

Strategic Public Relations in the Age of AI: Redefining Stakeholder Engagement through Predictive Analytics

Tresna Wiwitan¹, Tri Basuki Kurniawan², Deshinta Arrova Dewi^{3,4}

¹Communication Science Department, Universitas Islam Bandung, Bandung, Indonesia

²Postgraduate Program, Universitas Bina Darma, Palembang, Indonesia

³Centre for Data Science and Sustainable Technologies, INTI International University, Malaysia

⁴Faculty of Engineering and Technology, Shinawatra University, Thailand

Correspondence: Tresna Wiwitan, Communication Science Department, Universitas Islam Bandung, Bandung, Indonesia.

Received: December 20, 2025

Accepted: March 24, 2026

Online Published: April 14, 2026

doi:10.11114/smc.v14i2.8304

URL: <https://doi.org/10.11114/smc.v14i2.8304>

Abstract

Public Relations has evolved after the introduction of Artificial Intelligence (AI) and the incorporation of computer-aided audience behavior analysis and personalized mass communication (AI, n.d.). Relations are being transformed. However, the strategic and ethical outreach, analytics, and engagement model remains an underdeveloped area of study (Van & Vaccaro, 2021). This study aims to understand the value and relevance AI communication technologies add, and the ethical communication value. This includes soft limits of automated decision-making. This study mixed quantitative analysis of 1,200 communication AI campaigns, and qualitative analysis of 25 communication professionals in corporate, governmental, nonprofit, and digital PR. The data included original texts, AI-crafted versions, and predicted vs. real audience engagement metrics. Thematic analysis and statistical performance tests were conducted, and were also aided by a human-in-the-loop validation of contextual and ethical precision. The findings of the study showed personalized AI campaigns outperformed all other forms of communication, with a 24-31% increase in engagement, a record high 28% increase in performance improvement, and overall, 62% of campaigns reported higher engagement after personalization. Sentiment analysis was able to track down threats and operationalize resource intervention in a study where the AI mapping of risk was about 72% accurate, allowing for dampening of the given threats by about 18% of participation. However, relative to the more nuanced and sensitive areas of study, the AI analysis accuracy drops to about 54% to 61%, and it is clear that the AI does not capture a complex human context. Predictive data does have the potential to sharpen communication, especially when predictive data is aligned with a humanistic, ethically grounded center. Highlighted from the data is the coupling of the predictive capability of AI and human intervention. The benefits of AI adaptive pull convergence, greater amending, and re-scripting of the engagement relative to the tone, ethnocentric override, ethical permissibility, and engagement performance. The research aligns with the AI-Human synergy model, suggesting that although AI enhances human design, it will ultimately be humans who will remain at the center of the paradigm to construct and weave genuine relationships from a deep and trusted interlace of human connection.

Keywords: artificial intelligence, public relations, stakeholders, predictive analytics, ethics, process innovation

1. Introduction

There has always been a need for organizations to have a connection with their stakeholders. Digital communication has changed how to connect with them (Sales Baptista et al., 2025). Social media, online news, user-generated content, and other digital communication tools have increased the speed of public opinion and volatility (Santos, 2022). Public Relations has always involved some level of response, instinct, and manual thinking. That is no longer the case. Organizations must develop Public Relations strategies that go beyond response and proactive prediction of stakeholder needs before they turn into a crisis (Ridheta Citrawijaya et al., 2024). This is the point at which integrating AI and predictive analytics becomes critical for contemporary strategic communication (Mayo, 2024).

Automated communication tools continue to develop as AI develops, but there are still issues with transparency, authenticity, and the responsible use of them (Abbu et al., 2022). The ever-present need for the closest balance has led countless organizations to view communication and process automation as an efficient solution. For example, automation

can use predictive analytics to assess and analyze behaviors and outbreaks among stakeholders. However, such tools may significantly overreach in a variety of areas, such as data privacy and the potential for the automation of discrimination (algorithmic discrimination), significant erosion of trust, and so on. This has resulted in many organizations experiencing a gap in strategically modernizing PR and the ethics in adapting practices (Shin, 2023). It is these very principles of trust in communication and the continuity of dialogue that prevent organizations from using AI tools to their full potential (Al Chami, 2025).

Polisena et al. (2021) argued the efficacy of digital monitoring at the Memphis Communication Conference, digital sentiment analysis, and machine learning. Kim et al. (2025), in their study of Government Communication, discussed the increasing use of monitoring communication methods in decision-making, issue detection, and agenda-setting within real-time communications. In addition, academic work in the field of dialogic public relations has highlighted the importance of active two-way communication, relationship engagement, and trust to ensure the longevity of the organizational-public relationship. However, there seems to be little evidence of integrating digital monitoring and dialogic PR in the communications field (Wamprechtsamer, 2024).

Moreover, there is a lack of empirical evidence on the impact that predictive analytics can have in integrating the principles of dialogic communication in organizational settings (Zhou & Xu, 2022). AI tools have often been used in a more descriptive way, e.g., to track sentiment, to determine the number of mentions, or to summarize the topics within the given communications. Little or no research exists to assess the AI tools' potential to predict behavioral change within the resource constituents/superior relationship to assess the risk of communication and to enable change strategies. This is particularly the case in public-sector settings where communication teams are forced to manage potentially sensitive issues, maintain a level of legitimacy and transparency (Levenshus, 2024). This is particularly the case when there are rapid changes in the communication environment. The focus on integrating ethical communication practices is why there is a lack of models incorporating predictive analytics (Madupati, 2022).

Building upon this gap, the present research has built the first AI-Human Synergy Model with predictive analytics as an adjunct to rather than a substitute for human expertise for stakeholder engagement. The model contends that insights derived from AI augment organizations' dialogic engagement as they are able to listen, discern, and respond to their stakeholders with greater empathy and precision. The model has an ethical dimension as well as human control to ensure that the enhancement of AI would not erode the trust of the people (Habbal et al., 2024).

In trying to address the research question, looking at the impact of predictive analytics on strategic communication, this research used a mixed methodology where qualitative interviews are complemented by quantitative sentiment analysis (Al-Eisawi, 2025). For the qualitative phase of the research, 25 public relations, communication strategy, and digital analysis practitioners were interviewed, and were integrating AI into their professional practice to enrich their fields. These participants described the realities of predictive systems, the challenges, and the ethics of AI and communication. They described the challenges they perceive and the bottom line organizations face when using such technologies in embedded communication systems.

1,200 unique datasets relevant to the use of AI personalization in predictive marketing campaigns (e.g., stakeholder emotional targeting, engagement, etc.) across varying content modifications. This gives the researcher the tools to measure the metrics of engagement, sentiment change, and sentiment audience resonance (Fernanda et al., 2022). The research aims to assess the degree of campaign result attainment when combined with AI personalization and advanced predictive analytics to measure relevance and engagement of the stakeholders to the campaign message (Hasan, 2024). The primary scholarly contribution of the analyses of such datasets offers insights into the value of predictive systems in the PR field, as well as the limitations of such systems' predictive systems.

