

AI-Driven public relations in health communication: Evidence from India and Indonesia

Moti Pangkam¹, Andi Subhan Amir², Aat Ruchiat Nugraha³

¹Fakir Mohan University, Odisha, India

²Department of Communication Studies, Universitas Hasanuddin, Makassar, Indonesia

³Faculty of Communication Sciences, Universitas Padjadjaran, Bandung, Indonesia

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ABSTRACT

Background: The rapid integration of artificial intelligence (AI) into health communication has redefined the way institutions relate to the public; However, existing studies highlight above all the technological and clinical dimensions, leaving a critical gap in understanding AI-driven public relations as a strategic tool that adapts outcomes such as trust and commitment, especially in developing countries. **Purpose:** This study aims to examine the influence of AI-driven public relations on public trust and engagement in health communication, as well as the mediating role of public trust, using cross-national insights from India and Indonesia. **Methods:** This study employed a quantitative survey design involving 320 respondents, equally distributed between India and Indonesia. Respondents were selected through purposive sampling based on their experience accessing health-related information through digital platforms involving AI-supported communication features. The pooled cross-national data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). **Results:** The results demonstrate that AI-powered public relations significantly enhance public trust and public engagement. Public trust also positively influences engagement and serves as the primary mediating mechanism linking AI-driven communication to engagement outcomes. **Conclusion:** These results demonstrate that the effectiveness of artificial intelligence in health communication is determined not only by its technological sophistication but also by its ability to promote relationships based on the trust of public engagement. **Implications:** This research expands on public relations theory, integrating AI into the realm of relational communication, highlighting the sensitive contexts of healthcare institutions working in different sociocultural settings and the importance of trust-oriented AI trust strategies.

Keywords: Artificial Intelligence; public relations; health communication; public trust; public engagement

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Correspondence: Moti Pangkam, Fakir Mohan University, Vyasa Vihar, Nuapadhi (North Campus) Balasore, Odisha – 756020 India. Email: motipangkam@edu.fmuniversity.in

INTRODUCTION

Artificial Intelligence (AI) is changing the way information is created, distributed, and consumed on digital platforms, and is becoming a defining feature of modern health communication. Using it to target audiences, automate responses, and personalize messages, health organizations can communicate more effectively and more widely (Glikson & Woolley, 2020; Uddin et al., 2025; Weingott & Parkinson, 2025). According to recent studies, AI-driven communication can improve interaction in the digital health environment, particularly when messages are tailored to user preferences and distributed through social media ecosystems (Merl et al., 2026). But, alongside these benefits, the integration of AI raises important questions about public relations (PR), ethical responsibility, and trust (Sagona et al., 2025). In view of these developments, artificial intelligence in health communication should be considered as a strategic communication phenomenon that should be assessed through a PR perspective and not as a technical development.

Communication is fundamentally relational in terms of PR, which emphasizes the development of mutual understanding, trust and long-term commitment between organizations and their audiences. The theory of excellence in

PR stresses that good communication involves more than sharing information; it also involves building and maintaining positive relationships through responsiveness, transparency and credibility. This relational approach is particularly important in the context of health communication, as communication is often carried out in circumstances characterized by risks, uncertainties and high public sensitivities. Effective health communication relies on well-structured tactics such as audience segmentation, message design and channel choice, all of which are basic to strategic PR practice, according to previous research (Alif et al., 2023; Amir & Pangkam, 2025). Therefore, the integration of AI into health communication must also be understood in terms of its ability to support or disrupt these relational processes.

Health communication provides a particularly relevant context for examining AI-driven PR because health information directly influences public understanding, decision-making, and behavior. In this context, communication failure may not only reduce institutional reputation but may also create misunderstanding, anxiety, and inappropriate health decisions. Therefore, AI-supported communication must be evaluated in terms of its ability to maintain credibility, transparency, responsiveness, and public trust.

