largely unfavorable, accounting for 58% and 59% of reports, respectively; corresponding positive coverage amounted to only 17% and 16%.

Sourcing patterns revealed distinct dependencies. Corporate press releases exhibited high internal reliance, with proprietary information comprising between 76% and 100% of content. International media demonstrated lower dependency on corporate sources (0 - 25%), favoring cross-verification through independent channels.

Chinese media occupied a median position, with corporate-derived information ranging from 51% to 75%, indicating a greater propensity to reproduce official narratives. While international reporting on ChatGPT (Health) similarly relied on corporate disclosures, it markedly increased the utilization of user and patient sources. U.S. media, however, relied predominantly on domestic expert sources, maintaining a low proportion of corporate sourcing, not exceeding 25% in either category.

Figure 2: The Primary Source Distribution of the Core and the Reference Sample



4.1.3 Statistical Analysis of Frames and Biases

The sample exhibited a predominant reliance on the health and safety frame (46%), primarily within coverage of ChatGPT (Health). This was followed by the conflict, economic consequences, and inclusive frames (13% each), whereas the morality and attribution of responsibility frames constituted a comparatively minor share.

Media tone functions as a critical indicator of the value judgments embedded within journalistic practice, significantly shaping audience perceptions. To quantify these relationships, this study first employed a chi-square test (χ^2) to assess the correlation between specific frame types and media tone. This was supplemented by Spearman's rank-order correlation coefficient (ρ) to evaluate the monotonic association between these variables. As illustrated in Table 5, with the exception of the health and safety frame, all other frame types demonstrated statistically significant associations with media tone ($p < 0.05$). These results confirm that editorial frame selection is a substantial determinant of the valence of coverage regarding AI health products.

Table 5: Results of the Chi-squared Test and Correlation Analysis for the Overall Sample

Category		Media Tone			
		χ^2	p	Correlation Coefficient	Cramer V
General Frame	Conflict Frame	31.206	0.000**	0.579**	0.442
	Human Interest Frame	23.510	0.003**	-0.281*	0.383
	Economic Consequences Frame	23.024	0.003**	-0.525**	0.379
	Morality Frame	36.843	0.000**	0.642**	0.480
	Attribution of Responsibility Frame	41.390	0.000**	0.635**	0.509
	Health and Safety Frame	8.738	0.365	0.207	0.234
	Inclusive Frame	49.868	0.000**	-0.728**	0.558

Subsequently, ordered logistic regression was conducted to model the influence of individual frames on media tone, which served as the dependent variable. The variable was reverse-coded such that lower scores indicated a more favorable media stance. Findings indicate that the conflict, human interest, morality, and attribution of responsibility frames significantly predicted increased bias scores, corresponding to a higher propensity for negative coverage. Conversely, the inclusive frame emerged as a significant negative predictor, substantially diminishing bias and enhancing the likelihood of positive coverage.

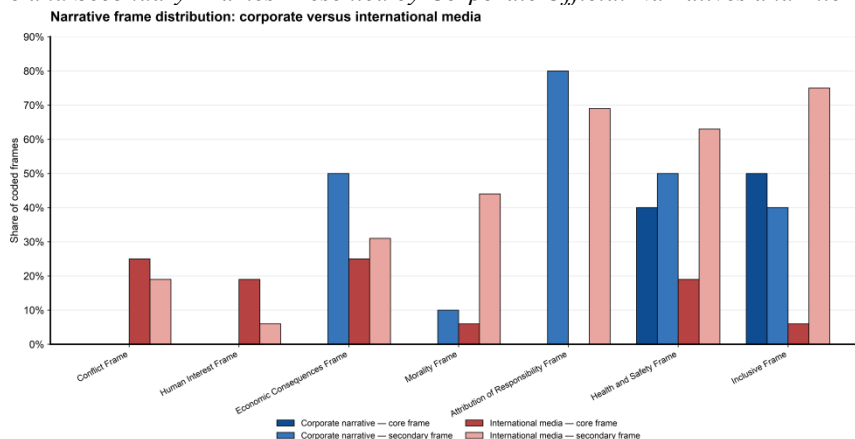
Table 6: Results of the Regression Analysis for the Overall Sample