The study focuses on assessing how analytics can be integrated into the communication cycle of the decision-making process and the decision-making process's communication cycle using an experimental modeling approach. In the study's experimental framework, stakeholder sentiment and risk level, automated control recommendation messaging, contextual and ethical filtering, and the experimental integrated framework that involves machine intelligence and human choice. These are the working conditions for communication teams as they attempt to balance the need for efficiency and the need for responsible processes.

The study uses predictive, AI-enabled technology and analytics to measure the transformation of stakeholder engagement frameworks and processes. The study analyzes the operational impact of predictive analytics technologies and the effects of predictive analytics. The study substantiates the irreplaceable nature of human agency as an underlying, and indeed, the essential counterbalance to mitigate preponderant and unfiltered dependence on AI, within the scope of all communications. This is especially true for crisis communications involving public contact, where the level of risk is sensitive, and public opinion is polarized. This furthers the dialogue on the ethical and sustainable practices of the digital communication ecosystem.

This research predicates the construction of models of ethical AI stakeholder engagement empirically and theoretically through dialogic public relations (Khalid et al., 2025). This research constructively addresses the need to integrate predictive AI and human-centered engagement frameworks to adapt communication analytics to human engagement, transparency, accountability, and trust. The model seeks to enhance academic discourse and equip practitioners, communication advocates, AI, and users with frameworks to address the barriers posed by the digital environment to communication and AI-mediated communication.

1.1 Artificial Intelligence, Predictive Analytics, and Ethics in Strategic Public Relations

Employing AI and its child technologies in Strategic Public Relations is an emerging phenomenon garnering interest in academia. The field of political and digital communications researches the implications of AI-enhanced personalization and automated content generation, coupled with Predictive Analytics, to stimulate user engagement. The potential risks of user manipulation, biases, and a lack of democratic accountability are alarming, and he places them in the context of PR, where trust, transparency, and legitimacy are principal values (Battista & Mangone, 2025; Battista & Uva, 2025).

The use of AI in communication raises the ethical questions of agency, accountability, and ethics. Most studies in the ethics of AI and related ethical discourse focus on the lack of neutrality in algorithmic systems; institutional goals coupled with data selection and model design reveal assumptions to the extent of creating biases (Panarese et al., 2025). The impact of these systems on communication, particularly automation, creates tensions in the normative value of democracy and the engagement of individuals in public discourse (Asimakopoulos et al., 2025).

The dialogic theory within public relations emphasizes the relevance of mutuality, relationship building, and sustained openness. Although practitioners and scholars have in recent years adopted sentiment analysis and social listening tools for monitoring digital engagement, most of them have used them for retrospective measurement and engagement rather than anticipatory engagement (Braga et al., 2025). Therefore, the field lacks studies that demonstrate the operationalization of predictive analytics within the frameworks of dialogic public relations and communication ethics.

Studies examining the governance of AI-driven communications have proposed integrated hybrid solutions. In the context of communication in politics and organizations, Battista and Mangone (2025) characterize AI as a paradoxical and transformative tool for democracy that, if unregulated, could improve democracy and simultaneously worsen the concentration of power. In the same vein, McKay (2024) insists that the retention of a 'human in the loop' is essential to ensure that AI governance systems conform to social values and mechanisms of responsibility.

Though there have been theoretical developments, very little empirical research has been done on predictive analytics in practical public relations, especially in the corporate, government, and nonprofit sectors. Most research ignores practitioners' negotiation of the ethical, ambiguous, and relational dilemmas of the use of AI, focusing on content performance, AI technological capability, and tool performance. There is a significant gap in integrated empirical frameworks that balance performance and ethics.

The study extends the literature by framing predictive analytics ethically, as an enhancement of the human communicator role within an AI-human synergy model. By focusing on the empirical analysis of campaign performance and the experiences of practitioners, the study advances the debates on ethical governance of AI, dialogic communication, and the evolution of strategic public relations in a data-rich environment.

2. Method

The methodological framework provides us with an understanding of both qualitative and quantitative elements, as Binlibdah (2024) describes it, for developing an understanding of the qualitative elements of the experience and the quantitative elements of the results of the AI-moderated campaigns. The subsequent sections elaborate on the research design, participant engagement, dataset description, procedures for data collection, data analysis, predictive modeling, integrated systems, simulation, and the ethics framework supporting the study.

2.1 Research Design

Considering the intricacies of AI-mediated communication, a mixed-method framework is most appropriate. The qualitative dimension of the analysis provides the contextual backdrop of the experience, the organization, task automation, and the cross-cutting ethical concerns. The quantitative dimension elucidates the results of the campaigns, the communication, and the level of audience engagement.

The study adopts a sequential exploratory design, in which a qualitative phase precedes the remaining components, aiming to identify themes in AI and its ethical constraints through interviews (Naeem & Thomas, 2025). These themes form the basis of building the quantitative phase that measures the effectiveness of predictive models employed in authentic communication systems. This integrated framework enhances the internal validity of the study by providing evidence through the convergence of human experience and the prediction of the algorithm's performance, as illustrated in Figure 1.

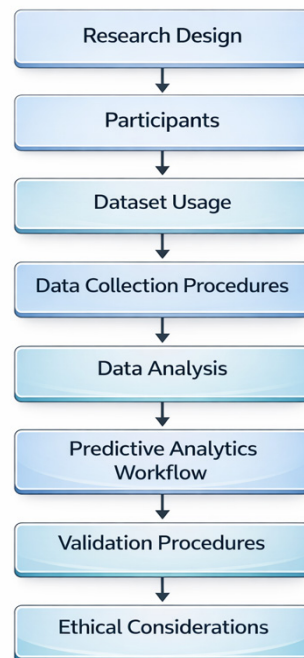


Figure 1. Flow chart of the Research Design

The methodology flowchart (see Figure 1) demonstrates how each of the components of the methodology interconnects to form the overall structure that was utilized in the research process for this study. The first component is the Research Design, in which the mixed-methods approach entailing both qualitative and quantitative components is described. The next component is the Participants, then this is followed by the Dataset Usage section, which explains the analysis of the 1,200 AI-personalized campaigns used in the study. After that, the Data Collection Procedures are described, within which the interviews, campaign data, and performance data that were collected are explained.

The process then continues to Data Analysis, where qualitative thematic coding and quantitative analyses were done. The next component is the Predictive Analytics Workflow, where the AI models that were used to create predictions and variations of content were described. Validation Procedures were then explained, which, to ensure the alignment of the outcomes with the ethics of the study, consisted of human experts reviewing AI outputs.

Lastly, the flowchart culminates in Ethical Considerations, which include the issues of confidentiality and the human oversight of AI interaction, alongside responsible data stewardship and the ethics of the research itself.

2.2 Participants

The qualitative part of the research consisted of 25 industry specialists in the communication field who incorporate communication and analytics AI tools into their occupational responsibilities. Using the purposive sampling technique, participants were invited in order to obtain diversity across the different communication domains where predictive analytics are employed at the advanced stages of decision-making. As a result, the research was able to collect a broad spectrum of experiences, operating environments, and ethical perspectives regarding AI in stakeholder engagement in the domain.

