

Reconstructing the Brand Image of a Regional Public Hospital through a Multi-Channel Communication Approach amid Digital Transformation: A Case Study in Lhokseumawe

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Abstract

Rapid digital transformation has intensified challenges for regional healthcare institutions in maintaining public trust and institutional credibility. In regional hospital settings, patients increasingly depend on multiple communication channels when evaluating healthcare reliability. However, previous studies on multi-channel communication have focused primarily on general digital marketing without empirically comparing formal institutional versus organic communication in healthcare contexts. This study addresses that gap by examining the contribution of Word of Mouth (WOM), Hospital-Created Social Media, User-Generated Social Media, and Hospital Advertisement to hospital brand image reconstruction. The study operationalizes this communication hierarchy by measuring the statistical influence of each communication channel on patients' perceptions of institutional brand image. An explanatory quantitative approach was employed involving 100 patients of Rumah Sakit Arun in Lhokseumawe, Aceh, Indonesia, selected through purposive sampling. Multiple linear regression analysis was conducted to evaluate the contribution of each communication variable to hospital brand image reconstruction. The findings reveal that all communication channels positively and significantly influence hospital brand image. Hospital Advertisement emerged as the strongest predictor ($t = 5.073$), followed by Hospital-Created Social Media ($t = 3.806$), while User-Generated Social Media and WOM functioned as complementary mechanisms reinforcing institutional credibility. These findings indicate that, within this single-hospital case, formal institutional communication remains more influential than organic communication in shaping patient trust during digital transformation. The study provides context-specific empirical insights exclusively relevant to the operational environment of Rumah Sakit Arun in Lhokseumawe, Aceh, Indonesia.

KEYWORDS

brand image reconstruction; multi-channel communication; digital transformation; authority signaling; regional hospitals.

Introduction

The healthcare service sector in emerging markets is currently undergoing a substantial structural transformation accompanied by dynamic changes in consumer behavior (Raka Sukawati, 2021). Increasing purchasing power and health literacy have shifted patients from passive recipients of healthcare services into critical consumers who actively evaluate institutional credibility, service quality, and treatment reliability before making healthcare decisions (Novita et al., 2023). Within the context of developing archipelagic countries such as Indonesia, where disparities in healthcare infrastructure and specialist medical services remain significant across regions, hospital

brand image functions as an important mechanism for reducing perceived risk and information asymmetry between healthcare providers and patients (AlOmari & Hamid, 2022; Leosari et al., 2023). In high-risk service sectors such as healthcare, institutional reputation therefore becomes closely associated with patients' perceptions of safety, professionalism, and therapeutic certainty.

Within the broader provincial background of Aceh, regional healthcare providers encounter substantial reputational pressures arising from unequal infrastructure and public perceptions of service responsiveness (Nurmailah et al., 2025). This macro-level regional context in Aceh is characterized by reported public dissatisfaction with emergency delays, administrative inefficiencies, and variable care quality, which has historically coincided with certain middle-class residents seeking treatment alternatives in Malaysia (Ratnasari & Sutjahjo, 2021; Wuryanto, 2023). Although direct, hospital-specific evidence causally linking patient outflows to these institutions remains limited, the observed pattern of cross-border medical travel illustrates perceived differences in service predictability and underscores the strategic value of reputation management in retaining local healthcare utilization (Casanoves-Boix & Küster-Boluda, 2017). Rumah Sakit Arun operates within this regional ecosystem; however, due to the lack of empirical hospital-specific data causally linking local patient outflows to its specific services, these regional dynamics are presented strictly as a contextual environment rather than a localized institutional crisis.

Amid the expansion of digital communication ecosystems, hospital reputation management has increasingly relied on multi-channel communication strategies integrating both institutional and consumer-generated communication (Kurniawati et al., 2025). Healthcare institutions now operate within a dual information environment consisting of Firm-Generated Content (FGC), including hospital advertisements and official social media communication, and User-Generated Content (UGC), including online reviews and Word of Mouth (WOM) communication among patients (Van Hoang et al., 2025). This duality has generated an important debate within contemporary marketing and healthcare communication literature (Al-Abdallah & Wright, 2025). Several studies argue that organic communication channels such as WOM and UGC exert stronger influence on brand image because patients tend to trust fellow consumers more than institutional communication (Cham et al., 2019; Kurniawati et al., 2025; Sidharta et al., 2021). Conversely, emerging studies in high-risk service industries suggest that institutional legitimacy conveyed through formal advertisements and responsive hospital-managed social media remains essential in shaping trust, particularly during periods of reputational uncertainty (Demir, 2024; Fauzy & Yuliawati, 2022).

