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What Drives Audience Reach on Instagram? Evidence from an Indonesian Government Institution's Instagram Account

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Abstract

Optimizing social media content has become increasingly important for government institutions seeking to disseminate public information effectively in the digital era. Although public organizations consistently publish content on social media platforms, audience reach often varies substantially across posts, suggesting that not all content characteristics perform equally well. This study investigates the effects of posting time, content type, and hashtag count on audience reach on the Instagram account of Statistics Indonesia (BPS) of Kepulauan Bangka Belitung Province, with audience engagement acting as a mediating variable. Employing a quantitative explanatory approach, this research analyzes secondary data obtained from the Meta Business Suite, covering 445 Instagram posts published throughout 2024. Data were examined using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS. The findings demonstrate that content type and audience engagement have significant direct effects on audience reach, whereas posting time and hashtag count do not exhibit significant direct effects. Furthermore, audience engagement significantly mediates the relationships between content type and hashtag count with audience reach, but not between posting time and reach. These results highlight that engagement-oriented content strategies are central to maximizing audience reach for government institutions on Instagram.

Keywords: *Instagram, content characteristics, audience engagement, audience reach, government social media*

1. INTRODUCTION

The rapid development of digital communication technologies has fundamentally transformed the way organizations disseminate information and interact with the public. Social media platforms now play a central role in shaping public perception, information accessibility, and civic engagement. For government institutions, social media is no longer merely a supplementary communication channel, but a strategic tool for transparency, education, and public outreach (Kaplan & Haenlein, 2010).

Among various social media platforms, Instagram has experienced substantial growth due to its visual-centric features, algorithm-driven content distribution, and high user engagement rates. In Indonesia, Instagram consistently ranks among the most widely used social media platforms, cutting across demographic boundaries. Consequently, many public

sector organizations have adopted Instagram to communicate statistical data, policy updates, and public service information in a more accessible and engaging manner (Kaplan & Haenlein, 2010; Tricomi et al., 2023).

Statistics Indonesia (BPS) of Kepulauan Bangka Belitung Province actively utilizes its official Instagram account (@bpsbabel) to disseminate statistical releases, infographics, educational materials, and institutional announcements. Despite regular posting activity, the account exhibits notable disparities in performance, particularly in terms of audience reach. Some posts reach only a few hundred users, while others reach several thousand, even when published within similar timeframes.

Existing literature suggests that content characteristics such as posting time, content format, and hashtag usage significantly influence algorithmic visibility and user interaction on Instagram. Furthermore, Instagram's algorithm prioritizes content that generates early and sustained audience engagement, such as likes, comments, shares, and saves. For government accounts, achieving high engagement is often more challenging than for commercial or influencer accounts (Cvijikj & Michahelles, 2013; Sabate et al., 2014).

Despite the growing body of research on social media marketing and engagement, empirical studies focusing on government Instagram accounts, particularly in developing country contexts, remain limited. Moreover, few studies explicitly examine the mediating role of audience engagement between content characteristics and audience reach. Addressing this gap, the present study analyzes how posting time, content type, and hashtag count affect audience reach on Instagram, and to what extent these effects operate through audience engagement.

2. METHOD

This study adopts a quantitative explanatory approach to examine the relationships between content characteristics, audience engagement, and audience reach on Instagram within the context of a government institution. This design is appropriate because the research aims to test theoretically grounded relationships using empirical data and to estimate both direct and indirect effects within a structured analytical model (Hair et al., 2017; Sarstedt et al., 2021).

The object of analysis is the official Instagram account of Statistics Indonesia (BPS) of Kepulauan Bangka Belitung Province (@bpsbabel), selected due to its consistent publication of public information and educational content. The data used are secondary analytics obtained from the Meta Business Suite, which provides platform-generated metrics on reach and engagement.

The population consists of all Instagram posts published by the account, from which 445 posts uploaded between January and December 2024 were selected using purposive sampling. This period reflects stable algorithmic conditions and contemporary communication strategies. Posts with incomplete analytic data were excluded to ensure robustness.

The dataset includes photo posts, carousel infographics, and short-form videos (reels). Posting time was operationalized as posts uploaded before 15:00 WIB and those uploaded after 15:00 WIB. Content type was categorized into static (photo/carousel) and dynamic (reel/video) formats. Hashtag count reflects the total hashtags used per post. Audience

engagement comprises likes, comments, shares, and saves, while audience reach represents the number of unique accounts reached.

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software. Model evaluation focused on path coefficients, coefficients of determination (R^2), effect sizes (f^2), and mediation effects tested via bootstrapping (Hair et al., 2017; Chin, 1998). A 10% significance level was applied due to the exploratory nature of public-sector social media research.