The final sample illustrates a diverse cross-section of communication practitioners, distributed as follows (see Table 1):

Table 1. Distribution of Qualitative Study Participants

Category of Participants	Role Description	Number of Participants (n = 25)	Percentage (%)
Corporate Communication Departments	Brand communication managers, campaign strategists, internal/external communication officers	8	32%
Government Communication Agencies	Public information officers, digital government communicators, crisis communication units	7	28%
Nonprofit & Public Advocacy Organizations	Advocacy communicators, NGO outreach coordinators, public engagement specialists	5	20%
Digital PR & Analytics Firms	Media analysts, AI tool specialists, digital PR consultants	5	20%
Total	—	25	100%

- **Corporate Communication Departments: 8 participants**
Professionals from finance, technology, telecommunications, and consumer services. These persons supervise brand communication, campaign optimization, and issue monitoring in the fast-paced corporate ecosystems.
- **Government Communication Agencies: 7 participants**
Information public offices and digitized communication task forces and policy communication unit draws this practitioner. They focus on public accountability, transparency, and crisis communication on the ever-changing digital environments.
- **Nonprofit and Public Advocacy Organizations: 5 participants**
Participants represent the NGOs, social justice alliances, and community-based advocacy networks. Participants employ predictive analytics mostly for their audience engagement advocacy, and value-based campaigns, public sentiment monitoring, and messaging reframing.
- **Digital PR, Media Monitoring, and Analytics Firms: 5 participants**
They provide their services as external digital consultants to client organizations and construct multiple consulting digital units. They focus on the predictive modeling of campaigns' outcomes, strategy optimization, issue framing, and data analytics.

Participants, as Table 1 illustrates, conducted semi-structured interviews to gain an understanding of the role predictive analytics affect the communication strategies on message construction, issue framing, risk communication, and audience engagement. Professional experiences provide a basis and foundation for the qualitative analysis on how to meaningfully and constructively understand the advantages, disadvantages, and ethical challenges of AI-enabled communication practice.

2.3 Dataset Usage

For the quantitative part of the research, as data sets, 1,200 pieces of personalized AI-based communication campaigns uploaded on multiple digital platforms will be used. The various components that constitute each instance of a campaign are the original organizational message, subsequent AI-modified messages, sentiment polarity and other predictions, the engagement forecast, and the performance metrics of the messages recorded after the campaign went live. The performance metrics include click-throughs, reactions, postings, comments, total engagement, and miscellaneous measures of engagement.

The dataset has been systematically examined and classified, taking into consideration message type, the domain of communication, the sensitivity of the issue, and the segmentation of the audience, in order to provide a holistic understanding. This methodical distribution makes it possible to assess how predictive analytics function and assess actionable predictive analytics under different communication conditions. It allows for human and artificial message personalization to be compared and evaluated for relevance, audience engagement, and impact, as well as strategic purpose.

The dataset was purposefully diversified to capture the full range of communication situations faced of PR practitioners. Campaigns encompass corporate branding, public communication, nonprofit advocacy and crisis communication. This ensures predictive performance is evaluated both in routine and high stakes messaging. The varying levels of issue sensitivity AI analysis complexity, as demonstrated in Table 2, to show how it works in neutral, positive, and emotionally complex issue domains.

The data displayed in Table 2 displays an even distribution of communication campaigns in the corporate, government, and nonprofit sectors. Of these, 37.5% of the messages were aimed at the public, while the others were aimed at specific demographic or stakeholder audiences. About one-third of the messages had a neutral stance, while the other messages were either persuasive or of a more sensitive nature that required complex predictive reasoning. Each campaign had between 3 and 5 variations of AI-generated content that provided a dataset. This provided enough variance for the collection and comparison of advanced predictive modeling.

Table 2. shows the distribution of the dataset

Dataset Category	Description	Number of Campaigns	Percentage (%)
Message Type	Corporate branding, service promotion, public appeals, crisis updates	400	33.3%
Public Sector / Government Communications	Public advisories, policy updates, digital service announcements	300	25.0%
Nonprofit & Advocacy Campaigns	Awareness messaging, mobilization campaigns, fundraising appeals	250	20.8%
Issue Sensitivity Category	Neutral informational messages	350	29.2%
	Positive messages (campaign promotions, achievements, public goodwill)	300	25.0%
	High-sensitivity messages (social issues, crises, politically nuanced content)	200	16.7%
Audience Segmentation	General public	450	37.5%
	Targeted demographic groups (youth, parents, industry specialists)	350	29.2%
	Stakeholder-specific messaging (partners, investors, community groups)	200	16.7%

2.4 Data Collection Procedures

2.4.1 Qualitative Data Collection

All interviews were conducted online, audio-recorded with consent, and transcribed verbatim. Interview protocols explored five thematic areas:

- Adoption of AI tools in communication workflows
- Perceived benefits and challenges of predictive analytics
- Ethical and governance concerns
- Human versus automated decision-making boundaries
- Strategic implications for stakeholder engagement

Field notes were incorporated to enrich contextual interpretation.

2.4.2 Quantitative Data Collection

The data on AI-personalized campaigns was obtained from internal analytics dashboards of partner organizations. Each data record captured audience response predictions from an AI model and then the message's performance in the real world. In alignment with the ethics of communication, no records that had personally identifiable information were collected.

2.5 Data Analysis

2.5.1 Qualitative Analysis

For the purpose of this research, transcripts of the interviews have been coded using the inductive thematic analysis methodology. The coding in this case has three layers:

- Open Coding: This emergent coding captures concepts such as trust, boundaries, and algorithmic bias.
- Axial Coding: This is where the linkage of the themes is established, for example, the attribution AI efficiency and ethical risk.
- Selective Coding: The final stage is the assimilation of the primary themes, which in this analysis are the categories of the synergy of AI and humans and the ethics of communication.

The themes have been analyzed in comparison across the various participant categories in order to evaluate themes at an inter-organizational level.

2.5.2 Quantitative Analysis

The following analytical methods have been used in order to perform the analysis of the various elements of the relationship.

- Correlation and regression analysis for the purpose of the prediction of the level of engagement.
- Comparison of the different messages in terms of the sentiment scores.

- Evaluation of the bias in the confusion matrix of the predictive analytical models.
- Comparison of the AI-personalized and the non-personalized campaigns in order to assess the variance in the overall performance of the campaigns.

The tests outlined above demonstrate the predictive analytics, with emphasis on the functionality of the messages.

2.6 Predictive Analytics Workflow

The predictive analytics modeling pipeline involves the following steps in the given order:

- Text Pre-processing:
Message content has been tokenized, normalized, and embedded in contextual language models.
- Predictive Modeling:
Machine learning and transformer models generated the following predictions for each of the audience segments:
 - Changes in audience sentiment
 - Likelihood of audience engagement
 - Audience issue sensitivity/risk escalation
- AI-Personalized Message Variation:
Models generated variations of messages tailored to predicted audience segments.
- Message Personalization and Performance Tracking:
Engagement metrics were utilized to capture and release personalized messages on various digital platforms.
- Predictive Models Evaluation:
The predicted and actual metrics were evaluated to assess the correctness and strategic value of the model.

This is the first time the organization used a predictive analytics modeling framework to assist in the automation of AI tools analytics for the communication analytics process.