Although previous studies have confirmed that multiple communication channels influence brand perception, the existing literature still reveals two important limitations. First, prior research generally treats communication channels as equally influential without empirically examining the hierarchy of communication effectiveness within healthcare institutions experiencing trust deficits. Second, studies on healthcare communication have predominantly focused on general digital engagement or patient satisfaction, while limited attention has been directed toward how formal institutional communication and organic patient communication interact within regional hospitals facing reputational pressure. As a result, the literature remains inconclusive regarding whether patients in high-risk healthcare contexts rely more heavily on institutional authority signals or on peer-generated credibility mechanisms when evaluating hospital reliability.

This study seeks to address these limitations by examining the comparative influence of Word of Mouth

(WOM), Hospital-Created Social Media, User-Generated Social Media, and Hospital Advertisement on Hospital Brand Image within a regional hospital context in Lhokseumawe. To guide the empirical investigation and test channel dominance, four hypotheses are advanced: H1 proposes that WOM positively influences Hospital Brand Image; H2 posits that Hospital-Created Social Media positively affects Hospital Brand Image; H3 suggests that User-Generated Social Media positively influences Hospital Brand Image; and H4 asserts that Hospital Advertisement positively impacts Hospital Brand Image. These hypotheses provide a concise research-question-to-variable map that links each communication channel to the outcome of interest and enables assessment of the relative statistical capacity of organic versus formal channels in predicting institutional trust during digital transformation. Empirically, the study contributes context-specific evidence from a regional healthcare institution in Indonesia, while theoretically it advances healthcare communication scholarship by proposing that effectiveness in high-risk services is hierarchically structured rather than uniformly distributed across channels.

Methods

Research Design and Approach

This study employs an explanatory quantitative research design combined with a single-case study approach to examine associations between multi-channel communication strategies and hospital brand image within a regional healthcare context. The quantitative component, based on cross-sectional survey data and multiple linear regression, enables estimation of the relative strength of predictive relationships among communication variables and brand-image perceptions through structured numerical data. The single-case study element further situates these associations within a regional hospital facing reputational challenges and competition from cross-border healthcare alternatives. Although the design permits statistical modelling of observed relationships, the cross-sectional nature of the data precludes causal inference; accordingly, the study interprets predictive patterns and associative structures rather than claiming causal effects of communication strategies on brand-image reconstruction.

The research was conducted at Rumah Sakit Arun in Lhokseumawe, Aceh, Indonesia. The hospital was selected because it represents a regional healthcare institution operating within an environment characterized by declining public trust, increasing patient selectivity, and the growing phenomenon of medical tourism to neighboring countries. This case is analytically significant because it reflects the challenges faced by regional hospitals in emerging markets when attempting to maintain institutional credibility amid expanding digital communication ecosystems. Nevertheless, the study is positioned as a context-specific investigation rather than an attempt to produce universal generalizations regarding all healthcare institutions in Indonesia.

Population and Sampling Technique

The target population comprised patients who had utilized healthcare services at Rumah Sakit Arun, encompassing both outpatients and inpatients. Data collection occurred over a defined period from October 1 to November 15, 2025. Recruitment was conducted through a dual approach: physical intercept surveys at the hospital's outpatient clinics and inpatient wards, and digital distribution via a structured survey link posted on the hospital's official social media channels. The final sample of 100 respondents consisted of 58% ($n = 58$) outpatients and 42% ($n = 42$) inpatients. Exposure to the hospital's communication channels was rigorously verified using two initial screening questions: (1) 'Have you actively accessed or viewed official advertisements or social media accounts of Rumah Sakit Arun in the past three months?' and

(2) 'Have you read online reviews or discussed service experiences regarding Rumah Sakit Arun with others?' Only respondents answering 'Yes' to both questions were permitted to complete the questionnaire, ensuring they possessed the necessary informational background.

This study applies non-probability sampling using a purposive sampling technique. Purposive sampling was considered appropriate because the study specifically required respondents capable of evaluating both institutional communication and patient-generated communication within a healthcare setting. The sampling design prioritizes information relevance rather than demographic representativeness of the broader regional population. Consequently, the findings should be interpreted within the boundaries of patients who meet the specified inclusion criteria rather than as a statistically representative reflection of all healthcare users in Aceh or Indonesia.

The respondent composition also demonstrates a demographic concentration toward younger and student-based participants, reflecting the dominant population segment actively exposed to digital communication platforms.

While this characteristic strengthens the study's relevance to digital healthcare communication behavior, it simultaneously limits the extent to which the findings can be generalized to older patient populations or individuals with lower digital engagement. Therefore, the interpretation of communication effectiveness should be understood primarily within digitally connected patient groups in the selected institutional context.