Category	Independent Variable	Dependent Variable: Media Tone				
		Regression coefficient	Standard error	p	OR	95% CI for OR
General Frame	Conflict Frame	1.784**	0.441	0.000	5.952	2.508 ~ 14.129
	Human Interest Frame	1.213**	0.428	0.005	3.364	1.453 ~ 7.791
	Economic	-0.142	0.492	0.772	0.867	0.331 ~ 2.274
	Consequences Frame					
	Morality Frame	2.054**	0.684	0.003	7.802	2.041 ~ 29.824
	Attribution of	1.555*	0.636	0.015	4.736	1.361 ~ 16.476
	Responsibility Frame					
	Health and Safety	1.018	0.596	0.087	2.769	0.861 ~ 8.904
	Frame					
	Inclusive Frame	-2.522**	0.606	0.000	0.080	0.025 ~ 0.263

4.2 Core Sample Frame Identification and Analysis

4.2.1 Corporate Official Narratives and Their Presentation Within International Media Frames

Corporate official narratives centered predominantly on an inclusive frame (50%), emphasizing the deployment of technology to advance healthcare accessibility. These narratives highlighted product affordability and their societal significance in mitigating healthcare disparities between urban and rural locales, as well as across affluent and impoverished populations. Official documents often showcase technological advancements as prime examples, utilizing metaphors such as “health manager” or “assistant” to delineate the functional role of “Ant Afu.” as physician’s aid. These depictions were reinforced by affirmative lexical choices and visual components like product screenshots and the corporate logo to cultivate a professional and credible image as a “health partner.” At the level of reasoning devices, however, official narratives lacked a precise problem definition. They attributed prevailing conditions to systemic inefficiencies within the conventional healthcare infrastructure or to extant health disparities. Implicitly, the corporate treatment was framed as an internal technology enhancement by the corporation, with all ethical assessments being favorable.

Figure 3: Core and Secondary Frames Presented by Corporate Official Narratives and International Media

International media coverage of “Ant Afu” was characterized predominantly by conflict (25%) and economic consequences frames (25%), supplemented by human interest, health and safety, inclusive, and morality frames. This distribution substantiates Hypothesis 1, confirming that global media concurrently deploy negative frames alongside positive frames.

The conflict frame centered on market competition among global technology leaders, frequently employing adversarial metaphors such as “killer application” and “battle.” It characterized the core issue as the risk of health inequity or regulatory deficiencies potentially disadvantaging competitors. Causal attribution typically implicated adverse actions by external firm, while moral evaluations remained predominantly neutral; notably, the frame failed to propose a definitive treatment.

Conversely, the economic consequences frame prioritized corporate valuation and commercial potential, utilizing industry comparisons as characteristic illustrations. It employed metaphors such as “global aspirations” and “transformative power” to characterize corporate ambition. Unlike the conflict frame, this frame did not foreground a specific problem definition; instead, it situated prevailing conditions within the context of neutral consumer demand, technological evolution, or proactive corporate strategy, typically accompanied by affirmative moral assessments.

4.2.2 Frame Interaction Types and Their Predictive Influence on Reporting Bias

International media coverage of “Ant Afu” predominantly manifested three distinct interaction patterns: frame reconstruction (44%), frame transformation (38%), and frame reinforcement (19%). These distributions substantiate Hypothesis 3, confirming that the interplay between corporate and international media frames operates through these three modalities. Subsequent chi-square tests and correlation analyses revealed that both overall media tone and the degree of congruence between media and corporate inclusive frames were significantly associated with the type of frame interaction. This supports Hypothesis 4, which posited that the nature of frame transformation is contingent upon the level of alignment regarding inclusivity.