Despite the growing adoption of AI in

healthcare communication, trust remains a central challenge that determines the success of such innovations. Trust theory suggests that individuals are more likely to accept and engage with information when they perceive it as credible, transparent, and aligned with their expectations. Empirical evidence shows that public trust in healthcare systems significantly influences the acceptance of AI technologies, as well as expectations regarding their impact on accessibility, cost, and quality of care (Longoni et al., 2019; Nong & Ji, 2025; Nong & Platt, 2025; Steerling et al., 2023). Furthermore, in digital communication contexts, trust has been found to directly shape different forms of engagement, including cognitive, emotional, and behavioral engagement (Luo et al., 2025; Sultan & Amir, 2023). It indicates that the effectiveness of AI-driven communication is dependent on how such communication is perceived and trusted by its audience.

However, existing literature has not sufficiently explored how artificial intelligence operates within the framework of PR in health communication. Most studies tend to examine AI from a technological or clinical perspective, focusing on system performance, automation, or patient outcomes, while overlooking its role as a strategic communication tool (Weingott & Parkinson, 2025). At the same time, research on digital PR, particularly in Indonesia, has

identified ongoing challenges related to ethical considerations, limited strategic integration, and the need for adaptive communication practices in the era of AI and big data (Subagio et al., 2025; Wulandari et al., 2025). Irwansyah (2025) further emphasizes that PR practitioners have not yet fully leveraged AI as part of a comprehensive communication strategy, especially in sectors that require high levels of public trust, such as healthcare. This gap reveals a lack of integrative understanding regarding how AI-driven PR influences key relational outcomes, particularly public trust and public engagement in health communication.

In addition to this theoretical gap, there is also a contextual limitation in the existing body of research, which is predominantly centered on Western settings. The dynamics of AI-driven communication in developing countries, particularly those characterized by cultural diversity, digital inequality, and complex social structures, remain underexplored. India and Indonesia represent two relevant contexts in this regard, as both countries are undergoing rapid digital transformation while facing challenges related to access, literacy, and public perception of technology (Nugraha et al., 2026). Studies in India indicate that AI is increasingly used in public health communication and digital outreach, offering opportunities for broad engagement but also raising concerns

regarding governance, equity, and public trust (Bashingwa et al., 2023; Gnana Sanga Mithra & Bhavana, 2025; Gore & Olawade, 2024; Sivasubramanian & Raval, 2025). Similarly, ethical communication, credibility and public trust remain major concerns in Indonesia, where the use of AI and digital technologies in communication practices has grown considerably (Irwansyah, 2025; Subagio et al., 2025; Wulandari et al., 2025).

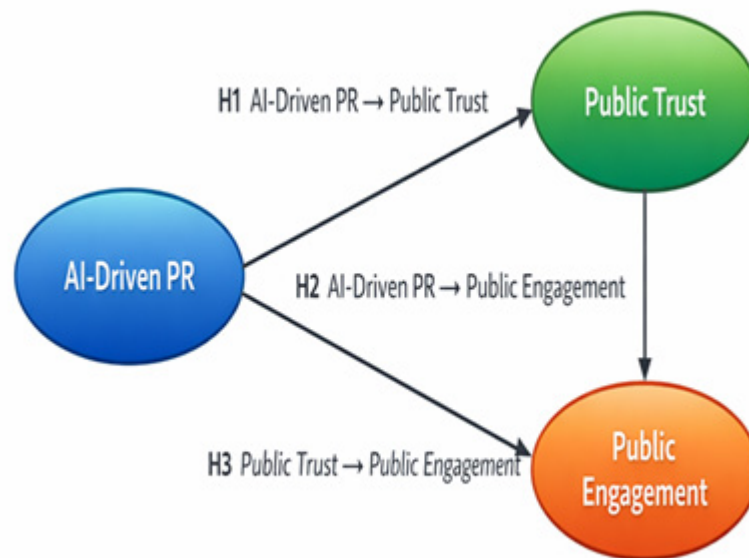
Based on comparative observations from Indonesia and India, the study seeks to examine the impact of AI-driven PR in health communication on public confidence and engagement. The study aims to determine whether AI can be used as a strategic communication tool to improve relations or whether its impact depends on wider contextual and perceptual factors. This study represents a theoretical development in PR research by integrating AI into the framework of health relational communication. In fact, it provides guidance to policy makers, communication experts, and health organizations on how to develop AI-based communication strategies that could build real engagement and trust. By placing the analysis in Indonesia and India, the study offers a South-South perspective that supports the current discussions on AI, PR, and health communication.