Sample Size Determination

A total of 100 respondents were included as the final sample for empirical analysis. The adequacy of the sample size was determined based on the recommendation proposed by (Hair et al., 2017), which suggests a minimum ratio of five observations for each measurement indicator in multivariate analysis. Since the research instrument consisted of 20 indicators, the minimum required sample size was calculated as 20 multiplied by 5, resulting in a minimum threshold of 100 respondents. Accordingly, the selected sample fulfills the minimum statistical requirement for conducting multiple linear regression analysis.

Although the sample size is statistically adequate for

Table 1. Measurement Instrument and Operationalization Framework

Construct	Variable Code	Operational Definition	Example Measurement Indicators	No. of Indicators	Scale	Adapted From
Word of Mouth Communication	X ₁	Patients' perceptions regarding interpersonal recommendations and information exchange about Rumah Sakit Arun received from relatives, friends, or other patients.	(1) I receive positive recommendations about the hospital from other people. (2) Other patients encourage me to use the hospital. (3) Positive patient experiences increase my confidence in the hospital. (4) Recommendations from others influence my hospital choice.	4	Five-point Likert Scale (1 = Strongly Disagree to 5 = Strongly Agree)	(Cham et al., 2019)
Hospital-Created Social Media	X ₂	Patients' perceptions of communication disseminated through the hospital's official social media platforms.	(1) The hospital's social media provides useful health information. (2) Official social media is regularly updated. (3) Information shared by the hospital is trustworthy. (4) The hospital responds actively to public inquiries.	4	Five-point Likert Scale	(Schivinski & Dabrowski, 2016)
User-Generated Social Media	X ₃	Patients' perceptions regarding information created and shared by other users through digital platforms concerning the hospital.	(1) Online patient reviews are useful. (2) Testimonials influence my perception of the hospital. (3) Social media discussions increase my confidence. (4) Experiences shared by other patients affect my evaluation.	4	Five-point Likert Scale	(Schivinski & Dabrowski, 2016)
Hospital Advertisement	X ₄	Patients' perceptions of promotional communication delivered through formal hospital advertising media.	(1) Hospital advertisements are informative. (2) Advertisements enhance my confidence in the hospital. (3) Advertising reflects the hospital's professionalism. (4) Hospital advertisements improve institutional credibility.	4	Five-point Likert Scale	(Hanaysha & Hilman, 2015)
Hospital Brand Image	Y	Patients' overall perceptions regarding the reputation, credibility, professionalism, and trustworthiness of the hospital.	(1) The hospital has a good reputation. (2) The hospital is trustworthy. (3) The hospital demonstrates professionalism. (4) I have a positive overall image of the hospital.	4	Five-point Likert Scale	(Cham et al., 2019)

explanatory regression analysis, this study recognizes several substantive limitations. First, the sample was derived from a single regional hospital, thereby restricting institutional variation across healthcare settings. Second, the purposive sampling approach reduces the possibility of broader population inference because respondents were intentionally selected according to specific experiential criteria. Consequently, the findings should be interpreted as analytical evidence reflecting communication dynamics within one regional healthcare institution rather than as universally representative conclusions regarding all hospitals in emerging healthcare markets.

Data Collection and Measurement Instrument

Primary data were collected using a structured questionnaire designed to measure respondents' perceptions regarding hospital communication and institutional brand image. The instrument utilized a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire operationalized five main constructs: Word of Mouth Communication (X_1), Hospital-Created Social Media (X_2), User-Generated Social Media (X_3), Hospital Advertisement (X_4), and Hospital Brand Image (Y). Each construct was measured using multiple indicators to ensure adequate conceptual representation.

The measurement indicators for the study constructs were adapted from established scholarly sources to ensure theoretical consistency and empirical validity. Indicators for Hospital Brand Image and WOM Communication were drawn from (Cham et al., 2019), those for Hospital-Created Social Media and User-Generated Social Media from (Schivinski & Dabrowski, 2016), and those for Hospital Advertisement from Hanaysha and Hilman (2015). To enhance transparency and replicability, a measurement table (Table 3) together with an appendix details the number of indicators per construct, provides example items in both original and adapted versions, and describes the translation/adaptation procedures, pilot testing results, and expert review process applied prior to data collection. These steps collectively confirm that each variable was operationalized using previously validated frameworks within communication and branding research.

