THE EFFECT OF GOVERNMENT INSTAGRAM CONTENT ON PUBLIC AWARENESS OF FIRE PREVENTION: A QUANTITATIVE STUDY IN TANGERANG CITY, INDONESIA

Abstract

1 This study examines the effect ofgovernment Instagram contenton public awareness of fire prevention in Tangerang
2 City, Indonesia.Urban fire risk remains a persistent challenge in rapidly growing cities, where dense settlements and
3 limited safety awareness increase vulnerability. As digital platforms become central to government communication,
4 social media particularly Instagram offers new opportunities for preventive risk communication through visually
5 driven content. This research adopts a quantitative explanatory survey design involving 100 Instagram users who
6 had been exposed to fire prevention content from the official government account. Data were collected through an
7 online questionnaire measuring perceptions of government Instagram content quality (visual appeal, message clarity,
8 relevance, and usefulness) and public awareness of fire prevention, encompassing knowledge, attitudes, and
9 preventive behavioral tendencies. The data were analyzed using simple linear regression. The findings indicate that
10 government Instagram content has a positive and statistically significant effect on public awareness of fire
11 prevention ($\beta = 0.681$; $p < 0.001$), with an R^2 value of 0.512. This suggests that more than half of the variance in
12 public awareness can be explained by the quality of government Instagram content. The study contributes to
13 government communication and risk communication literature by shifting the focus from engagement metrics to
14 substantive awareness outcomes. Practically, the results highlight the importance of strategic, visually oriented
15 social media content as a preventive communication tool, which should be integrated with offline fire safety
16 initiatives to enhance urban fire risk reduction.
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19 *Key words:-*
20 Fire Prevention, Government Instagram, Public Awareness, Risk Communication, Social Media
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Introduction:-

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24 Urban fire risk remains a persistent challenge in rapidly growing cities, particularly in
25 developing countries where population density, informal housing, aging electrical infrastructure,
26 and limited public safety awareness intersect. Fires in urban environments are not merely
27 technical failures but social risks shaped by human behavior, knowledge gaps, and everyday
28 safety practices. Recent disaster risk reduction studies emphasize that a significant proportion of
29 urban fire incidents are preventable through improved public awareness, preparedness, and
30 behavioral change (Cvetković et al., 2022; Kurata et al., 2023). Consequently, fire prevention
31 increasingly depends not only on emergency response capacity but also on effective public
32 communication strategies that can influence how individuals perceive risks and adopt preventive
33 behaviors.

34 Public awareness of fire prevention is closely related to knowledge of hazards, attitudes toward
35 safety regulations, and willingness to implement preventive actions in daily life. Behavioral
36 models such as Protection Motivation Theory demonstrate that media exposure, perceived
37 severity, response efficacy, and self-efficacy play crucial roles in motivating individuals to adopt
38 fire-safe behaviors (Kurata et al., 2023). However, traditional face-to-face education and training
39 programs often struggle to reach broad urban populations consistently, especially younger
40 demographics who rely heavily on digital media for information. This limitation has prompted

public institutions to explore digital platforms as alternative and complementary channels for risk communication.

In recent years, government use of social media has expanded significantly as part of broader digital government and e-government initiatives. Social media platforms enable public institutions to disseminate information rapidly, interactively, and at relatively low cost, while also allowing two-way communication with citizens. Research in government communication indicates that social media is no longer merely a broadcasting tool but has become an integral component of public service delivery, transparency, and citizen engagement (Yuan et al., 2023; Criado et al., 2023). When used strategically, government social media can enhance public understanding of policies, increase trust in institutions, and support behavior-oriented public campaigns.

Among various social media platforms, Instagram has emerged as a particularly influential medium due to its visual orientation and popularity among urban populations. Visual contentsuch as images, short videos, reels, and infographicshas been shown to facilitate faster cognitive processing and stronger message retention compared to text-heavy communication (Al-Omoush et al., 2023). For risk communication, visual storytelling can translate complex safety information into practical, easily understood guidance, making Instagram a promising platform for fire prevention education. Studies examining public sector Instagram use demonstrate that message clarity, visual appeal, and relevance significantly affect audience engagement and comprehension (Wukich, 2022; Malik et al., 2021).