The study argues that AI-driven PR

in healthcare communication functions as a strategic communication tool which can influence the relationship between health institutions and their patients.

According to this framework, AI-driven PR is the use of AI to improve communication processes through perceived utility, personalization, responsiveness, and interactivity in delivering health messages. AI-supported communication is expected to increase public confidence in the organization and encourage more active involvement in health information, when these characteristics are prioritized. Public confidence is, therefore, a key mediating construct, as people are more likely to accept, value and respond to health information if they believe it is transparent, reliable and trustworthy. Public engagement is treated as the final outcome of the model, which reflects the extent to which the public is cognitively, emotionally, and behaviorally involved with communication delivered by health institutions.

Based on this framework, the study proposes that AI-driven PR has a direct positive effect on public trust and public engagement. In addition, public trust is expected to have a positive effect on public engagement and to mediate the relationship between AI-driven PR and public engagement. Accordingly, the hypotheses of this study are formulated



Source: Developed by Authors, 2026

Figure 1 Conceptual Model

as follows: H1: AI-driven PR has a positive and significant effect on public trust in health communication. H2: AI-driven PR has a positive and significant effect on public engagement in health communication. H3: Public trust has a positive and significant effect on public engagement in health communication. H4: Public trust mediates the relationship between AI-driven PR and public engagement in health communication.

The relationships among AI-driven PR, public trust, and public engagement proposed in this study are presented in Figure 1. As illustrated, AI-driven PR is expected to influence public engagement both directly and indirectly through public trust.

RESEARCH METHODS

This study employed a quantitative research design to analyze the influence of AI-driven PR in health communication on public trust and public engagement, with comparative insights from India and Indonesia. A quantitative approach was selected because the study was intended to test theoretically derived relationships among latent variables and to evaluate the structural effects between constructs systematically. The object of the study was public perception of AI-driven PR practices in health communication, while the subjects were individuals in India and Indonesia who had been exposed to health-related information delivered through digital media involving AI-supported communication features, such as chatbots, automated responses,

personalized health messages, or AI-assisted social media communication. The study was conducted during the first trimester of 2026, from January to March 2026. The data collection process was administered online to facilitate a cross-national participation.

The population of the study consisted of digital media users in India and Indonesia who had experience accessing health information through online platforms. Since the exact population size was indeterminate, this study used a purposive sampling technique. Respondents were selected based on several criteria, namely being at least 18 years old, residing in India or Indonesia, and having prior experience receiving or accessing health communication through digital platforms that potentially involve AI-supported features. The final sample consisted of 320 respondents, comprising 160 respondents from India and 160 respondents from Indonesia. Equal allocation was used to ensure balanced representation of the two national contexts in the pooled dataset and to prevent the overall structural estimates from being disproportionately influenced by one national sample. This allocation was not based on the assumption that the populations or sociocultural characteristics of the two countries were identical. Within each country, respondents were selected purposively using the same eligibility criteria.

Data were collected using an online questionnaire distributed through social media platforms, online communities, and digital communication networks accessible in both countries. The instrument was designed using a five-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree. The questionnaire comprised two main parts. The first part collected demographic data from respondents, such as age, gender, country of residence, educational background, and the frequency of their exposure to digital health information. The three main research constructs measured in the second section were public participation, public confidence and PR based on AI.

Four metrics were used to measure AI-driven PR: the perceived utility of AI-enabled communication, personalization, responsiveness and interactivity. Four metrics on the credibility, reliability, transparency and trust of health communication provided by institutions were used to measure public trust. Four indicators reflecting attention, interaction, participation and willingness to share or respond to health communication were also used to measure public participation. In total, these three structures included 12 indicators in the tool.

The questionnaire was reviewed and improved before the initial data collection

in order to ensure its relevance and clarity in relation to the situation. Language changes were made where necessary to ensure that the text was comprehensible and appropriate for the respondents from both countries. After the data collection, SmartPLS 4 was used to process and analyze the data. PLS-SEM was selected on its suitability for complex modelling analyses, construction of relationship predictions and parallel evaluation of the measurement model and the structural model (Hair et al., 2021). This method was relevant for the current study as the model was designed to explain how AI-driven PR affected relational outcomes in health communication and included a number of latent variables.