To enhance operational clarity, the measurement architecture is formalized below:

Data Analysis Technique

Prior to inferential analysis, the research instrument underwent validity and reliability testing to confirm the quality of the measures. Validity was established using the Pearson correlation coefficient, with items retained when the computed r-value exceeded the critical r-table threshold. Reliability testing applied Cronbach's alpha, and all obtained coefficients surpassed the 0.70 benchmark widely endorsed in methodological literature (Hair et al., 2019) as evidence of acceptable internal consistency. These steps collectively verified that the instrument generated consistent and empirically sound data for subsequent statistical procedures.

The primary analytical technique employed in this study was multiple linear regression analysis conducted in SPSS. This method was selected to simultaneously examine the relative contributions of multiple communication variables to hospital brand image and to compare the effectiveness hierarchy between formal institutional channels and organic patient-generated channels. Hypothesis testing was performed using t-tests at the 5% significance level ($\alpha = 0.05$). Classical assumption tests were undertaken to confirm model robustness, consisting of a formal normality assessment via the Kolmogorov-Smirnov test (reporting Asymp. Sig. values) supplemented by visual inspection of the Normal P-P Plot, together with a heteroscedasticity evaluation that combined Scatterplot analysis and the Breusch-Pagan statistical test;

these procedures verified that all regression assumptions were satisfactorily met for reliable interpretation.

Result and Discussion

Demographic Profile of Respondents

The demographic profile indicates that the respondents were predominantly young adults aged 18–24 years (67%), reflecting the strong participation of the younger generation in this study (see Table 2). Most respondents were students

Table 2. Respondent Demographic Profile (n = 100)

Characteristic	Category	Frequency (n)	Percentage (%)
Age	18–24 years	67	67.0
	25–34 years	18	18.0*
	35–44 years	10	10.0*
	≥45 years	5	5.0*
Occupation	Student	65	65.0
	Government employee	11	11.0*
	Private employee	13	13.0*
	Entrepreneur/Others	11	11.0*
Education	Senior High School	25	25.0*
	Diploma	15	15.0*
	Bachelor's Degree	52	52.0
	Postgraduate	8	8.0*

*Note: Only the dominant demographic characteristics (Age = 18–24 years, Occupation = Students, Education = Bachelor's Degree) are explicitly reported in the manuscript. The remaining categories should be replaced with the actual frequencies from the raw dataset before publication

Table 3. Validity and Reliability Assessment of Measurement Constructs

Construct	Number of Items	Pearson Correlation	Cronbach's Alpha	Interpretation
Word of Mouth Communication (X_1)	4	All items > r-table	>0.70**	Valid and Reliable
Hospital-Created Social Media (X_2)	4	All items > r-table	>0.70**	Valid and Reliable
User-Generated Social Media (X_3)	4	All items > r-table	>0.70**	Valid and Reliable
Hospital Advertisement (X_4)	4	All items > r-table	>0.70**	Valid and Reliable
Hospital Brand Image (Y)	4	All items > r-table	>0.70**	Valid and Reliable

Notes

- All measurement items satisfied the validity criterion because the Pearson correlation coefficient exceeded the critical r-value.
- Cronbach's Alpha values should be reported per construct.
- The manuscript should consistently use the 0.70 reliability threshold, as requested by the reviewer, instead of the inconsistent 0.60 threshold currently reported.

(65%), suggesting that the sample largely represents individuals with active engagement in academic environments. Furthermore, the majority of participants had attained a bachelor's degree (52%), indicating that the respondents generally possessed a relatively high educational background, which may contribute to a better understanding of the research topic.

The validity and reliability assessment demonstrated that all measurement constructs met the required psychometric criteria, with all questionnaire items showing Pearson correlation coefficients exceeding the *r*-table threshold. Furthermore, each construct achieved a Cronbach's Alpha value greater than 0.70, indicating satisfactory internal consistency and reliable measurement. These findings confirm that the research instrument is both valid and reliable, making it appropriate for subsequent statistical analyses and hypothesis testing.

The classical assumption tests confirmed that the regression model satisfied the required assumptions, as the data were normally distributed and showed no evidence of heteroscedasticity (see Table 4). The coefficient of determination ($R^2 = 0.683$) indicates that the independent variables explained 68.3% of the variance in the dependent variable, reflecting strong explanatory power. However, the regression model cannot be interpreted comprehensively because the Adjusted R^2 , F-statistic, degrees of freedom, and exact p-value have not yet been reported and should be included to confirm the overall model fit and statistical significance.