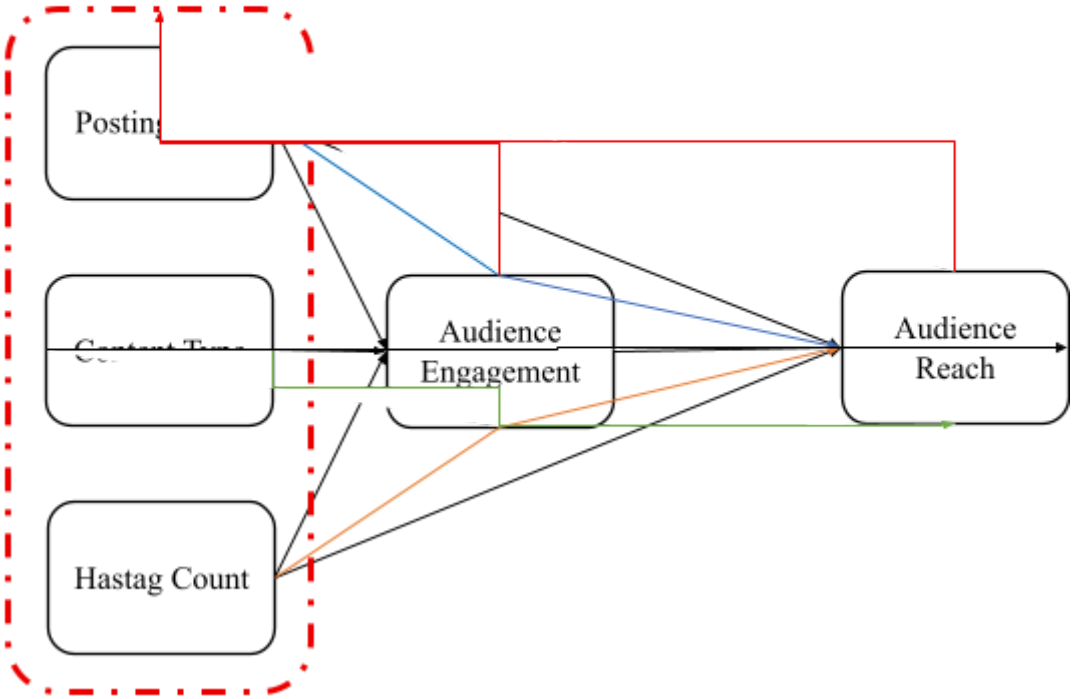

Figure 1. Conceptual Research Model

3. RESULTS AND DISCUSSION

The descriptive analysis examines patterns of posting behavior, content characteristics, and performance outcomes across 445 posts. Posts were predominantly published after 15:00 WIB, especially between 17:00–19:00, reflecting an assumption of higher audience activity outside office hours. However, higher posting frequency during these hours did not consistently yield higher reach.

Table 1. Posting Time Distribution and Average Reach

Posting Time	Number of Posts	Average Reach

Before 15:00 WIB	195	Moderate
After 15:00 WIB	250	High variation

Carousel posts constitute the largest share of content, reflecting an educational strategy using multi-slide infographics. Reels, though fewer, generate substantially higher engagement and reach.

Table 2. Content Type and Performance Overview

Content Type	Frequency	Average Engagement	Average Reach
Photo	Low	Low	Low
Carousel	High	Medium	Medium
Reel/Video	Medium	High	High

Hashtag usage varies widely, with most posts using three to six hashtags.

Table 3. Hashtag Usage Categories

Number of Hashtags	Dominant Reach Pattern
1–2	Moderate
3–6	Stable to High
>6	Inconsistent

Likes dominate engagement metrics, while saves are prominent for carousel infographics, indicating informational value. Reels show superior engagement-to-reach efficiency. Overall, performance reflects the interaction of content design, audience behavior, and algorithmic amplification.

Partial Least Squares–Structural Equation Modeling (PLS-SEM) was employed to analyze the structural relationships among posting time, content type, hashtag count, audience engagement, and audience reach. This approach is particularly suitable for this study because it emphasizes predictive accuracy, accommodates mediation analysis, and does not require strict assumptions of multivariate normality, characteristics that align well with social media analytics data (Hair et al., 2017).

The structural model specifies posting time, content type, and hashtag count as exogenous variables, audience engagement as a mediating endogenous construct, and audience reach as the final endogenous outcome variable. This specification reflects Instagram's engagement-driven algorithm, in which content dissemination is largely

determined by interaction signals rather than by content attributes alone (Tricomi et al., 2023; Sabate et al., 2014).

Model estimation was conducted using SmartPLS software. A bootstrapping procedure with a large number of resamples was applied to obtain standard errors, t-statistics, and confidence intervals for all structural paths, ensuring robust statistical inference for both direct and indirect effects.