Nevertheless, high engagement metrics such as likes, comments, or shares do not necessarily translate into increased public awareness or behavioral change. Government communication research highlights a critical distinction between superficial engagement and substantive cognitive or behavioral outcomes (Bonsón et al., 2021; Wukich, 2022). While many studies focus on engagement performance, fewer investigate whether exposure to government social media content actually improves public understanding of risks or motivates preventive action. This gap is particularly evident in the context of disaster and fire prevention communication, where effectiveness should ultimately be measured by awareness and preparedness rather than online interaction alone.

Risk communication literature further emphasizes that the effectiveness of safety messaging depends on message framing, emotional tone, and instructional clarity. Crisis and Emergency Risk Communication (CERC) frameworks suggest that messages should balance urgency with efficacy, ensuring that audiences not only recognize risks but also feel capable of taking preventive measures (Ho et al., 2024). Poorly designed messages may increase anxiety without fostering action, whereas well-structured visual messages can enhance trust and compliance. Trust itself is a critical factor, as public willingness to follow government safety guidance is closely linked to perceptions of institutional credibility and transparency (Li, 2025; Khan et al., 2021).

Empirical studies also show that government social media can shape public trust and policy perceptions when communication aligns with public expectations and demonstrates responsiveness (Li, 2025; Criado &Villodre, 2023). In disaster-related contexts, inconsistent or unclear messaging may undermine confidence and reduce compliance with preventive recommendations. Therefore, evaluating not only the presence but also the impact of government Instagram content is essential for evidence-based public communication planning.

In Southeast Asian urban contexts, including Indonesia, social media penetration is among the highest globally, with Instagram being one of the most frequently used platforms by young and middle-aged adults. This creates both opportunities and challenges for government agencies responsible for public safety. While Instagram offers wide reach and strong visual affordances, competition with entertainment content and information overload may dilute the impact of educational messages. Studies on government Instagram accounts in developing countries indicate that content strategy, consistency, and perceived usefulness are key determinants of audience attention and message effectiveness (Guo et al., 2025; Malik et al., 2021).

Despite growing interest in government social media research, empirical evidence linking Instagram content to public awareness of fire prevention remains limited. Many existing studies examine health communication, political communication, or institutional image building, leaving disaster prevention—especially fire safetyrelatively underexplored (Criado et al., 2023; Wukich, 2022). Furthermore, most studies adopt qualitative or descriptive approaches, offering valuable insights into communication practices but providing limited causal evidence regarding content effects on public awareness and behavior.

In addition, local urban contexts with high fire risk, such as Tangerang City, Indonesia, have received little focused scholarly attention in international literature. As a rapidly urbanizing city within the Greater Jakarta metropolitan area, Tangerang faces recurring fire incidents linked to residential density and electrical hazards. Understanding how government Instagram content influences public awareness in such settings is crucial for designing communication strategies that are both context-sensitive and scalable. Quantitative analysis can provide robust evidence on the extent to which social media content contributes to awareness outcomes, complementing qualitative insights from previous research.

Recent studies on disaster preparedness emphasize that digital communication should be integrated into broader risk reduction strategies, combining online awareness-raising with offline training and community engagement (Ubieto-Artur et al., 2025; Seneviratne et al., 2024). However, before integration can be optimized, it is necessary to empirically assess the effectiveness of digital channels themselves. Measuring the effect of government Instagram content on public awareness of fire prevention provides a critical foundation for such integration.

115 Based on these considerations, this study seeks to examine the effect of government Instagram
116 content on public awareness of fire prevention using a quantitative approach. By focusing on
117 Tangerang City, Indonesia, this research addresses both empirical and contextual gaps in the
118 literature. Academically, it contributes to government communication and disaster risk
119 communication studies by shifting the analytical focus from engagement metrics to awareness
120 outcomes. Practically, the findings are expected to inform public institutions on how Instagram
121 can be used more effectively as a preventive communication tool, supporting evidence-based
122 strategies to reduce urban fire risk through enhanced public awareness.

123 **Research methods**

124 This study used a quantitative approach with an explanatory survey design to examine the causal
125 relationship between government Instagram content and public awareness of fire prevention. A
126 quantitative approach was chosen because it allows for objective measurement and hypothesis
127 testing through statistical analysis. The explanatory design was used to explain the extent to
128 which variations in the independent variable influence the dependent variable, rather than simply
129 describing government communication practices on social media. Therefore, this study focuses
130 on the effect of government Instagram content on public cognitive and affective outcomes in the
131 context of fire risk communication.