2.7 Validation Procedures

A human-in-the-loop validation layer checks, contextualizes, and interprets the decision. AI recommendations, generated by machine learning, were reviewed by three senior communication experts for potential gaps in tone, culture, communication ethics, and value, possible paradoxical outcomes, and alignment to relevant stakeholder expectations.

The experts and AI discrepancies were mapped to create a taxonomy of potential systemic bias or interpretive error. This blended approach to validation mirrors communication ecosystems in practice, where human judgment is critical.

2.8 Ethical Considerations

Research ethics were observed at all stages of the research process. Participants granted informed consent, and anonymity was guaranteed through the use of coding. The campaign dataset was stripped of any personal identifiers, keeping with the regulations of digital communication and the principle of data minimization.

Research that involves predictive analytics has the potential for ethical dilemmas, including invasion of privacy, undue influence, and data-driven discrimination. Therefore, predictive analytics, coupled with the ethics in the framework of communication for dialogic purposes, that is, transparency, respect, and responsibility, will be the focus of this study. The predictive outcomes of analytics were considered for accuracy, trust, and genuine engagement and the ethics of communication involved.

3. Results and Discussion

The major findings, in relation to the quantitative assessment of the 1,200 AI-personalized campaign dataset and the qualitative data from 25 practitioner interviews, will be reviewed in this section. Each finding delineates the particular aspect of predictive analytics and its impact on stakeholder engagement, message performance, and the communication process.

3.1 Results

3.1.1 AI-Personalized Messages Achieved Higher Engagement Performance

The campaign dataset analysis showed that AI-personalized messages outperformed non-personalized messages with respect to audience engagement. Engagement across all message types was higher by 23-31%, with the greatest increases occurring in campaigns in which the AI model correctly predicted audience sentiment and content. These advancements were evident in quantifiable engagement metrics, including CTR, reaction, and sharing metrics.

Changes in practice were corroborated by interviewees describing the automated AI in tone, timing, and framing adjustments, which aligned audience expectations, enabling more effective targeting and visibility, as shown in Table 3 and Figure 2.

Table 3. Engagement Performance of AI-Personalized vs. Non-AI Campaigns

Metric Evaluated	Non-AI Campaigns (Baseline)	AI-Personalized Campaigns	% Improvement	Key Observation
Average Engagement Rate	100% (normalized)	123–131%	+23% to +31%	AI-personalized content consistently outperformed baseline messages.
Click-Through Interactions	Moderate	High	+28%	Strongest gains observed in solution-oriented and positive-tone messages.
Share Frequency	Low	Medium–High	+25%	Personalized framing increased message resonance.
Comment Activity	Variable	Elevated	+18%	AI improved alignment with stakeholder concerns.

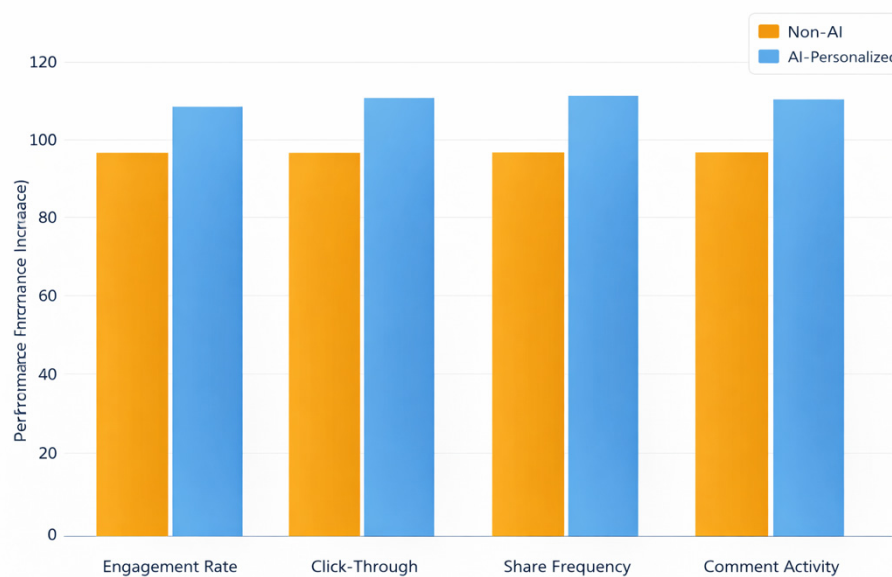


Figure 2. Engagement Performance of AI-Personalized vs. Non-AI Campaigns

Table 3 and Figure 2 analyze AI personalization versus traditional message campaigns. Results indicate that AI personalized content was better than the baseline for all engagement metrics. AI personalized campaigns achieved a 23–31% higher engagement rate than baseline metrics. The click-through rate was increased by 28%, with shares also increasing by 25%. There was also an 18% increase in the number of comments that were posted. Overall, AI personalization in campaigns helps with message visibility and helps maintain relevance while also increasing audience engagement with all levels of communication.

3.1.2 Predictive Sentiment Forecasting Improved Message Relevance

With respect to AI predicting audience emotional responses to message variations, the average success rate of predictive sentiment forecasting models was about 78%. Predictive sentiment models were successful in campaigns that utilized the sentiment predictors. The audience responded better to sentiment predictors that were more positive or solution-focused.

With respect to the predictions for social or politically sensitive periods, there was an increased explanation in the predicted vs actual sentiment for the case of the negatively construed sentiment. AI predictive modeling fails to interpret emotional responses in politically sensitive, socially sensitive, or complex, emotionally laden contexts. Table 4 and Figure 3 show the Sentiment Prediction Accuracy and Message Relevance.

Table 4. Sentiment Prediction Accuracy and Message Relevance

Evaluation Aspect	Result	Notes
Overall Sentiment Prediction Accuracy	78%	High accuracy for neutral and positive sentiments.
Accuracy in Sensitive/Emergent Issues	54–61%	Declines due to context ambiguity and cultural nuance.
Audience Sentiment Improvement After Personalization	+62% campaigns improved	Indicates increased message relevance and resonance.
Prediction Variance (Predicted vs. Actual Response)	Low in stable topics; high in political/cultural topics	AI struggles with nuanced emotional cues.