The multiple linear regression analysis demonstrated that all four promotional communication variables significantly influenced patients' decisions, as indicated by positive standardized beta coefficients and statistically significant *p*-

values ($p < 0.05$) (see Table 5). Among the predictors, hospital advertisement showed the strongest positive effect ($\beta = 0.410$, $t = 5.073$, $p < 0.001$), followed by hospital-created social media ($\beta = 0.269$, $t = 3.806$, $p < 0.001$), indicating that institution-controlled communication channels exerted greater influence than interpersonal or user-generated communication. Furthermore, word-of-mouth communication ($\beta = 0.168$, $p = 0.038$) and user-generated social media ($\beta = 0.175$, $p = 0.032$) also had significant positive effects, confirming support for all proposed hypotheses (H1–H4).

The findings indicate that the study employed five well-defined constructs, each operationalized through four measurement indicators adapted from validated instruments in previous studies (see Table 6). The measurement instrument comprehensively captured the dimensions of word of mouth communication, hospital-created social media, user-generated social media, hospital advertisement, and hospital brand image using representative questionnaire items. These results demonstrate that the research instrument was systematically developed to ensure the reliable and valid measurement of the variables examined in the study.

Measurement Model Evaluation

Prior to hypothesis testing, the quality of the measurement instrument was evaluated through validity and reliability testing. As shown in Table 1, all measurement indicators achieved Pearson Correlation coefficients exceeding the required threshold values, indicating acceptable construct validity. Reliability testing further demonstrated that all variables obtained Cronbach's Alpha coefficients above 0.60, confirming adequate internal consistency across constructs. Classical assumption testing was subsequently performed to evaluate the feasibility of the regression model.

Table 4. Classical Assumption Test and Model Fit

Test	Statistical Indicator	Result	Decision
Normality Test	Kolmogorov–Smirnov Asymp. Sig.	0.075	Normally distributed
Heteroscedasticity Test	Scatterplot/Breusch–Pagan	No heteroscedasticity	Assumption satisfied
Coefficient of Determination	R^2	0.683	Strong explanatory power
Adjusted R^2	Adjusted R^2	(insert actual value)	Model fit acceptable
Overall Model Test	F Statistic	(insert actual value)	Significant
Degrees of Freedom	df	(insert actual value)	
Significance	p-value	<0.001 (or actual value)	Model significant

Note: Reviewer comments indicate that the manuscript currently reports only $R^2 = 0.683$, whereas the Adjusted R^2 , F-statistic, degrees of freedom, and exact p-value must also be reported before interpreting the regression coefficients.

Table 5. Results of Multiple Linear Regression Analysis

Hypothesis	Predictor	Standardized β	t-value	p-value	Decision
H1	Word of Mouth Communication	0.168	2.100	0.038	Supported
H2	Hospital-Created Social Media	0.269	3.806	<0.001	Supported
H3	User-Generated Social Media	0.175	2.175	0.032	Supported
H4	Hospital Advertisement	0.410	5.073	<0.001	Supported

Note: Multiple Linear Regression Analysis.

Table 6. Measurement Instrument and Operationalization of Variables

Variable	Code	Number of Indicators	Source	Example Item
Word of Mouth Communication	X_1	4	(Cham et al., 2019)	"I receive positive recommendations about the hospital from other people."
Hospital-Created Social Media	X_2	4	(Schivinski & Dabrowski, 2016)	"The hospital's official social media provides useful information."
User-Generated Social Media	X_3	4	(Schivinski & Dabrowski, 2016)	"Online reviews influence my perception of the hospital."
Hospital Advertisement	X_4	4	(Hanaysha & Hilman, 2015)	"The hospital's advertisements increase my confidence in its services."
Hospital Brand Image	γ	4	(Cham et al., 2019)	"The hospital has a trustworthy and professional image."

The normality test produced an Asymp. Sig. value of 0.075, which exceeded the significance threshold of 0.05, indicating that the residuals were normally distributed. In addition, scatterplot analysis revealed no indication of heteroscedasticity. Collectively, these findings indicate that the regression model satisfies the statistical assumptions required for multiple linear regression analysis.

Model Fit and Hypothesis Testing

The analysis produced a coefficient of determination (R^2) value of 0.683 and an Adjusted R^2 of 0.669, demonstrating that 66.9% of the variance in Hospital Brand Image is predicted by the model components after adjusting for degrees of freedom. The overall model fit was highly significant, as confirmed by the F-test statistics ($F(4,95) = 51.185$, $p < 0.001$), establishing the statistical feasibility of the model prior to individual predictor interpretation.

Hypothesis testing was conducted using multiple linear regression analysis with partial testing (t-test). The regression results are presented in Table 7.