The coefficient of determination (R^2) for audience engagement indicates a moderate level of explanatory power. This suggests that posting time, content type, and hashtag count collectively explain a meaningful proportion of variation in engagement behavior, while also implying the influence of additional contextual factors such as topic relevance and visual quality.

In contrast, the R^2 value for audience reach is relatively high, indicating substantial explanatory power. This result demonstrates that audience reach is strongly shaped by the variables included in the model, particularly audience engagement, confirming its central role in reach formation.

The direct path from content type to audience reach is positive and statistically significant. This finding indicates that dynamic content formats, especially reels or short-form videos, tend to achieve higher levels of reach than static formats such as photos or carousel infographics.

The effect size of content type suggests that format selection is a strategic determinant of visibility. Reels benefit from Instagram's algorithmic preference for motion-based and immersive content, which aligns with prevailing user consumption patterns.

Audience engagement exhibits the strongest direct effect on audience reach among all hypothesized paths. The magnitude of this relationship clearly identifies engagement as the dominant predictor of reach within the structural model. This finding provides strong empirical support for engagement-driven algorithm theory, which posits that platform algorithms prioritize content that signals relevance through measurable interactions such as likes, comments, shares, and saves.

Posting time does not demonstrate a statistically significant direct effect on audience reach. This indicates that, after controlling for content format and engagement, the timing of publication does not independently increase reach for the government Instagram account examined. Similarly, hashtag count does not show a significant direct effect on audience reach. Increasing the number of hashtags alone does not guarantee broader visibility or higher reach.

Mediation analysis reveals that audience engagement significantly mediates the relationship between content type and audience reach. This indicates that reel-based content enhances reach primarily by stimulating higher engagement rather than through a direct distribution advantage.

Audience engagement also significantly mediates the relationship between hashtag count and audience reach, suggesting that hashtags contribute to reach only when they facilitate discovery that leads to user interaction. No significant mediation effect is observed for posting time, indicating that temporal posting strategies neither directly nor indirectly influence audience reach through engagement.

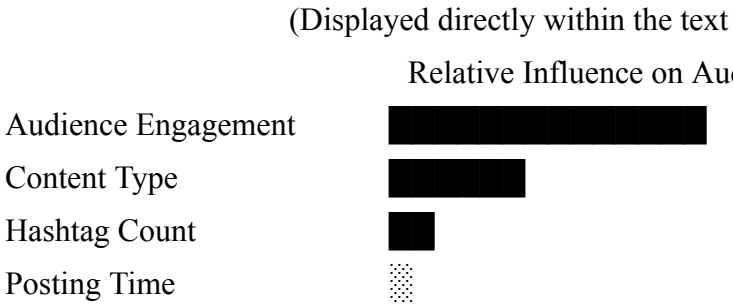

Figure 2. Relative Influence of Structural Predictors on Audience Reach

As illustrated in Figure 2, audience engagement exerts the strongest influence on audience reach, substantially exceeding the effects of content type, hashtag count, and posting time. Content type demonstrates a moderate influence, while hashtag count and posting time show relatively weak contributions to reach. This visualization reinforces the numerical results of the PLS-SEM analysis by clearly demonstrating that engagement acts as the primary transmission mechanism through which content characteristics affect reach outcomes.

Effect size (f^2) analysis further supports this interpretation. Audience engagement exhibits a large effect size on audience reach, content type shows a moderate effect size, and both hashtag count and posting time display small to negligible effect sizes. Predictive relevance (Q^2) assessment indicates that the structural model possesses strong out-of-sample predictive capability, particularly for audience reach. This suggests that the model is effective not only in explaining observed relationships but also in predicting future post performance.

From a theoretical perspective, these findings extend engagement-driven distribution frameworks into the context of government social media, which has been relatively underexplored compared to commercial or influencer-based accounts. From a practical standpoint, the results imply that government institutions should prioritize content strategies that actively encourage interaction, such as visually dynamic reels and concise, audience-oriented messaging, rather than relying on mechanical optimization tactics such as posting schedules or excessive hashtag usage.

Overall, the PLS-SEM analysis demonstrates that maximizing audience reach on government Instagram accounts depends primarily on the ability of content to generate meaningful, sustained, and algorithmically valuable engagement.

4. CONCLUSION

This study concludes that content type and audience engagement are the primary determinants of audience reach on Instagram for government institutions. Posting time and hashtag count do not directly influence reach, though hashtags have indirect effects via engagement. Engagement functions as the key mediating mechanism connecting content characteristics to reach.

Government institutions should prioritize reel-based and interactive content and adopt relevance-focused hashtag strategies. Emphasizing engagement can substantially improve public information dissemination.

The study focuses on a single institution and one year of data. Future research may incorporate multiple institutions, longitudinal designs, and additional metrics such as watch time.

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NOVELTY

This study provides empirical evidence of engagement-mediated content effects on reach within Indonesian government social media, an area still underexplored.

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