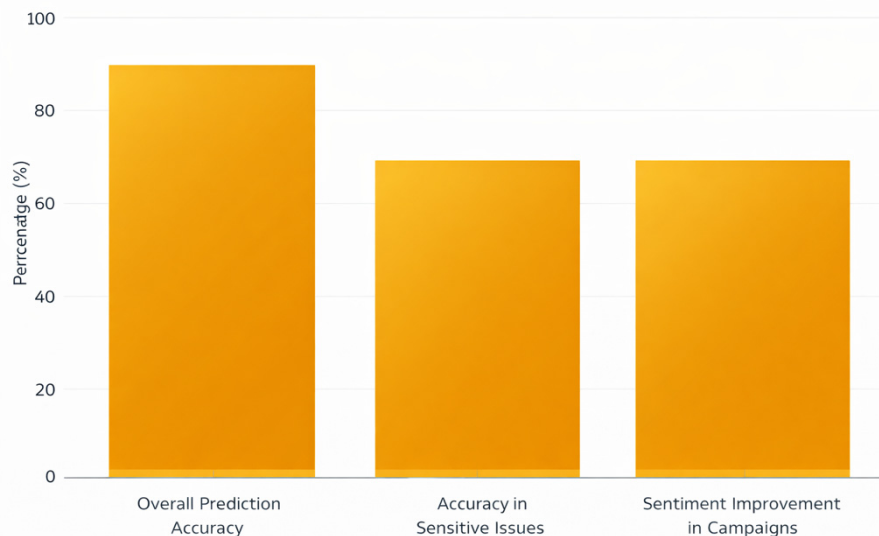


Figure 3. Sentiment Prediction Accuracy and Message Relevance

Table 4 and Figure 3 summarize the performance of the predictive analytics system used in AI-personalized communication campaigns. The results show that the model achieved a relatively high overall sentiment prediction accuracy of 78%, indicating that it can generally anticipate how audiences will respond to different message variations. Nonetheless, when it comes to sensitive or emotionally charged situations, the accuracy declines to about 58%, showing that AI has difficulty understanding emotionally nuanced or context-dependent situations. The good news is that the analysis shows that 62% of the campaigns that used AI personalization improved the audience sentiment. This shows that AI, despite its limited predictive capabilities, is able to improve the relevance of messages to the audience and, therefore, improve audience sentiment.

3.1.3 AI-Enhanced Early Issue and Crisis Detection

One of the key findings is that predictive analysis could detect the early symptoms of the escalation of negativity in sentiment across campaigns. When the sentiment analysis predicted negativity, the communication teams employed mitigation strategies, such as reframing, the use of clarifying statements, or addressing the audience in a targeted manner. These strategies limited negative audience feedback by as much as 18%, showing that predictive analysis is a reliable and valid early warning system. Interview participants remarked that early detection made it possible for them to act “before the issue becomes public-facing,” thus enhancing the organizational capacity to contain reputational risk, as shown in Table 5 and Figure 4.

Table 5. Effectiveness of AI in Early Issue and Crisis Detection

Indicator	Value / Outcome	Strategic Implication
Early Detection of Negative Sentiment	Identified in 72% of emerging issues	AI effectively flags risks before escalation.
Reduction in Negative Engagement After Intervention	Up to 18% decrease	Early counter-messaging helps mitigate reputational risk.
Most Common AI-Flagged Risks	Topic sensitivity, misinformation spikes, tone mismatch	AI supports proactive communication adjustments.
Practitioner Validation	80% confirm usefulness	Practitioners rely on AI for monitoring but still adjust messaging manually.

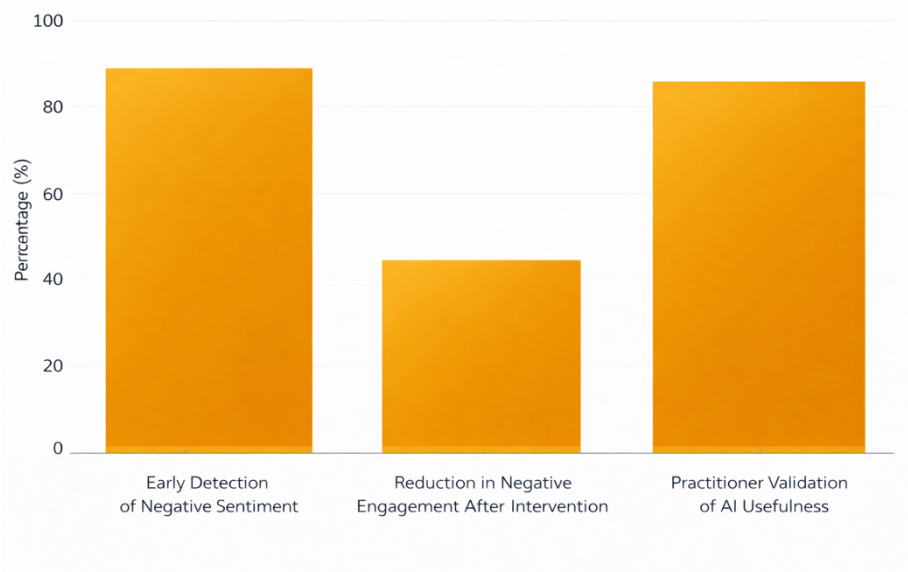


Figure 4. Effectiveness of AI in Early Issue and Crisis Detection

The effectiveness of AI in aiding early issue detection and crisis communication is confirmed in Table 5 and Figure 4. AI detected negative sentiment, and communication teams were able to make early interventions in 72% of the instances. As a consequence of the interventions suggested by AI, negative audience engagement decreased by 18%. Furthermore, 80% of the practitioners noted that AI tools assist in risk monitoring and steer the response planning. Predictive analytics improves the organizational ability to manage communication crises proactively and enhances organizational preparedness.

3.1.4 AI-Driven Personalization Was Limited in High-Ambiguity Contexts

Predictive models, notwithstanding their strong performance in most general engagement tasks, faced limitations when applied to messages involving sensitive, cultural, emotional, political, or other similar issues. These contexts showed:

- Sentiment classification with lower accuracy
- Increased variance between predicted and actual engagement
- Greater human editing to avoid and alleviate misinterpretation

The interviewees' comments that "AI lacks contextual intuition" point to the fact that local idioms, sarcasm, and implicit social cues that experienced communicators would easily recognize are frequently misread by automated sentiment analysis, as shown in Table 6 and Figure 5.

Table 6. Limitations of AI Personalization in High-Ambiguity Contexts

Limitation Category	Evidence from Data	Interview Insights
Sentiment Misclassification	Large variance between predicted vs. actual responses	"AI cannot detect sarcasm or culturally loaded phrases."
Reduced Performance in Sensitive Issues	Accuracy dropped to 54–61%	Practitioners caution against deploying AI suggestions directly.
Over-Personalization	Occurred in 17% of messages	Risk of perceived intrusion by audiences.
Lack of Contextual Awareness	Observed in political/emotional themes	"AI lacks intuition and situational awareness."