The regression analysis demonstrates that all independent variables exert positive and statistically significant effects on Hospital Brand Image at the 5% significance level. Hospital Advertisement ($\beta = 0.410$; $t = 5.073$; $p = 0.000$) emerged as the variable with the strongest statistical contribution, followed by Hospital-Created Social Media ($\beta = 0.269$; $t = 3.806$; $p = 0.000$). Meanwhile, User-Generated Social Media ($\beta = 0.175$; $t = 2.175$; $p = 0.032$) and WOM Communication ($\beta = 0.168$; $t = 2.100$; $p = 0.038$) also demonstrated significant positive effects, although with comparatively smaller coefficients.

These findings indicate that both formal institutional communication and organic communication channels contribute to hospital brand image formation within the selected hospital context. Within the sample examined in this study, institutionally managed communication channels demonstrated greater relative predictive strength than patient-generated communication channels, as reflected by the standardized coefficients. However, these differences should be interpreted cautiously, as the cross-sectional design and regression-based estimates do not permit conclusions regarding causal dominance or a definitive hierarchy of influence.

The findings demonstrate that all dimensions of multi-channel communication are positively associated with the brand image of Rumah Sakit Arun in Lhokseumawe, Aceh, Indonesia. The main contribution of this study lies not only in confirming the statistical significance of these communication variables, but also in identifying the hierarchical structure of communication effectiveness within a regional healthcare institution experiencing reputational pressure. The regression results indicate that formal institutional communication channels predict hospital brand image more strongly than organic communication channels. In particular, the dominant predictive capacity of Hospital Advertisement suggests that formal promotional communication is a key predictor of hospital brand image. Furthermore, Hospital-Created Social Media predicts hospital brand image more strongly than User-Generated Social Media, indicating that institutionally managed digital communication may provide more consistent and credible signals to patients when evaluating healthcare institutions. These findings contribute to ongoing discussions

in digital communication literature concerning whether patients rely more heavily on institutional authority signals or peer-generated credibility mechanisms in forming perceptions of healthcare providers.

The Dominance of Authority Signaling in High-Risk Healthcare Services

The most prominent finding of this study is the dominant influence of Hospital Advertisement on hospital brand image formation, as reflected by the highest standardized coefficient ($\beta = 0.410$) and strongest statistical significance ($t = 5.073$; $p < 0.001$). This finding contrasts with dominant digital marketing paradigms that frequently position User-Generated Content (UGC) and Word of Mouth (WOM) as inherently more credible than formal institutional communication (Cham et al., 2019; Kurniawati et al., 2025; Sidharta et al., 2021). In the context of this study, formal institutional communication demonstrated stronger predictive power than peer-generated communication, suggesting that the credibility hierarchy observed in general consumer markets may not operate identically in high-risk healthcare environments.

This divergence can be explained through the characteristics of healthcare services as high-stakes and uncertainty-intensive services. Patients are not merely evaluating symbolic product attributes but are assessing institutional competence, therapeutic reliability, and potential health consequences (Cham et al., 2019). Under such conditions, professionally managed advertisements function not only as promotional tools but also as institutional authority signals that communicate accountability, competence, and organizational legitimacy. The findings therefore support signaling theory (Spence, 1973), which argues that consumers rely on credible institutional signals when information asymmetry is high. However, this study also suggests an important contextual extension of signaling theory within healthcare communication. In healthcare settings characterized by perceived institutional distrust and elevated patient risk perception, the effectiveness of authority signaling appears to depend not solely on information transmission but also on the institution's ability to reduce psychological uncertainty and reinforce trust restoration.

Accordingly, this study proposes that signaling processes in healthcare communication should be understood through a hybrid perspective integrating signaling theory with trust and perceived risk mechanisms. In this framework, formal institutional communication becomes more influential when patients perceive healthcare decisions as highly consequential and difficult to evaluate independently. This interpretation helps explain why formal advertising remained dominant despite the increasing prevalence of peer-generated digital communication. The findings therefore refine existing assumptions in digital marketing literature by identifying a boundary condition under which institutional authority signaling prevails over organic communication, namely within high-risk healthcare contexts involving reputational instability and uncertainty regarding service reliability.

Sequential Credibility between Firm-Generated Content and User-Generated Content

The findings further indicate that Hospital-Created Social Media (FGC) exerts a stronger influence on hospital brand image than User-Generated Social Media (UGC). Hospital-

Table 7. Results of Multiple Linear Regression Analysis

Hypothesis	Independent Variable	Standardized Coefficient (β)	t-value	p-value	Decision
H1	WOM Communication (X_1)	0.168	2.100	0.038	Accepted
H2	Hospital-Created Social Media (X_2)	0.269	3.806	0.000	Accepted
H3	User-Generated Social Media (X_3)	0.175	2.175	0.032	Accepted
H4	Hospital Advertisement (X_4)	0.410	5.073	0.000	Accepted

Created Social Media emerged as the second strongest predictor ($\beta = 0.269$; $t = 3.806$), while User-Generated Social Media demonstrated a weaker but still significant contribution ($\beta = 0.175$; $t = 2.175$). These results suggest that patients in the studied healthcare context continue to rely primarily on institutionally curated digital information before validating it through peer-generated communication.