Table 7: Results of the Chi-squared Test and Correlation Analysis for the Core Sample

Category		Types of Frame Interaction			
		χ^2	p	Correlation Coefficient	Cramer V
Content Characteristics	Media Tone	12.813	0.046*	0.644**	0.633
General Frame	Inclusive Frame	10.444	0.034*	-0.648**	0.571

To isolate the predictive effects of specific variables, a series of regression analyses was conducted. Given the stringent credibility requirements for this analysis, the sample was meticulously vetted to include only verified reports from mainstream international media concerning “Ant Afu,” resulting in a reduced sample size of $n = 16$. Acknowledging that infrequent category occurrences can destabilize parameter estimates in ordered logistic regression, this study followed Norman’s [33] assertion regarding the robustness of parametric statistics in small-sample contexts. Consequently, the five-level ordinal variable “media tone” was treated as a continuous measure, and linear regression was employed for the final modeling. The results are summarized in Table 8.

Table 8: Results of the Regression Analysis for the Core Sample

Category	Independent Variable	Dependent Variable: Media Tones						
		Unstandardised Coefficient		t	p	R^2	Adjusted R^2	F
		B	Standard error					
General Frame	Inclusive Frame	-0.967	0.307	-3.153	0.007**	0.415	0.374	9.944
Frame Interaction	Types of Frame Interaction	0.379	0.131	2.888	0.012*	0.373	0.329	8.339
Measurement	Acceptance of the Company’s Core Frame	0.607	0.244	2.483	0.026*	0.306	0.256	6.168
	Acceptance of the Company’s Frame Elements	0.891	0.344	2.587	0.022*	0.323	0.275	6.691
	Acceptance of Corporate Metaphors	-0.3	0.393	-0.764	0.458	0.004	-0.029	0.583
	Acceptance of Corporate Problem Definitions	-0.567	0.371	-1.527	0.149	0.143	0.081	2.331
	Acceptance of Corporate Causal Attributions	-0.891	0.344	-2.587	0.022*	0.323	0.275	6.691
	Acceptance of Corporate Treatment Recommendations	-0.683	0.346	-1.972	0.069	0.217	0.162	3.889

The analysis yielded three principal findings. First, the inclusive frame exerted a substantial negative predictive effect on media tones ($B = -0.967$, $p = .007$), indicating that greater adoption of the corporate inclusive frame by international media corresponded to significantly more favorable coverage. Second, the degree of acceptance of the corporate core frame significantly enhanced positive tones. This finding corroborates Hypothesis 2, demonstrating that higher congruence between international media and corporate official narratives increases the likelihood of favorable reporting. Third, the incorporation of the firm’s causal attribution elements -- specifically, references to systemic healthcare characteristics or extant health inequities -- positively influenced media tone. International media that integrated these specific causal logics were more inclined to endorse the corporate narrative at a foundational level, effectively reinforcing it. In contrast, the

assimilation of other frame devices -- such as corporate metaphors, problem definitions, or treatment recommendations -- did not significantly predict the dependent variable.

5. Conclusions and Discussion

This study employed a mixed-methods design to analyze the framing strategies and interaction mechanisms characterizing international media coverage of AI health products from 2025 to the present. While health and safety constituted the predominant frame in global reporting on AI health products generally, coverage of “Ant Afu” prioritized corporate commercial agendas, primarily manifesting as conflict and economic consequences frames. Quantitative analyses confirmed that the deployment of an inclusive frame served as a significant negative predictor of media tone, whereas conflict, human interest, morality, and attribution of responsibility frames correlated positively with unfavorable coverage. Regarding interaction patterns, frame reconstruction emerged as the modal category (44%), followed by frame transformation (38%) and frame reinforcement (19%). Crucially, the nature of frame transformation -- particularly the incorporation of corporate causal attribution elements -- exerted a considerable influence on media tone.

Media tone is a crucial aspect in the assessment of framing bias [34]. Within the techno-scientific and health domains, such bias often emerge as a departure from equitable stakeholder representation, disproportionately amplifying the experiences of users or patients, legal disputes, or particular products. This compels the media to privilege human interest or conflict frames, thereby exacerbating media tone. Entman [35] asserts that framing bias largely arises from interactions with interplay of real-world events, cultural norms, and journalistic practices; in this context, these dynamics are mediated by product-specific characteristics and the structural constraints of media systems.