132 This research was conducted in Tangerang City, Indonesia, a high-density urban area with a
133 relatively significant fire risk. The study population consisted of Instagram users who had been
134 exposed to fire prevention content published through the city government's official Instagram
135 account. A purposive sampling technique was used to ensure that respondents were truly relevant
136 to the research object. The criteria were: at least 17 years old, active Instagram users, having
137 seen or interacted with fire prevention content, and residing or working in Tangerang City. Based
138 on Slovin's calculation with a 10 percent margin of error, 100 respondents were obtained as the
139 study sample, an adequate number for simple regression analysis in communication studies.

140 Data collection was conducted using a structured questionnaire distributed online. The
141 government Instagram content variable was measured through respondents' perceptions of visual
142 quality, message clarity, information relevance, and usefulness of fire prevention content.
143 Meanwhile, public awareness of fire prevention was measured through three main dimensions:
144 knowledge, attitudes, and tendencies toward preventive behavior. All items were measured using
145 a five-point Likert scale. Validity was tested using Pearson correlation, while instrument
146 reliability was tested using Cronbach's alpha. Data that met statistical assumptions were analyzed
147 using simple linear regression with SPSS software to test the effect of independent variables on
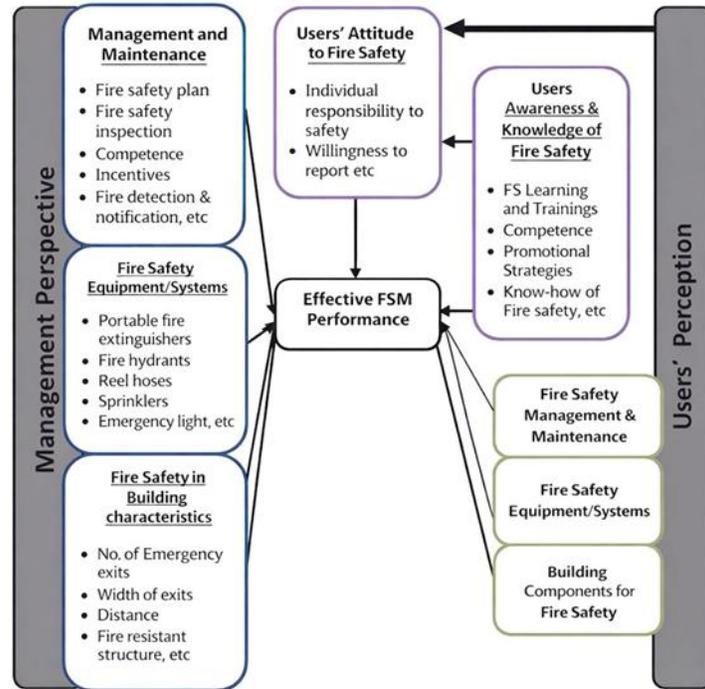148 the dependent variable.

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Figure 1. Conceptual framework of the study

Based on the theoretical framework of risk communication and government social media, this
study proposes one main hypothesis: H1: Government Instagram content has a positive and
significant effect on public awareness of fire prevention. The relationship between the variables
in this study is direct, with the quality of government Instagram content assumed to influence the
level of public awareness, reflected in increased knowledge, the formation of positive attitudes,
and tendencies toward preventive behavior. This conceptual relationship is visualized in the
Conceptual Framework in Figure 1, which depicts the direction of influence from the
independent variables to the dependent variable in a simple and measurable manner.

A. Results

B. Respondent Characteristics

A total of 100 respondents participated in this study. All respondents were active Instagram users
who had been exposed to government fire prevention content in Tangerang City. The
demographic profile indicates that the sample adequately represents urban social media users
who are the primary target of digital government communication.

Table 1. Respondent Characteristics (N = 100)

Characteristic	Category	Frequency	Percentage
Gender	Male	48	48%
	Female	52	52%
Age	17–25 years	34	34%

	26–35 years	41	41%
	>35 years	25	25%
Instagram Use	Daily	86	86%
	Several times/week	14	14%
Exposure to Fire Prevention Content	Seen repeatedly	63	63%
	Seen occasionally	37	37%

The data show that most respondents are frequent Instagram users and have repeated exposure to government fire prevention content, supporting the relevance of the sample for analyzing content effects.

C. Validity Test Results

Instrument validity was tested using the Pearson Product–Moment correlation method. All items measuring Government Instagram ContentandPublic Awareness of Fire Prevention showed correlation coefficients exceeding the critical r-value (r-table = 0.196, df = 98, α = 0.05).