The analysis consisted of two main stages: an internal model evaluation and external model evaluation. The quality of the measurement instrument was evaluated by looking at an external model. This stage included the examination of indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Indicator reliability was assessed using outer loadings, while internal consistency was assessed using composite reliability. Convergent validity was evaluated using the Average Variance Extracted (AVE), with each construct expected to meet the recommended threshold to indicate adequate convergence. Discriminant validity was tested

by applying the Fornell and Larcker criterion, in which the square root of the AVE for each construct should be greater than its correlations with other constructs (Fornell & Larcker, 1981). This procedure was used to ensure that each construct in the model captured a distinct conceptual domain and was empirically different from the others.

After the measurement model fulfilled the required standards, the structural model was evaluated to test the proposed hypotheses. This stage involved examining path coefficients, coefficient of determination, and the significance of structural relationships through bootstrapping. The bootstrapping analysis was conducted using 5,000 subsamples to generate t-statistics and p-values for each hypothesized path. A hypothesis was considered supported when the relationship between constructs showed a statistically significant result at the predetermined significance level. In addition, descriptive analysis was carried out to provide an overview of respondent characteristics and general patterns of perception regarding AI-driven PR in health communication.

Because this study involved respondents from India and Indonesia, the two national samples were combined to estimate the overall structural relationships among AI-driven PR, public trust, and public engagement. The balanced composition of 160 respondents from

each country ensured equal representation in the pooled dataset. Descriptive observations were used to provide contextual insights into the two national settings; however, no formal statistical comparison of path coefficients between India and Indonesia was conducted. Therefore, the structural model represents the overall pattern across the combined cross-national sample.

RESULTS AND DISCUSSION

The results of this study confirmed that the measurement model met the required standards of reliability and validity. All indicators demonstrated acceptable outer loadings, indicating adequate indicator reliability. The composite reliability exceeded the recommended threshold, suggesting strong internal consistency across constructs. In addition, the AVE values for all variables were above the acceptable level, confirming convergent validity. Discriminant validity was also established, as the square root of the AVE for each construct was greater than its correlations with other constructs, consistent with the criteria proposed by Fornell and Larcker (1981). These results indicated that the measurement model is robust and suitable for further structural analysis.

Table 1 shows that all indicators have outer loading values above the recommended

threshold, indicating satisfactory indicator reliability. The composite reliability values exceed 0.70 and AVE values are above 0.50, confirming internal consistency and convergent validity. Furthermore, Table 2 demonstrates that discriminant validity is achieved, as the square root of AVE for each construct is greater than its correlations with other constructs.

The structural model analysis shows that AI-driven PR has a positive and significant effect on public trust ($\beta = 0.641$, $t = 11.284$, $p < 0.001$), supporting H1. This finding suggests that the integration of AI in PR practices enhances the perceived credibility and reliability of health communication. This result aligns with previous studies indicating that AI-based communication can increase users' trust when messages are perceived as relevant, responsive, and personalized (Merl et al., 2026). However, prior research also indicates that AI-based medical communication may introduce risks when information lacks contextual accuracy or human oversight, which can potentially influence public trust (Bickmore et al., 2018). From a theoretical perspective, this finding reinforces the relational paradigm of PR, which emphasizes trust as a key outcome of effective communication processes (Amir & Pangkam, 2025). The ability of AI to deliver consistent and timely information appears to reduce uncertainty, which strengthens public trust in

Table 1 Measurement Model Evaluation

Variable	Indicator	Outer Loading	CR	AVE
AI-Driven Public Relations	AIPR1	0.812	0.902	0.697
	AIPR2	0.847		
	AIPR3	0.859		
	AIPR4	0.821		
Public Trust	PT1	0.801	0.891	0.672
	PT2	0.836		
	PT3	0.844		
	PT4	0.803		
Public Engagement	PE1	0.825	0.907	0.710
	PE2	0.861		
	PE3	0.874		
	PE4	0.820		

Source: Processed research data, 2026

Table 2 Discriminant Validity (Fornell-Larcker Criterion)

Variable	AI-Driven PR	Public Trust	Public Engagement
AI-Driven PR	0.835	0.641	0.618
Public Trust	0.641	0.820	0.689
Public Engagement	0.618	0.689	0.843

Source: Processed research data, 2026

health institutions.