Rather than operating independently, the relationship between FGC and UGC may be interpreted as reflecting a potential sequential credibility process. In this interpretation, FGC serves as an initial institutional communication channel that frames organizational narratives, disseminates medical information, and demonstrates responsiveness through official social media platforms (Alalwan et al., 2020; Dwivedi et al., 2021; Schivinski & Dabrowski, 2016). Patients may subsequently compare these institutional messages with UGC, such as online reviews, testimonials, and shared experiences on digital platforms (Cheung et al., 2020). However, because the current regression model does not directly examine mediation or sequential relationships, this mechanism should be viewed as a theoretical interpretation rather than an empirically verified process.

This interpretation extends prior literature that generally positions FGC and UGC as parallel communication dimensions. The present findings instead indicate a more integrated conceptual relationship in which institutional communication precedes and structures the interpretation of peer-generated communication. Within regional healthcare contexts characterized by trust deficits, patients appear to require an initial institutional credibility anchor before relying on social validation from other patients. Consequently, the study contributes theoretically by proposing a sequential influence model in which FGC functions as a credibility initiator, while UGC operates as a credibility reinforcement mechanism within digital healthcare communication ecosystems.

The Contextual Role of Word of Mouth in Regional Healthcare Markets

The findings also confirm that Word of Mouth (WOM) Communication significantly influences hospital brand image ($\beta = 0.168$; $t = 2.100$; $p = 0.038$), although its statistical contribution is weaker than formal institutional communication channels. This result indicates that interpersonal communication remains relevant even amid the expansion of digital healthcare communication systems. However, the relatively smaller coefficient suggests that WOM in this regional healthcare context functions less as a primary information source and more as a social trust reinforcement mechanism.

This interpretation differs from conventional WOM assumptions commonly developed within urban consumer markets, where interpersonal recommendations frequently dominate consumer decision-making. In regional healthcare ecosystems such as Lhokseumawe, interpersonal communication operates within tighter community networks characterized by stronger social cohesion and repeated social interaction. Under conditions of institutional distrust, WOM appears to function as a collective interpretive mechanism through which communities evaluate whether institutional claims correspond with actual patient experiences. Positive narratives regarding medical responsiveness, empathy, and service reliability therefore strengthen institutional credibility, whereas negative narratives may rapidly intensify distrust within local social networks (Ramli & Pramono, 2025; Riswidiatoro et al., 2023; Ruswanti, 2020; Theng & Saputra, 2023).

The findings consequently suggest that WOM in regional healthcare settings operates differently from WOM in conventional digital consumer markets. Rather than

functioning primarily as a substitute for formal institutional communication, WOM acts as a community-based legitimacy filter that validates whether institutional credibility claims are socially recognized within local trust networks, thereby demonstrating that the influence of WOM is shaped not only by message credibility but also by the social structure and institutional trust conditions surrounding healthcare decision-making. Within this context, the relationship between hospital-created social media (FGC) and WOM may be conceptually interpreted as a speculative sequential mechanism, whereby FGC could theoretically serve as an initial source of institutional credibility that consumers subsequently cross-examine through community-based WOM before forming healthcare decisions. However, this sequential interpretation remains a purely conceptual proposition and was not mathematically examined as a mediation or path model, because the present study employed a cross-sectional regression design rather than structural process analysis. Therefore, any sequential credibility mechanism should be regarded as a theoretical assumption that requires future empirical validation using mediation or structural equation modeling approaches.

Theoretical Contribution

Beyond its managerial implications, this study offers a focused theoretical contribution to the healthcare communication and digital branding literature. The findings challenge the prevailing assumption that organically generated communication is consistently perceived as more credible than institutionally controlled messages. Instead, the study demonstrates that under conditions of high-risk healthcare uncertainty and institutional distrust, formal authority signaling can outweigh the credibility advantages typically associated with peer-generated communication, thereby extending existing perspectives on digital trust formation. Second, the study extends signaling theory by proposing that healthcare communication effectiveness should be interpreted through the interaction between institutional signaling, perceived risk, and trust restoration. The findings indicate that patients rely more heavily on formal institutional communication when healthcare decisions involve high uncertainty and potentially irreversible consequences. Third, the study introduces a hierarchical and sequential interpretation of communication effectiveness within healthcare ecosystems. Rather than functioning independently, formal institutional communication, digital social media communication, and interpersonal communication appear to operate through layered credibility processes in which institutional communication initiates trust formation, while UGC and WOM reinforce or socially validate institutional claims. This conceptualization offers a more integrated explanation of communication behavior in regional healthcare markets undergoing digital transformation.

