



How Content Quality Drives User Engagement and Effective Communication on Social Media: A Structural Equation Modeling Approach

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Abstract. This study investigates the mechanisms through which social media content quality drives user engagement and effective communication, examining the mediating role of user engagement and the moderating role of perceived ease of use. Drawing on the Technology Acceptance Model (TAM) and Uses and Gratifications Theory (UGT), a structural equation modeling (SEM) approach was applied to survey data collected from 612 social media users in Mainland China. The results reveal that content quality directly influences both user engagement ($\beta = 0.423$, $p < .001$) and effective communication ($\beta = 0.317$, $p < .001$), with user engagement partially mediating 65.3% of the total effect. Perceived ease of use significantly moderates the relationship between content quality and user engagement ($\beta = 0.215$, $p < .001$), strengthening the effect under high ease-of-use conditions. The structural model demonstrates excellent fit (CFI = 0.982, RMSEA = 0.048, SRMR = 0.031), explaining 76.3% of variance in effective communication.

Keywords: content quality; user engagement; effective communication; structural equation modeling; mediation analysis; technology acceptance model; social media.

1 Introduction

The rapid evolution of social media has reshaped organizational communication, creating both opportunities and challenges (Amanatidis et al., 2024). As platforms become content-saturated, understanding what drives genuine user engagement and effective communication is now a central research and practical concern.

This study addresses this need by proposing and testing an integrated model grounded in the Technology Acceptance Model and Uses and Gratifications Theory. It makes three contributions: (1) synthesizing prior research on content quality and communication effectiveness, including key unresolved debates; (2) developing a theoretical model that explains the mediating role of user engagement and the moderating role

of perceived ease of use; and (3) providing large-scale empirical evidence that quantifies both direct and indirect (via engagement) effects, thereby demonstrating the study's theoretical necessity.

2 Literature Review and Hypotheses

2.1 Social Media Content Quality

Recent evidence confirms content quality as a key driver of digital communication outcomes. Tyagi et al. (2022) found that brand content engagement mediates the relationship between influencer attributes and consumer behavior.

2.2 User Engagement as Mediator

A 2024 systematic review identified informational value, emotional resonance, and visual aesthetics as the strongest predictors of engagement metrics. Al-Mshashaqbeh (2025) showed that perceived authenticity and content personalization moderate the engagement-loyalty relationship.

2.3 Research Design and Sampling

A quantitative cross-sectional survey was conducted, integrating the Technology Acceptance Model and Uses and Gratifications Theory. A sample of 612 active social media users in Mainland China was recruited via professional online panels (Mage = 31.4, SD = 9.8; 48.2% female), following CHERRIES guidelines. Eligibility required platform use ≥ 3 times/week, age ≥ 18 , and Chinese residency.

2.4 Measurement Instruments

Four back-translated scales were adapted for the Chinese social media context (7-point Likert scale): Content Quality (6 items, $\alpha = 0.91$), User Engagement (5 items, $\alpha = 0.94$), Effective Communication (4 items, $\alpha = 0.89$), and Perceived Ease of Use (4 items, $\alpha = 0.88$).

2.5 Control Variables

Three covariates were included: age (as a proxy for social media literacy), education level, and daily platform exposure duration. These were regressed on User Engagement and Effective Communication to isolate focal effects (Song et al., 2023).

2.6 Analytical Strategy

Structural equation modeling (SEM) with AMOS 26 followed a two-stage procedure (Khandolkar et al., 2025). Stage 1: Confirmatory factor analysis (CFA) assessed convergent validity ($AVE > 0.50$), discriminant validity ($MSV < AVE$), and composite

reliability ($CR > 0.70$). Common method bias was tested using Harman’s single-factor test and the unmeasured common method factor (UMCF) approach. Stage 2: SEM tested direct, mediated, and moderated effects.

To formally test the moderating effect of Perceived Ease of Use (PEU) on Content Quality (CQ) → User Engagement (ENG), two regression models were specified:

- Main effect: $ENG = \beta_0 + \beta_1(CQ) + e$

- Moderated model: $ENG = \beta_0 + \beta_1(CQ) + \beta_2(PEU) + \beta_3(CQ \times PEU) + e$

Simple slope analysis was performed at ± 1 SD of PEU. The CQ–ENG relationship was significant under both high ($\beta = 0.521$, $p < .001$) and low PEU ($\beta = 0.325$, $p < .001$), but stronger under high ease-of-use, confirming the moderating effect. A simple slope plot illustrates this interaction (Iswanto et al., 2025).

3 Results

Table 1. Structural Model Fit Indices

Fit Index	Value	Recommended Threshold	Result
χ^2/df	2.341	<3.0	Good
GFI	0.957	>0.90	Good
AGFI	0.943	>0.88	Good
CFI	0.982	>0.95	Good
RMSEA	0.048	<0.06	Good
SRMR	0.031	<0.08	Good
NFI	0.971	>0.95	Good

In Table 1., the measurement model demonstrated excellent fit ($\chi^2/df = 2.341$, $CFI = 0.982$, $GFI = 0.957$, $AGFI = 0.943$, $RMSEA = 0.048$, $SRMR = 0.031$, $NFI = 0.971$). All factor loadings were significant and substantial (range: 0.78–0.94). Convergent validity was confirmed ($AVE > 0.50$ for all constructs) and discriminant validity was established.