Regarding product characteristics, while ChatGPT (Health) attracted extensive international scrutiny regarding health and safety -- largely due to its broad user base and potential security risks [36, 37], this factor alone does not directly dictate media tone. Instead, its impact was contingent upon its integration into conflict or human interest frames. Conversely, reporting on “Ant Afu” was primarily mediated by the adoption of the inclusive frame, with significant cross-national variations in frame selection reflecting divergent sociocultural contexts and media ecologies.

Western media systems, anchored in liberal pluralist traditions and professionalized journalistic norms and significantly shaped by the commercial imperatives of Anglo-American press systems [38], demonstrate varied reporting perspectives. In contrast, the Chinese media system operates under a government-centric paradigm, where political instrumentalism and commercial logics are deeply interwoven [39]. The inclusive frame, institutionally rooted in China’s “inclusive finance” policy agenda, thus orients both state and corporate official narratives toward affirmative coverage.

This study delineates three distinct modalities of frame interaction: reinforcement, reconstruction, and transformation. Causal attribution emerged as a foundational mechanism for elucidating these interactions within non-Western contexts, insofar as it clarifies underlying causality and assigns responsibility. The research indicates that international media frequently begin with framing elements and employ a multi-tiered adoption strategy:

(1) Frame Reconstruction: Business media, such as *Bloomberg*, utilized metaphors like “Doctor avatars” to characterize physician assistants, thereby offering a novel viewpoint on market competition and expansion challenges, and recontextualizing the product within the broader industrial discourse of AI-driven healthcare advancement.

(2) Frame Transformation: Technology media, exemplified by *Tech Times*, established a novel causal attribution about regulatory structures of the Chinese and U.S. governments by incorporating new information, including AI regulations and user experiences in both nations.

(3) Frame Reinforcement: The technology and healthcare media field, shown by *HealthTechAsia*, typically adhered to the conventions of corporate press releases on fundamental messaging, metaphorical language, and causal attribution, merely augmenting and expanding upon this basis.

Notably, the core sample yielded no evidence of outright “frame conflict,” meaning there were no entirely exclusive narratives. This absence is attributable to Ant Afu’s current market confinement to mainland China;

international media lack direct product experience and localized case studies, necessitating reliance on reconstruction and transformation strategies. Moreover, international coverage of Ant Afu remained quantitatively sparse relative to ChatGPT (Health) and was predominantly positioned within a neutral register, underscoring the filtering effect of media political orientations on news selection.

This study is subject to several limitations. First, given Ant Afu's nascent presence in global markets, the core sample size was constrained. While robustness checks and the mixed-methods design partially mitigated this limitation, future longitudinal research should expand the sample as the product's global footprint widens. Second, this research prioritized textual production; subsequent studies should integrate audience reception surveys to empirically substantiate the differential impacts of these frames on international public perception.

Furthermore, concerning the categories of frame interactions, subsequent research could explore their formation mechanisms and influencing factors in greater depth, aiming to generalize the findings to wider studies of technology-health narratives in non-Western contexts, thus enhancing the generalizability of the theory and explanatory capacity.

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Appendix Coding Scheme

Level 1 Heading	Level 2 Heading	Level 3 Heading	Operational Definition
Basic Information	News ID	Format: PR-01, INT-01, etc.	Corporate Press Release (PR), International Media (INT), Chinese External Publicity (CHN), US Media (USA)
	News Title	Fill in directly	
	News Category	1 = Corporate Press Release 2 = International Media Report on “Ant Aluf” 3 = Chinese Media Report on “Ant Aluf” 4 = US Media Report on “ChatGPT (Health)” 5 = International Media Report on “ChatGPT (Health)”	
	Media Location	Fill in directly 1 = Mainland China; 2 = Hong Kong/Taiwan, China; 3 = United States; 4 = United Kingdom; 5 = EU Countries; 6 = Other Countries	
	Media Type	1 = General News Media;	