Table 2. Validity Test Results – Government Instagram Content

Item	r-calculated	r-table	Sig.	Result
X1–X24	0.671 – 0.835	0.196	<0.001	Valid

Table 3. Validity Test Results – Public Awareness of Fire Prevention

Item	r-calculated	r-table	Sig.	Result
Y1–Y14	0.578 – 0.823	0.196	<0.001	Valid

All questionnaire items met the validity criteria and were retained for further analysis.

Reliability Test Results

Reliability was assessed using Cronbach's Alpha to measure internal consistency.

Table 4. Reliability Test Results

Variable	Number of Items	Cronbach's Alpha	Interpretation
Government Instagram Content	24	0.967	Very High Reliability
Public Awareness of Fire Prevention	14	0.929	Very High Reliability

Both variables demonstrated excellent reliability (α > 0.90), indicating that the instruments consistently measure the intended constructs.

Normality Test

The normality of residuals was tested using the One-Sample Kolmogorov–Smirnov Test.

Table 5. Normality Test Results

Statistic	Value
N	100
Mean	0.000
Std. Deviation	4.574
Test Statistic	0.059
Asymp. Sig. (2-tailed)	0.200

Since the significance value is greater than 0.05, the residuals are normally distributed. Thus, the regression model meets the normality assumption.

Simple Linear Regression Analysis

To test the research hypothesis, simple linear regression was conducted to examine the effect of government Instagram content on public awareness of fire prevention.

Table 6. Regression Coefficients

Variable	B	Std. Error	t-value	Sig.
Constant	12.317	2.104	5.86	<0.001
Government Instagram Content	0.681	0.078	8.74	<0.001

The regression coefficient indicates that government Instagram content has a positive and statistically significant effect on public awareness of fire prevention ($\beta = 0.681$, $p < 0.001$).

Coefficient of Determination

The explanatory power of the model was assessed using the coefficient of determination (R^2).

Table 7. Model Summary

R	R^2	Adjusted R^2	Std. Error
0.715	0.512	0.507	4.574

The R^2 value of 0.512 indicates that 51.2% of the variance in public awareness of fire prevention can be explained by government Instagram content. The remaining 48.8% is influenced by other factors not included in the model.

Hypothesis Testing

The hypothesis testing results are summarized as follows:

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H1: Government Instagram content has a positive and significant effect on public awareness of fire prevention.

Based on the regression analysis (t = 8.74; p < 0.001), H1 is accepted. This finding confirms that higher-quality government Instagram content is associated with higher levels of public awareness regarding fire prevention.

Summary of Results

Overall, the results demonstrate that government Instagram content significantly contributes to increasing public awareness of fire prevention in Tangerang City. The strong reliability of the instruments, fulfillment of regression assumptions, and substantial explanatory power of the model provide robust empirical support for the proposed conceptual framework.

Discussion

This study examined the effect of government Instagram content on public awareness of fire prevention in Tangerang City, Indonesia. The findings demonstrate that government Instagram content has a positive and statistically significant effect on public awareness, explaining more than half of the variance in awareness levels. This result confirms the central assumption of the study's conceptual framework, namely that digital government communication when designed and delivered effectively can function as a meaningful instrument for risk communication and preventive education.

The results strongly support the Uses and Effects perspective, which posits that media exposure produces cognitive, affective, and behavioral outcomes depending on content quality and relevance. In this study, respondents' exposure to visually engaging, clear, and informative Instagram content was associated with higher levels of knowledge, more favorable attitudes toward fire safety, and stronger tendencies toward preventive behavior. This finding aligns with prior research indicating that government social media content can move beyond information dissemination to shape public cognition and perception when audiences actively engage with the medium (Yuan et al., 2023; Bonsón et al., 2021).

From a risk communication standpoint, the findings reinforce the argument that fire prevention communication is most effective when it enhances awareness rather than merely conveying technical instructions. The relatively high explanatory power of Instagram content ($R^2 = 0.512$) suggests that digital communication plays a substantial role in shaping public understanding of fire risks in urban contexts. This supports previous disaster risk reduction studies emphasizing that awareness and preparedness are socially constructed through communication processes, not solely through formal training or regulatory enforcement (Cvetković et al., 2022; Kurata et al., 2023).