The analysis also reveals that AI-driven PR has a positive and significant direct effect on public engagement ($\beta = 0.318$, $t = 4.972$, $p < 0.001$), supporting H2. This finding indicates that AI not only influences perceptions but also stimulates active public participation in health communication. The presence of interactive and adaptive communication features encourages users to engage more deeply with health-related content. This finding is consistent with previous studies that digital platforms and social

media enhance public engagement in health communication (Moorhead et al., 2013; Sultan & Amir, 2023). This result is further supported by studies showing that digital and AI-supported communication can improve user interaction and engagement in online environments (Uddin et al., 2025) driven by the development of new technologies, including generative artificial intelligence (GenAI). It suggests that AI can function as an effective tool for fostering two-way communication, which is a central principle in modern PR theory.

Table 3 Hypothesis Testing of the Structural Model 3

Hypothesis	Path	Coefficient	t-value	p-value	Result
H1	AI-Driven PR → Public Trust	0.641	11.284	< 0.001	Supported
H2	AI-Driven PR → Public Engagement	0.318	4.972	< 0.001	Supported
H3	Public Trust → Public Engagement	0.485	7.163	< 0.001	Supported
H4	AI-Driven PR → Trust → Engagement	0.311	5.486	< 0.001	Supported

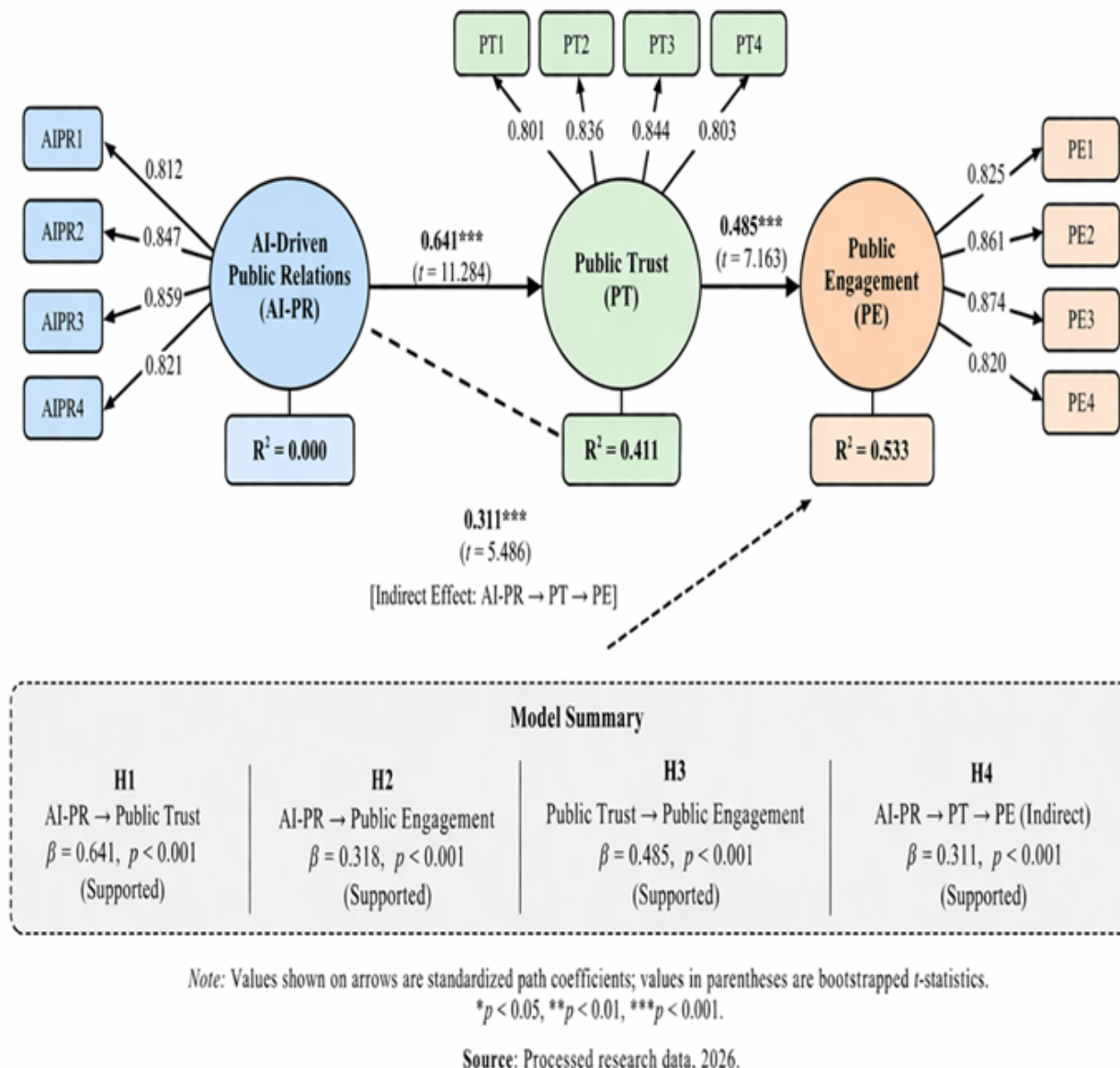
Source: Processed research data, 2026

Furthermore, public trust has a positive and significant effect on public engagement ($\beta=0.485, t=7.163, p<0.001$), supporting H3. This finding promotes trust as a relational mechanism that links communication and behavior outcomes. Most people think of engagement as a multi-dimensional concept that involves behavioral, emotional, and cognitive elements (Brodie et al., 2011). People are more likely to interact with content, share information or participate in discussions if they believe that communication on health is transparent and trustworthy. This result is consistent with prior research indicating that trust is a key determinant of engagement in digital communication contexts (Luo et al., 2025). This also aligns with more recent perspectives suggesting that engagement in digital environments is shaped by interactive and value-driven communication processes (Hollebeek et al., 2019). These findings lend support to the theory that engagement is motivated by the perceived integrity and reliability of the communication

source rather than by its technical features.