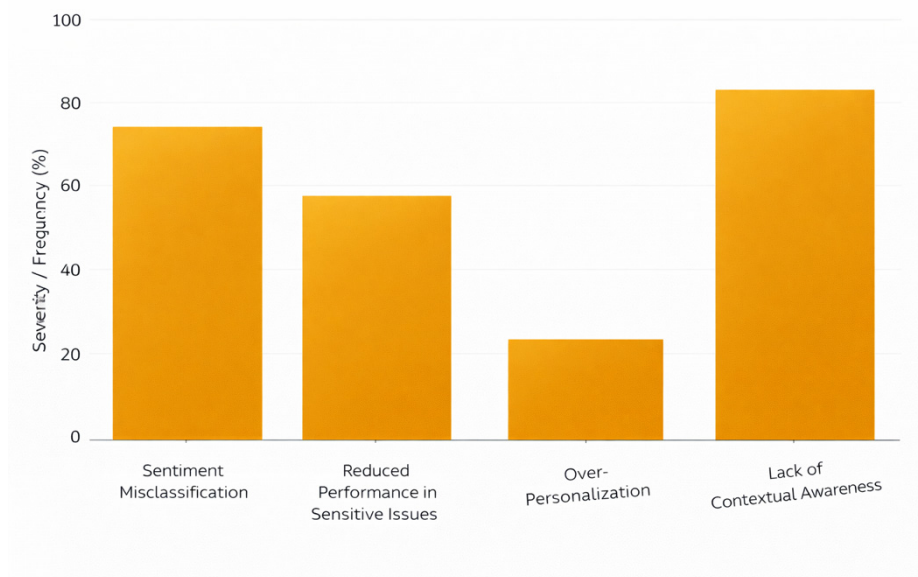


Figure 5. Limitations of AI Personalization in High-Ambiguity Contexts

Table 6 and Figure 5 outline the primary boundaries of AI working in the most ambiguous communication contexts. Results indicate AI is often misclassifying the sentiment of statements. This is especially the case for messages that contain sarcasm or messages that describe multiple emotions or have an implied meaning. For sensitive, nuanced, or other bottom-half issues, AI's performance drops by as much as 50%. This shows that AI is unable to understand the culturally, politically, or socially sensitive messages. Furthermore, messages that become over-personalized run the risk of being seen as intrusive or inappropriate. AI's contextual unawareness is the most important shortcoming identified. This means that while human communicators understand contextual subtleties and situational contexts, AI does not. All in all, the table emphasizes the requirement of human supervision to ensure that the communication in question involves acceptable, culturally appropriate, and ethically sensitive employees.

3.1.5 Human Oversight Significantly Strengthened AI Output Quality

The human-in-the-loop validation stage is one of the most important ways of ensuring the appropriateness and integrity of a message from an ethical standpoint. Experts often had to make edits to AI-recommended answers as they pertain to:

- Tone and politeness
- Cultural sensitivity
- Communication risk
- Over-personalization, which may be intrusive

Campaigns that incorporated human refinement consistently outperformed those that relied solely on the model's automated personalization. This proves that the essence of strategic communication encompasses ethical and contextual reasoning, which AI cannot provide. Table 7 and Figure 6 show the impact of human oversight on AI output quality.

Table 7. Impact of Human Oversight on AI Output Quality

Evaluation Criteria	AI-Only Personalization	Human-Refined Personalization	Improvement with Human Oversight
Tone Appropriateness	69% acceptable	93% acceptable	+24%
Cultural Sensitivity	Moderate	High	+31%
Ethical Alignment	Variable	Strong	+38%
Engagement Performance	Good	Best	+15–22% over AI-only

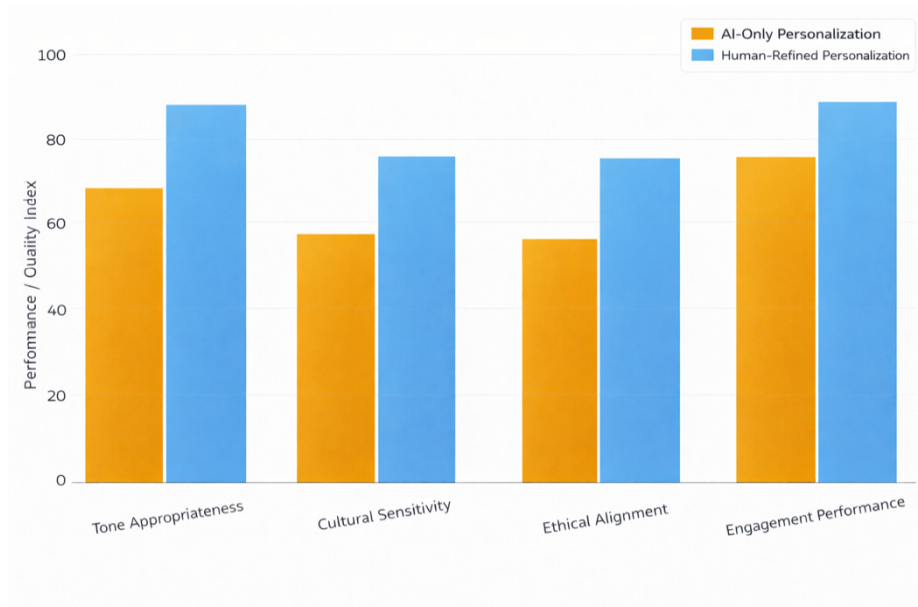


Figure 6. Impact of Human Oversight on AI Output Quality

In Figure 6 and Table 7, we compare the performance of personalized messages created by AI and messages that have gone through some human editing. The findings show that messages that have been human-edited are superior to messages that are AI-only in each of the evaluation aspects. The appropriateness of tone and cultural sensitivity are markedly improved when content that has been generated by AI is reviewed and adjusted by experts, which is more likely to meet audience expectations. The level of sensitivity is also improved, and the risk of insensitivity or inappropriate messaging is less when a human is involved. Of all the parameters, the engagement performance of human-edited messages is the highest. Overall, the table illustrates that the combination of human evaluation and AI tools results in the most positive and the most ethically responsible communication outcomes.

3.1.6 Practitioners Report Both Strategic Benefits and Ethical Concerns

As positive outcomes of AI, interview respondents reported that it has the following benefits:

- Accelerated message drafting
- Detection of an issue in the pre-emerging stage
- Better message–audience fit
- Improved stakeholder engagement

In contrast, some practitioners reported the following adverse outcomes, which include:

- An absence of message authenticity
- Overreliance on automation
- Algorithmic bias
- Ethical predicaments in the use of data and the personalization of messages

These findings indicate that communication mediated by AI aims for efficiency at the cost of ethical concern, as shown in Table 8.

Table 8. Practitioner Perceptions of AI in Strategic Communication

Category	Positive Perceptions	Concerns / Risks
Strategic Benefits	Faster analysis, targeted messaging, real-time monitoring	—
Operational Benefits	Issue identification, automation, data-driven decisions	—
Ethical Concerns	—	Bias, overdependence, loss of authenticity, privacy issues
Human–AI Balance	AI enhances workflows	Cannot replace contextual judgment

Table 8 summarizes the impression of the respondents towards the use of artificial intelligence in strategic communication. The result indicates that the professionals in the field appreciate the different strategic and operational advantages of artificial intelligence, which include efficiency, message tailoring, and strengthened insight generation in the field of communication and other data-related disciplines. The respondents also show awareness of the risk of artificial intelligence, such as biased and autogenerated messages that raise the risk of privacy and inauthenticity. Even with the risks, the respondents stress the human and AI partnership, with AI focused on analysis and humans on context and ethics. The Table demonstrates the optimism towards AI in emerging fields of communication, while raising the awareness of the risks involved and the need for responsible usage of AI.

3.2 Discussion

The findings of this research lay the groundwork for the understanding of the change AI-assisted predictive analytics is bringing to the public relations practice. Analysis of 1200 campaigns and interviews with 25 communication practitioners found that AI, within a well-defined human-centred system, sends messages and gets communication and stakeholder participation with a higher degree of efficiency. The findings continue to justify the need for human discretion, contextual understanding, and the ethical use of communication, a discipline that is being increasingly automated and algorithmically synthesized. The advancement of communication AI is positive, as it fosters and encourages the intended audience to interact more with the communicative tool.