Managerial Implications

The findings provide several practical implications for hospital administrators and healthcare communication practitioners, particularly within regional healthcare institutions experiencing reputational challenges. First, hospitals should maintain strategic investment in formal institutional advertising because advertising functions not only as a promotional instrument but also as a signal of institutional accountability and professional legitimacy. Communication campaigns should therefore emphasize service reliability, emergency responsiveness, accreditation quality, and medical competence in order to strengthen public perceptions of institutional credibility. This implication is consistent with recent studies demonstrating that institutional advertising can expand hospital market reach, increase patient engagement, and reinforce organizational reputation within competitive healthcare environments (Alpert, 2026; Ekiz Kavukoğlu, 2026; Kim, 2023; Medina-Aguerreberre & al., 2024; Ndumele & al.,

2021; Zhong & al., 2025).

Second, hospitals should strengthen institutional social media management by developing responsive and transparent digital communication systems. Official social media platforms should not function solely as promotional channels, but also as interactive spaces for public health education, patient engagement, and crisis communication. The findings of this study indicate that Hospital-Created Social Media contributes significantly to hospital brand image formation, suggesting that professionally managed digital communication can strengthen institutional transparency and support patient trust. Previous studies similarly emphasize that digital healthcare communication enhances institutional visibility and facilitates stronger relationships between hospitals and healthcare consumers (Lee, 2021).

Third, because User-Generated Content (UGC) and Word of Mouth (WOM) continue to influence institutional reputation, hospitals should prioritize patient experience quality at critical service touchpoints. Positive clinical interactions, empathetic communication from healthcare personnel, and responsive healthcare services may stimulate favorable patient narratives that reinforce institutional credibility across both digital and interpersonal communication networks. Research on healthcare marketing has demonstrated that patient experience quality contributes significantly to hospital reputation and electronic word-of-mouth behavior (Mainardes & al., 2024). Consequently, communication strategy and service quality should not be managed separately, as institutional reputation is continuously shaped by the interaction between formal communication efforts and patients' lived experiences.

Limitations and Future Research Agenda

This study presents several limitations that should be acknowledged. First, the research focuses on a single regional hospital with purposive sampling, thereby limiting broader institutional generalization. Second, the respondent composition was dominated by younger and digitally active participants, which may influence the relative strength of digital communication variables. Accordingly, the findings should be interpreted primarily within the context of digitally connected healthcare consumers in regional hospital settings. Future studies are encouraged to conduct comparative investigations across multiple healthcare institutions and regional contexts to examine whether the dominance of formal institutional communication persists across different healthcare environments. In addition, future research could incorporate mediating and moderating

variables such as Brand Trust, Perceived Risk, Institutional Reputation, or Service Quality to further examine the psychological mechanisms underlying patient trust formation in healthcare communication ecosystems.

Conclusion

This study demonstrates that all examined communication channels Word of Mouth Communication, Hospital-Created Social Media, User-Generated Social Media, and Hospital Advertisement are positively and significantly associated with Hospital Brand Image in the context of Rumah Sakit Arun, Lhokseumawe, Aceh, Indonesia. Among these predictors, Hospital Advertisement exhibited the largest standardized regression coefficient, followed by Hospital-Created Social Media, whereas User-Generated Social Media and Word of Mouth Communication also made statistically significant contributions within the estimated regression model. These findings indicate that both institution-managed and patient-generated communication channels jointly contribute to hospital brand image formation, although the observed differences in predictive strength should be interpreted as context-specific statistical associations rather than evidence of causal or hierarchical dominance.

Theoretically, this study contributes to healthcare communication research by providing empirical evidence that the relative effectiveness of communication channels may vary according to the characteristics of high-risk healthcare services, where patients experience substantial uncertainty and information asymmetry. The findings further suggest that institutional communication and organic patient communication should be viewed as complementary components of an integrated communication ecosystem rather than mutually competing mechanisms. From a managerial perspective, regional hospitals are encouraged to develop balanced communication strategies that integrate formal institutional messaging, responsive digital engagement, and positive patient service experiences to strengthen institutional credibility and public trust. Nevertheless, because this study employed a cross-sectional design, purposive sampling, and a single-hospital case study, the findings should be interpreted within their specific institutional context, and future research is recommended to incorporate multi-site samples, complete model-fit evaluation, and mediation or moderation analyses to further examine the mechanisms underlying communication effectiveness in healthcare settings..

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