Level 1 Heading	Level 2 Heading	Level 3 Heading	Operational Definition
Content Characteristics		2 = Business & Financial Media; 3 = Technology Media; 4 = Medicine Media; 5 = Political Commentary Media	
		0 = No clear political orientation; 1 = Liberal; 2 = Conservative; 3 = Neutral	
		Publication Date	Fill in directly
		Reporting Timeframe	1 = Within 7 days of product launch/upgrade; 2 = 7–30 days; 3 = Over 30 days
		Article Type	1 = News Report; 2 = News Feature; 3 = News Analysis; 4 = Editorial/Column; 5 = News Commentary
		Length	1 = Short (<300 words); 2 = Medium (300–1000 words); 3 = Long (>1000 words)
		Title Prominence	0 = Not mentioned; 1 = Secondary mention; 2 = Core mention
		Core Theme	1 = Product Features & Service Upgrades; 2 = Technological Innovation & Capabilities; 3 = User Base & Market Performance; 4 = Data Privacy & Security; 5 = Medical Accuracy & Reliability; 6 = US-China Technology Competition & Geopolitics; 7 = Regulatory Policy & Compliance; 8 = Health Equity & Inclusivity; 9 = Corporate Business Strategy; 10 = Industry Impact & Competitive Landscape; 11 = Other
		Secondary Themes (Multi-select)	1 = Product Features; 2 = User Feedback; 3 = Industry Trends; 4 = International Markets; 5 = Capital Financing; 6 = Corporate Partnerships; 7 = Litigation; 8 = Government Policy or Regulation; 9 = Corporate Social Responsibility;

Level 1 Heading	Level 2 Heading	Level 3 Heading	Operational Definition
Sources	Media Tone	10 = Doctor-Patient Relations;	
		11 = Healthcare System;	
		12 = Social Ethics;	
		13 = Other	
		1 = Positive;	
	Dimensions of Bias (Multi-select)	2 = Slightly Positive;	
		3 = Neutral;	
		4 = Slightly Negative;	
		5 = Negative	
		1 = Technological Level;	
	Official Corporate Sources	2 = Product Level;	
		3 = Corporate Level;	
		4 = Industry Level;	
	Academic Sources	5 = National Level	
		0 = Not present;	
		1-1 = Ant Group;	
		1-2 = OpenAI;	
		1-3 = Other Corporations	
		0 = Not present;	
		2-1 = Chinese Experts;	
		2-2 = US Experts;	
		2-3 = EU Experts;	
		2-4 = Experts from Other Countries;	
		2-5 = Chinese Industry Analysts;	
	Government and Regulatory Sources	2-6 = US Industry Analysts;	
		2-7 = EU Industry Analysts;	
		2-8 = Analysts from Other Countries	
		0 = Not present;	
		3-1 = Chinese Government;	
	Third-party Organization Sources	3-2 = US Government;	
		3-3 = EU Government;	
		3-4 = Governments of Other Countries	
	User and Patient Sources	0 = Not present;	
		5 = Present	
	Media Journalist Sources	0 = Not present;	
		6 = Present	
	Other	0 = Not present;	
		7 = Present	
	Primary Sources	1-1 = Ant Group;	
		1-2 = OpenAI;	
		1-3 = Other Companies;	
		2-1 = Experts from China;	
		2-2 = Experts from the US;	
		2-3 = Experts from the EU;	
		2-4 = Experts from Other Countries;	
		2-5 = Chinese Industry Analysts;	
		2-6 = US Industry Analysts;	
		2-7 = EU Industry Analysts;	