Beyond the direct effects, the findings support H4 by showing that public trust significantly mediates the relationship between AI-driven PR and public engagement ($\beta=0.311, t=5.486, p<0.001$). This indirect effect indicates that AI-driven communication enhances public engagement partly by strengthening public trust. Although AI-driven PR directly increases public engagement, its effect becomes stronger when the communication is perceived as credible, transparent, and trustworthy. This finding is consistent with previous studies that the success of AI-supported communication depends on its ability to maintain transparency and credibility (Sagona et al., 2025).

As presented in Table 3, all proposed hypotheses are supported. AI-driven PR has a significant positive effect on public trust and public engagement. Public trust also has a significant positive effect on public engagement and significantly mediates the relationship between AI-driven PR and public engagement.



Source:

Figure 2 Structural Model and Path Coefficients

Figure 2 below shows that AI-driven PR has a stronger direct effect on public trust than on public engagement. The model also demonstrates that public trust contributes substantially to public engagement and serves as a significant mediating mechanism.

The results indicate that all proposed hypotheses are supported. AI-driven PR significantly influences public trust and

public engagement, while public trust also has a significant effect on public engagement. In addition, the indirect effect confirms the mediating role of public trust.

From a cross-national perspective, the pooled findings indicate an overall positive relationship among AI-driven PR, public trust, and public engagement across respondents from India and Indonesia. However, because

the structural model was estimated using the combined sample, the study does not claim that the strength of these relationships is statistically identical in the two countries. Differences in digital literacy, access to technology, communication culture, and socio-cultural perceptions of institutional trust may produce country-specific patterns. Therefore, the findings should be understood as a cross-national pattern, not as evidence of statistically-equivalent relationships in India and Indonesia. Studies in developing countries suggest that trust in digital systems is often influenced by broad social and institutional factors (Bashingwa et al., 2023; Wulandari et al., 2025). Therefore, the effectiveness of AI-driven PR cannot be separated from the socio-cultural environment in which it operates.