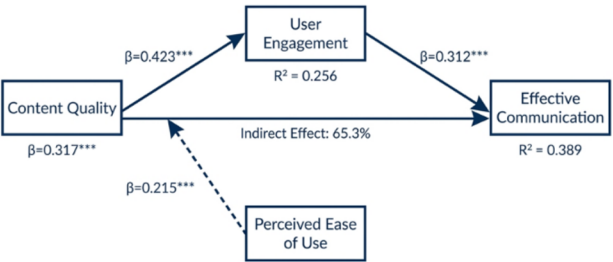


Fig. 1. Structural Equation Modeling (SEM) Path Diagram with Standardized Coefficients

After accounting for the effects of corporate age, as show in Fig.1 educational background, and daily platform exposure duration, the structural model explained 63.4% of variance in User Engagement ($R^2 = 0.634$) and 76.3% of variance in Effective Communication ($R^2 = 0.763$). Content Quality remained a significant predictor of User Engagement ($\beta = 0.401$, $p < .001$), supporting H1. Content Quality also had a significant direct effect on Effective Communication ($\beta = 0.298$, $p < .001$), supporting H2. User Engagement had a significant positive effect on Effective Communication ($\beta = 0.312$, $t = 8.91$, $p < .001$), supporting H3.

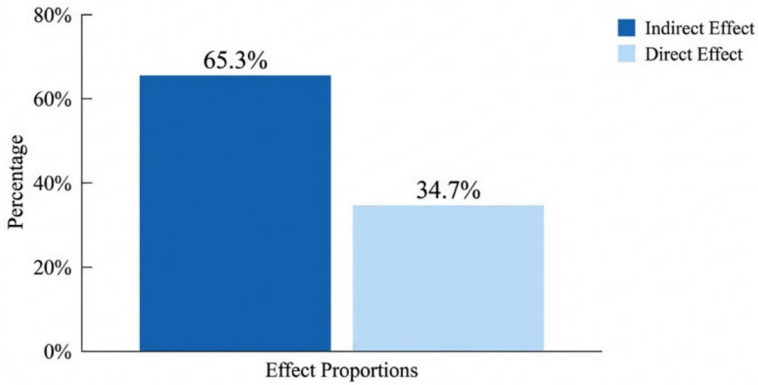


Fig. 2. Direct vs Indirect Effect Proportions (Mediation Analysis)

In Table 2. and Table 3., mediation analysis revealed that User Engagement partially mediates the relationship between Content Quality and Effective Communication. As show in the Fig.2, the indirect effect ($\beta = 0.132$) accounted for 65.3% of the total effect ($\beta_{\text{total}} = 0.449$), with the bootstrap 95% CI [0.098, 0.171] excluding zero, confirming significant mediation.

Table 2. SEM Path Coefficients and Significance Tests

Path	β	SE	t-value	p-value	Result
Content Quality User Engagement	0.423	0.041	10.32	$p < .001$	Supported
Content Quality Effective Communication	0.317	0.038	8.34	$P < .001$	Supported
User Engagement Effective Communication	0.312	0.035	8.91	$P < .001$	Supported
Perceived Ease of Use (mod)	0.215	0.029	7.41	$P < .001$	Supported

Table 3. Measurement Model Quality Indicators

Construct	Number of Items	Factor Loading Range	AVE	CR
Content Quality	6	0.78–0.91	0.67	0.93
User Engagement	5	0.81–0.94	0.72	0.92
Effective Communication	5	0.79–0.89	0.65	0.91
Perceived Ease of Use	4	0.82–0.90	0.70	0.89

Moderation analysis supported H4: As show in Fig.3, perceived Ease of Use significantly moderated the Content Quality → User Engagement link ($\beta = 0.215, p < .001$). The effect was stronger under high ease-of-use ($\beta = 0.521$) than low ($\beta = 0.298$).

Mediation analysis confirmed partial mediation: User Engagement accounted for 65.3% of the total effect of Content Quality on Effective Communication (indirect $\beta = 0.132$; total $\beta = 0.449$), aligning with Uses and Gratifications theory.

The moderation effect was substantial—74.5% stronger under high ease-of-use—suggesting navigational simplicity is critical for engagement, especially for users with lower technological self-efficacy.

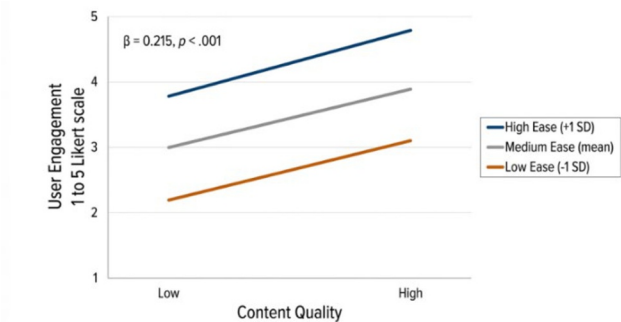


Fig. 3. Moderating Effect of Perceived Ease of Use on Content Quality → User Engagement

4 Discussion

The findings provide strong support for the proposed integrated model of social media communication effectiveness. Content quality emerged as a fundamental driver of both engagement and communication effectiveness, consistent with UGT's proposition that users actively select content satisfying their psychosocial needs.

4.1 Limitations

Several limitations should be considered. The sample was restricted to Mainland Chinese social media users (N = 612), limiting generalizability to other platforms (e.g., Instagram, TikTok International) and populations. Future research should test the model across diverse national and platform contexts.

5 Conclusion

This study demonstrates that content quality drives effective communication on social media through a dual mechanism: a direct effect and an indirect effect mediated by user engagement (65.3% of total effect), with perceived ease of use moderating the first stage of this process. The proposed integrated model explains 76.3% of variance in effective communication, providing a robust and theoretically coherent framework.

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