Level 1 Heading	Level 2 Heading	Level 3 Heading	Operational Definition
General Frame	Primary Sources Proportion of Corporate Sources	2-8 = Analysts from Other Countries; 3-1 = Chinese Government; 3-2 = US Government; 3-3 = EU Government; 3-4 = Governments of Other Countries; 4-1 = International Organizations; 4-2 = Industry Associations; 5 = Users / Patients; 6 = Journalists; 7 = Others	
		1=0%; 2=1-25%; 3=26-50%; 4=51-75%; 5=76-100%	
		0 = Not present; 1 = Secondary; 2 = Core	Emphasizes oppositional relationships, e.g., China-US competition, corporate-regulator confrontation, tech pros/cons debate.
		0 = Not present; 1 = Secondary; 2 = Core	Presents through personal stories, user cases, or emotional narratives.
		0 = Not present; 1 = Secondary; 2 = Core	Focuses on market value, business prospects, cost-benefit, or industry impact.
	Conflict Frame	0 = Not present; 1 = Secondary; 2 = Core	Involves moral judgments regarding privacy invasion, fairness, social responsibility, etc.
		0 = Not present; 1 = Secondary; 2 = Core	Identifies responsible parties or emphasizes responsibilities to be assumed.
		0 = Not present; 1 = Secondary; 2 = Core	Focuses on impacts on user health and safety, including medical accuracy, misdiagnosis risks, data breach hazards, etc.
		0 = Not present; 1 = Secondary; 2 = Core	Emphasizes product accessibility, affordability, and role in narrowing health disparities.
		0 = Not present; 1 = Secondary; 2 = Core	
Framing Devices	Core Metaphors	0 = No core metaphor; 1 = Friend/Partner; 2 = Doctor/Assistant; 3 = Tool/Weapon; 4 = Platform/Ecosystem; 5 = Threat/Risk; 6 = Other	
		0 = No exemplar; 1 = User Success Case; 2 = Tech Breakthrough Case; 3 = Negative Incident Case; 4 = Industry Comparison Case; 5 = Other	
	Iconic Examples	1 = Positive; 2 = Neutral; 3 = Negative	
		Record top 3 most frequent	

Level 1 Heading	Level 2 Heading	Level 3 Heading	Operational Definition
Reasoning Devices	Visual Imagery	0 = No visual imagery; 1 = Product Screenshot; 2 = Corporate Logo; 3 = User Photo; 4 = Executive Photo; 5 = Hospital/Medical Photo; 6 = AI/Technology Photo; 7 = Other	
	Problem Definition	0 = No clear problem; 1 = Data Privacy & Security; 2 = Medical Accuracy & Reliability; 3 = Algorithmic Bias & Health Inequity; 4 = Lack of Effective Regulation; 5 = National Tech Competition; 6 = Corporate Data Monopoly; 7 = Characteristics/Flaws of Healthcare Systems; 8 = High Costs; 9 = Other	
	Causal Attribution	Object: 1 = Corporation; 2 = Government/Regulator; 3 = Technology itself; 4 = User; 5 = Geopolitics; 6 = Social Needs; 7 = Current State of Healthcare; 8 = Other	
	Moral Evaluation	Direction: 1 = Positive; 2 = Neutral; 3 = Negative	
	Treatment (Multi-select)	1 = Corporate Tech Upgrades & Self-regulation; 2 = Government Legislation/Policy; 3 = Industry Standards & Certification; 4 = User Self-protection; 5 = International Cooperation; 6 = Restriction/Ban of Technology; 7 = No Clear Solution	
	Acceptance of the Company's Core Frame	1 = Full Adoption; 2 = Partial Adoption; 3 = No Adoption	
	Company's Frame Elements (Multi-select)	00 = No elements adopted; 1 = Metaphors; 2 = Data/Facts;	

Level 1 Heading	Level 2 Heading	Level 3 Heading	Operational Definition
		3 = Problem Definition; 4 = Causal Attribution; 5 = Treatments	
	Types of Frame Interaction	1 = Frame Reinforcement; 2 = Frame Reconstruction; 3 = Frame Transformation	

Funding

This research received no external funding.

Conflicts of Interest

The authors declare no conflict of interest.

Acknowledgment

This paper is an output of the science project.

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