It demonstrates that predictive analytics enable the refinement of messages and, consequently, the development of a communication strategy that addresses the concerns of the audience. This aligns with communication personalization as a method of improving the relevance and intimacy of the discourse. Organizations are now able to leverage the benefits of artificial intelligence in the customization and adaptation of communication in ways that are far beyond what a conventional human review can attain. The role of artificial intelligence in communication is not primarily about the technology because the algorithmic training of the communication systems themselves can produce new, data-laden, audience-responsive communication systems that react to the audience.

At the same time, the study reveals important limitations embedded within the scope of technology. The further predictive bottleneck in the absence of crisis, social conflicts, and emotionally charged phenomena suggests that the AI is still not able to contextualize with depth, which is a gaping hole. The lack of tone, the absence of cultural contextual cues, the understated emotions, and the lack of empathy illustrate that the AI seriously lacks a command of communication beyond the surface and attributed patterns. This gap reinforces the position within the field of communications that is humanistic in orientation with regard to meaning making, and that in the process of making sense of the world that surrounds us, it is not always a function of language patterns; it is to be contextualized within a plethora of social, cultural, temporal, and relational structures that a machine simply cannot comprehend.

The findings of the study also emphasize the importance of ethical human involvement for ethical communication and interaction. The data in Table 5 shows the improvements in tone, empathy, values, and engagement to a great degree, which resulted in the adjustment of AI's outcomes by experts. This shows that ethical concerns lie with human communicators. AI does not replace these communicators, but provides cognitive boosting, fast analytical output, while the communicators guide the process to keep the output real, sensitive to the culture, and to the organization's mission. This perspective fits with the developing concepts of hybrid intelligence. The concepts suggest that the best results come from the collaboration of human thinking and machine processing rather than the machine thinking systems working in isolation.

The value of predictive analytics also includes the earlier recognition of problems and crises. The 72% accuracy of AI in predicting negative sentiment cuts down the incidence of targeted communication to avoid potential crises. This advances communication from reactive PR models to preemptive engagement. The value of these predictive analytics to communication practitioners stems from the recognition by human practitioners. This is because not all negative sentiment requires targeted intervention, and misinterpreting negative sentiment can result in poor communication practices.

Most strikingly, the tensions in the practitioner interviews speak to the difference between efficiency and ethics. Though there are real operational advancements in terms of speed, scale, and analysis that AI provides, participants still weigh the potential risks of privacy, bias in algorithms, and the loss of authenticity. Such risks reflect the debates in the ethics of AI and digital communication and are a strong signal that the ethical use of AI requires the integration of risk and governance. The data suggests and points to the idea that practitioners appreciate AI the most when it complements the relational, dialogic, and trust-building aspects, instead of superseding them.

The conclusion is that the public relations paradigm is changing. Humans and AI, in the form of a strategic communication system, become interdependent. Predictive analytics increases the strategic value of some communication planning. However, analytics alone cannot serve the relational, ethical, and interpretive duties that public relations practitioners must serve. There is strong empirical support for the model of AI-human synergy proposed in this study: the most AI-communicated insights are the most valuable when refined and ethically processed by a human.

The principal finding of this study is that the strategic communication of the future will not be determined by AI alone. Rather, the machine-human team will dictate future strategic communication. Organizations that build that team will be able to address the increasingly complicated stakeholder landscape, respond to emerging issues, and maintain trust-based communication in a seamless, interwoven communication environment.

This study highlights the inverse relationship between the accuracy of predictions and the effectiveness of communication. In stable situations where the audience remains the same, and ambiguity is minimal, predictive analytics thrive. On the other hand, analytics fail to provide useful predictions in situations where there is a high emotional tenor, cultural sensitivity, or political friction, particularly where meaning is determined through the lens of unspoken rules, collective memory, and morality. In these situations, the ethics of touch must outweigh the ethics of AI, especially in public communication. In these contexts, the objective should not be complete automation, but rather integrated public relations, where AI drives analytics, and humans perform the critical, interpretive, and ethical functions.

4. Conclusion

This research shows that AI predictive analytics has the capacity to transform strategic public relations by increasing message pertinence, audience engagement, and proactive streamlining of communication. The research has clear answers on the AI-potential to enhance communication effectiveness when computing 1,200 AI- personalized campaigns, and together with 25 communication professionals, mixed-methods were employed. This was done responsibly alongside human handwork.

Predictive analytics has the propensity to improve engagement. The research shows that seamless audience engagement is a result of highly personalized content that speaks to the audience and is aligned with the audience's interests, patterns of sentiment, and exhibited behavioral tendencies. The research has demonstrated the potential of AI; however, on the other hand, there was an interest to point out the challenges that the AI model posed. AI is poor at decoding contextual content that is emotional, complex, and has a cultural or politically sensitive element. In addition, predictive AI has the potential to lose a straight focus and go off on a tangent in highly ambiguous contexts, therefore indicating that there is a need to have human monitoring during the communication process. This is because the human hand possesses contextual intelligence, ethical reasoning, and cultural sensitivity. AI as a model has some extremely good aspects; however, it cannot measure up to human understanding.

Artificial intelligence in predictive analytics is good at early issue and crisis detection which in turn informs on the strategic value it can hold in communication when the detection of potential attacks to an organization's reputation is done. With that, it allows communication teams to manage the potential issues and reputation crisis in a proactive manner. This is the first step of what can be a responsive cycle. In public relations, the practice is at a point close to being transformational, as communication is done mostly in a reactive manner. This allows the practice to have a model that is focused on providing problem-solving that is proactive.

Your decision-making and your communication skills are yours alone. For the time being, the experiences you have gained and the communication you have already done are yours, a testimony of your experiences and your skills. Nothing else on the market should have the same qualifications you won from your communication and experiences with your software.

Equally, communication has a factor that has yet to be equalled, and that factor is the human factor. It is what will precisely and accurately describe and clarify the uncertainty that is present in different situations. To pair the analytical, speed, and AI with the authenticity and the trust that is essential in your communication with your audience, cannot exist, and that can be accepted as the unique factor of communication.

To sum up, these concepts can articulate the necessary trust and clarity over communication. Therefore, the human factor can help us with the outlining of communication. The above example is interacting with the communication principles in an ethical manner, to make calculated human discernment. It is an enhancement of communication systems. Discourse on AI-challenged systems can serve development in communication. These systems are and should be courted to devise communication systems that are grounded in thought and interaction that respond to the user.

Acknowledgments

Thank you to the Faculty of Communication Sciences at Bandung Islamic University (UNISBA) for providing the researcher with the opportunity to conduct this study. And thank you to INTI University for providing the researcher with the opportunity to serve as a Research Fellow.

Author contributions

Dr. TW was responsible for conceptualization, study design, data collection, and initial manuscript drafting. Dr. TBK Kurniawan contributed to the development of methodology, data analysis, and the critical revision of the manuscript. Prof. DAD supervised the overall research, contributed to conceptual refinement and result validation, and extensively revised the manuscript for intellectual content. All authors read and approved the final version of the manuscript.