The findings of this study also provide insights into the role of AI in shaping relational communication. While AI-driven PR demonstrates a positive impact on both trust and engagement, its effectiveness should not be interpreted as purely technological. Instead, the results indicate that the perceived human-like quality of AI communication, such as responsiveness and personalization, could shape public perception. This observation is consistent with prior research suggesting that adaptive and user-centered communication enhances perceived credibility in digital environments

(Merl et al., 2026). This suggests that AI does not replace human communication; it functions as an extension in ways that can either strengthen or weaken relational outcomes depending on how it is designed and implemented.

From a contextual perspective, the comparative insights from India and Indonesia further reveal that the effectiveness of AI-driven PR is closely linked to broad socio-cultural and technological conditions. In both countries, rapid digital transformation has increased public exposure to AI-mediated communication, yet disparities in digital literacy and access remain significant. Previous studies have shown that trust in digital systems in developing countries is often shaped by institutional credibility and prior experiences with technology (Bashingwa et al., 2023; Wulandari et al., 2025). It implies that AI-driven communication strategies must be adapted to local conditions, taking into account cultural expectations, communication norms, and levels of technological familiarity.

The novelty of this study lies in positioning public trust as the central relational mechanism connecting AI-driven PR with public engagement in health communication. The proposed model demonstrates that its communication value depends on whether AI-supported interactions are perceived as credible, transparent, responsive, and trustworthy. This relational interpretation extends previous studies

that predominantly emphasize technological performance or clinical outcomes.

In terms of practical implications, this study suggests that health institutions should adopt a strategic approach in implementing AI-driven PR rather than focusing solely on technological adoption. Effective AI-based communication requires careful integration of credibility, transparency, and interactivity into message design. Institutions should ensure that AI systems provide accurate and understandable information while maintaining human oversight when necessary (Ratnasari & Sumartias, 2025). In addition, communication strategies should adopt two-way interaction, enabling the public to ask questions, provide feedback, and engage actively with health information. By combining technological innovation with relational communication principles, AI-driven PR can serve as a powerful tool for enhancing both public trust and engagement in health communication.

CONCLUSION

This study demonstrates that AI-driven PR plays a significant role in shaping relational outcomes in health communication by positively influencing both public trust and public engagement, with public trust acting as a key mediating mechanism that strengthens

this relationship. The findings indicate that the effectiveness of AI in communication does not solely depend on its technological sophistication, but rather on its ability to deliver credible, transparent, and responsive messages that align with public expectations. In the contexts of India and Indonesia, the findings should be interpreted with consideration of possible differences in socio-cultural conditions, digital literacy, and institutional credibility. Although these contextual factors were not directly tested in the structural model, they may have influenced how AI-mediated communication was perceived. These findings contribute theoretically by extending the relational perspective of PR into the domain of artificial intelligence within health communication, emphasizing trust and engagement as central outcomes. In practice, the study suggests that health organizations and communication practitioners should take a strategic and contextual approach in implementing AI-driven communication, ensuring that technological innovation is accompanied by ethical considerations, clear messages, and interactive engagement. This study used a pooled sample from India and Indonesia and did not statistically compare the structural relationships between the two national groups. Therefore, the findings represent an overall cross-national pattern, not evidence of identical effects in both countries. Future

studies should employ measurement invariance assessment and multi-group analysis to examine country-level differences more rigorously.

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AI Declaration: The authors declare that any use of artificial intelligence (AI) tools was limited to language editing and formatting assistance. All intellectual contributions, data interpretation, and conclusions are entirely the responsibility of the authors. The authors take full responsibility for the accuracy, integrity, and originality of the work.

Ethical Clearance: Ethical approval was not deemed necessary for this study because it utilized non-sensitive and anonymous survey data, in which participants could not be identified either directly or indirectly. Participation in this study was entirely voluntary, and all respondents were provided with clear information regarding the purpose of the research prior to their involvement. The data were analyzed in an aggregated manner to maintain full confidentiality, in line with institutional ethical standards.

Data Availability Statement: The data supporting the findings of this study are available upon reasonable request to the corresponding author.

Conflicts of Interest: The authors declare no conflict of interest. The authors confirm that there are no financial or personal relationships that could have appeared to influence the work reported in this paper.

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