The results also highlight the importance of visual-based communication in public safety messaging. Instagram's affordances short videos, infographics, and simplified narratives—appear to facilitate faster comprehension and stronger message retention among users. This finding is consistent with research showing that visual content improves information processing

238 and engagement, particularly among younger and urban populations who dominate social media
239 usage (Al-Omoush et al., 2023; Malik et al., 2021). In the context of fire prevention, visual cues
240 such as evacuation routes, equipment demonstrations, or real incident scenarios may help
241 translate abstract safety principles into actionable knowledge.

242 However, the findings also reveal an important nuance: while government Instagram content
243 significantly increases knowledge and attitudes, its influence on preventive behavioral tendencies
244 appears more moderate. This pattern reflects a well-documented gap in risk communication
245 literature, where increased awareness does not automatically translate into sustained behavior
246 change. According to Protection Motivation Theory, behavioral change requires not only threat
247 awareness but also perceived response efficacy, self-efficacy, and enabling conditions (Kurata et
248 al., 2023). Social media content may raise awareness and concern, but without complementary
249 offline interventions such as drills, inspections, or community training behavioral transformation
250 may remain limited.

251 This finding has important implications for Fire Safety Management (FSM) theory and practice.
252 The conceptual framework adopted in this study emphasizes that effective fire safety
253 performance emerges from the interaction between management systems and users' perceptions.
254 The results suggest that government Instagram content primarily strengthens the users'
255 perception pathway, particularly awareness and attitudes, but must be integrated with
256 management and infrastructural components to maximize overall FSM performance. In other
257 words, digital communication enhances the "human factor" of fire safety, but cannot replace
258 physical systems, building design, or institutional enforcement.

259 The study also contributes to the literature on government social media effectiveness by shifting
260 the evaluative focus from engagement metrics to substantive public outcomes. While many
261 studies assess success based on likes, comments, or shares, this research demonstrates that
262 content effectiveness should be evaluated based on its ability to improve public awareness of
263 risk. This aligns with recent critiques in government communication research, which caution
264 against equating digital popularity with policy or safety impact (Wukich, 2022; Criado et al.,
265 2023).

266 In the context of developing countries, the findings provide empirical evidence that government
267 Instagram content can serve as a cost-effective and scalable communication tool for urban fire
268 prevention. Given high social media penetration and limited resources for large-scale training
269 programs, Instagram offers a practical channel for reaching diverse audiences quickly. However,
270 reliance on digital platforms alone risks exacerbating inequalities if certain groups lack access,
271 digital literacy, or trust in online government communication. This underscores the need for
272 inclusive communication strategies that combine digital outreach with community-based
273 approaches.

274 Despite its contributions, this study has several limitations. First, the use of a cross-sectional
275 survey limits causal inference beyond statistical association. Second, public awareness was
276 measured through self-reported perceptions, which may not fully capture actual behavior. Third,
277 the study focused on a single city and platform, limiting generalizability. Future research could

278 adopt longitudinal designs, include behavioral observation, or compare multiple social media
279 platforms to deepen understanding of digital risk communication effectiveness.

280 Overall, this study advances the understanding of how government Instagram content influences
281 public awareness of fire prevention, particularly within an integrated fire safety management
282 framework. The findings underscore that digital communication is not merely an auxiliary tool
283 but a central component of contemporary risk communication strategies. When strategically
284 designed and institutionally supported, government social media content can play a meaningful
285 role in strengthening public awareness and contributing to urban fire risk reduction.

286 **Conclusion**

287

288 This study demonstrates that government Instagram content has a positive and significant effect
289 on public awareness of fire prevention in Tangerang City, Indonesia. The findings confirm that
290 well-designed digital communication characterized by clear messages, relevant information, and
291 strong visual presentation can meaningfully enhance public knowledge, shape safety-oriented
292 attitudes, and support preventive awareness in urban fire-risk contexts.

293 Theoretically, this research extends government social media and risk communication scholarship
294 by shifting the focus from engagement metrics to substantive awareness outcomes, positioning
295 Instagram as an effective instrument within an integrated fire safety management framework.
296 Practically, the results suggest that government Instagram accounts should be treated not merely
297 as informational channels but as strategic tools for preventive education, ideally integrated with
298 offline training and institutional fire safety measures.

299 Overall, this study highlights the growing importance of digital government communication in
300 disaster risk reduction and underscores the need for evidence-based social media strategies to
301 strengthen public awareness and contribute to sustainable urban fire prevention.

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