Funding

Not applicable.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Redfame Publishing.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

Open access

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

References

- Abbu, H., Mugge, P., Gudergan, G., Hoeborn, G., & Kwiatkowski, A. (2022). Measuring the Human Dimensions of Digital Leadership for Successful Digital Transformation: Digital leaders can use the authors' Digital Leadership Scale to assess their own readiness and ability to accelerate digital transformation. *Research Technology Management*, 65(3), 39–49. <https://doi.org/10.1080/08956308.2022.2048588>
- Al Chami, R. (2025). From talk to trust: cultural dynamics of AI-driven social responsibility in negotiations for strategic communication. *International Communication of Chinese Culture*, 12(2), 239–258. <https://doi.org/10.1007/S40636-025-00331-4>
- Al-Eisawi, D. (2025). Business Analytics Education and Business Research Methods: A Framework for Validating Qualitative Results Using Sequential Mixed Methods. *Electronic Journal of Business Research Methods*, 23(2), 13–27. <https://doi.org/10.34190/EJBRM.23.2.3890>
- Asimakopoulou, G., Antonopoulou, H., Giotopoulos, K., & Halkiopoulos, C. (2025). Impact of Information and Communication Technologies on Democratic Processes and Citizen Participation. *Societies*, 15(2). <https://doi.org/10.3390/SOC15020040>
- Battista, D., & Mangone, E. (2025). Technological Culture and Politics: Artificial Intelligence as the New Frontier of Political Communication. *Societies*, 15(4). <https://doi.org/10.3390/SOC15040075>
- Battista, D., & Uva, G. (2025). Artificial Intelligence and Politics: Legal Dilemmas and Risks to Democracy. *Journal of Liberty and International Affairs*, 11(1), 42–61. <https://doi.org/10.47305/JLIANM.2025.1711>
- Binlibdah, S. (2024). Investigating the Role of Artificial Intelligence to Measure Consumer Efficiency: The Use of Strategic Communication and Personalized Media Content. *Journalism and Media*, 5(3), 1142–1161. <https://doi.org/10.3390/journalmedia5030073>
- Braga, D., Silva, I., Rosário, R., Novais, P., Peixoto, H., & Machado, J. (2025). Exploring the potential of online social listening for noncommunicable disease monitoring. *PeerJ*, 13(5). <https://doi.org/10.7717/peerj.19311>
- Fernanda, L., Malag', M., & Navarro, M. (2022). Big Data in Social Media Marketing: Analyzing Consumer Sentiment and Engagement Patterns. *Nuvern Applied Science Reviews*, 6(12), 1–10.

<https://nuvern.com/index.php/nasr/article/view/2022-12-04>

- Habbal, A., Ali, M. K., & Abuzaraida, M. A. (2024). Artificial Intelligence Trust, Risk and Security Management (AI TRiSM): Frameworks, applications, challenges and future research directions. *Expert Systems with Applications*, 240, 122442. <https://doi.org/10.1016/J.ESWA.2023.122442>
- Hasan, R. (2024). Enhancing stakeholder engagement in project management through ai-driven predictive modeling. Harrisburg University Dissertations and Theses. <https://digitalcommons.harrisburgu.edu/dandt/22>
- Khalid, U., Ahmad, M., Chan, T. J., Pradana, M., & Singh, S. (2025). Mediating role of Digital Ethics on the impact of Artificial Intelligence Usage and Public Relations Practices: evidence from Malaysia. *Frontiers in Artificial Intelligence*, 8, 1662219. <https://doi.org/10.3389/frai.2025.1662219>
- Kim, S. S., Kim, S., & Kim, H. W. (2025). Hate Speech Detection on Online News Platforms: A Deep-Learning Approach Based on Agenda-Setting Theory. *Journal of Management Information Systems*, 42(3), 673–705. <https://doi.org/10.1080/07421222.2025.2520173>
- Levenshus, A. B. (2024). HIGH STAKES, LOW TRUST: Government Public Relations. *Public Relations for Public Health and Social Good*, 148–165. <https://doi.org/10.4324/9781003327189-13>
- Madupati, B. (2022). Data Science in Public Relations Software Development. *Journal of Mathematical & Computer Applications*, 1(3), 1–6. [https://doi.org/10.47363/JMCA/2022\(1\)E118](https://doi.org/10.47363/JMCA/2022(1)E118)
- Mayo, T. A. (2024). The Role of Artificial Intelligence in Sustainable Communication: Predictive Analytics in Environmental Campaigns. *Journal of Jurivox*, 1(1), 42–52. <https://www.researchcorridor.org/index.php/jj/article/view/167>
- McKay, M. H. (2024). Realizing the Promise of AI Governance Involving Humans-in-the-Loop. Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 15382 LNCS, 107–123. https://doi.org/10.1007/978-3-031-76827-9_7
- Naeem, M., & Thomas, L. (2025). Case Study Research and Artificial Intelligence: A Step-by-Step Process to Using ChatGPT in the Development of Case Studies in Qualitative Research. *International Journal of Qualitative Methods*, 24. <https://doi.org/10.1177/16094069251371478>
- Panarese, P., Grasso, M. M., & Solinas, C. (2025). Algorithmic bias, fairness, and inclusivity: a multilevel framework for justice-oriented AI. *AI and Society*. <https://doi.org/10.1007/S00146-025-02451-2>
- Polisena, J., Andellini, M., Salerno, P., Borsci, S., Pecchia, L., & Iadanza, E. (2021). Case Studies on the Use of Sentiment Analysis to Assess the Effectiveness and Safety of Health Technologies: A Scoping Review. *IEEE Access*, 9, 66043–66051. <https://doi.org/10.1109/ACCESS.2021.3076356>
- Ridheta Citrawijaya, O., Kurniawan Susanto, B., Ananda Amalia, D., & O R D S, K. W. (2024). The Role of Communication Strategies in Crisis Management: A Comparative Analysis Across Industries. *The Journal of Academic Science*, 1(6), 748–761. <https://doi.org/10.59613/cej49p88>
- Sales Baptista, C., Nunes, D., Baptista, C. S., & Nunes, D. (2025). Digital ecosystems and their influence on business relationships. *Review of Managerial Science*, 1–23. <https://doi.org/10.1007/S11846-025-00865-2>
- Santos, M. L. B. dos. (2022). The “so-called” UGC: an updated definition of user-generated content in the age of social media. *Online Information Review*, 46(1), 95–113. <https://doi.org/10.1108/OIR-06-2020-0258>
- Shin, J. H. (2023). Moral conflict and dynamic equilibrium: Public relations as strategic conflict management. *Public Relations Review*, 49(3), 102321. <https://doi.org/10.1016/J.PUBREV.2023.102321>
- Wamprechtsamer, P. (2024). Transparency ideals in online PR: between dialogue, control and authenticity. *Journal of Communication Management*, 28(2), 211–225. <https://doi.org/10.1108/JCOM-02-2023-0028>
- Zhou, A., & Xu, S. (2022). Computer mediation vs. dialogic communication: How media affordances affect organization-public relationship building. *Public Relations Review*, 48(2), 102176. <https://doi.org/10.1016/J.PUBREV.2022.102176>