



The effect of website quality, social media marketing, and personal selling on brand equity through brand loyalty: A study of B2B customers of PT gaya makmur tractors

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Abstract

Background: The rapid expansion of digital communication technologies has fundamentally transformed marketing practices in business-to-business (B2B) industries. Despite this shift, the effectiveness of integrating digital channels with interpersonal communication in shaping long-term brand value remains insufficiently explained, particularly within complex industrial markets such as heavy equipment distribution. Existing studies tend to examine website quality, social media marketing, and personal selling in isolation, leaving a critical gap in understanding their combined influence and underlying relational mechanisms.

Aims: This study aims to analyze the integrated effects of website quality, social media marketing, and personal selling on brand equity through brand loyalty, while clarifying the mediating role of relational commitment in a B2B context.

Method: A quantitative explanatory approach was employed using Structural Equation Modeling-Partial Least Squares (SEM-PLS). Data were collected from 302 B2B customers of PT Gaya Makmur Tractors through a structured questionnaire, and analyzed to evaluate both direct and indirect relationships among constructs.

Results: The findings demonstrate that all three communication channels significantly influence brand loyalty and brand equity. Social media marketing exhibits the strongest direct effect on brand equity, followed by personal selling and website quality. Furthermore, brand loyalty acts as a partial mediator, indicating that communication effectiveness operates through both immediate perception and sustained relational engagement.

Conclusion: This study advances the understanding of B2B marketing by positioning brand loyalty as a central relational mechanism within an integrated communication system. The results suggest that brand value in industrial markets is not solely driven by information quality or promotional intensity, but by the ability to align digital credibility with personalized interaction to foster long-term commitment. From a practical standpoint, firms are encouraged to develop coordinated communication strategies that balance digital presence and interpersonal engagement as part of a unified decision-support system. This approach not only strengthens competitive positioning but also enhances the sustainability of customer relationships, offering a more holistic pathway for optimizing brand equity in complex B2B environments.

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INTRODUCTION

The rapid expansion of digital technologies has fundamentally reshaped how firms communicate with customers, particularly through websites and social media platforms. Many organizations increasingly prioritize digital channels as primary tools for delivering information, building visibility, and enhancing engagement efficiency. However, this shift raises a critical question regarding whether digital communication can fully replace traditional interpersonal approaches, especially in complex business-to-business (B2B) environments. In high-involvement industrial

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markets, purchasing decisions often involve multiple stakeholders, extended evaluation processes, and significant financial risks, making trust and relationship-building essential. While digital platforms provide accessibility and scalability, they may lack the relational depth required to support such complex decisions. Prior studies suggest that social media and online platforms play an important role in shaping customer perceptions and engagement (Bhagat & Kim, 2023 and Krisprimandoyo et al., 2024 and Teepapal, 2025). At the same time, personal selling continues to function as a critical mechanism for developing trust, reducing uncertainty, and facilitating customized communication. This tension between digital efficiency and interpersonal effectiveness highlights the need to better understand how these communication channels operate together rather than independently.

Brand equity represents a strategic outcome of marketing activities, reflecting the cumulative value of customer perceptions, experiences, and relationships with a brand. In B2B contexts, brand equity extends beyond recognition and encompasses trust, reliability, and long-term commitment between firms. Customer loyalty plays a central role in this process, as it captures the continuity of relationships and repeated interactions over time. Existing research indicates that loyalty is influenced by both digital engagement and experiential interactions, suggesting that multiple communication channels contribute to its formation (Ahmad et al., 2022 and Ting & Ahn, 2023 and U-on et al., 2025). Furthermore, digital platforms often act as signaling mechanisms that communicate professionalism, competence, and credibility before direct interaction occurs. These signals are particularly important in early stages of the decision-making process, where customers rely on available information to reduce uncertainty. Nevertheless, such signals must be reinforced through direct interpersonal interaction to establish deeper relational commitment. Therefore, understanding how website quality, social media marketing, and personal selling jointly influence loyalty and brand equity becomes essential for developing effective B2B marketing strategies.

The increasing reliance on digital communication has led many firms to assume that online platforms can substitute traditional interpersonal selling, creating a strategic dilemma in allocating marketing resources. While digital channels offer scalability and efficiency, their ability to generate trust and long-term commitment in B2B contexts remains uncertain. Conversely, personal selling is often considered costly and less scalable, yet it plays a crucial role in addressing complex customer needs and building relationships. Existing studies tend to examine these communication channels separately, which limits the understanding of their combined and potentially complementary effects. Moreover, brand loyalty is frequently treated as a simple mediating variable without sufficient attention to its role as a dynamic relational mechanism. This fragmented perspective prevents a comprehensive understanding of how communication strategies translate into sustainable brand value. Therefore, there is a need to reconceptualize marketing communication as an integrated system rather than a set of isolated activities. This study is motivated by the intention to provide a more holistic explanation of how digital and interpersonal communication jointly shape brand equity in B2B markets.

Previous studies have emphasized the growing importance of digital platforms in influencing customer engagement and brand relationships. Park & Kim, (2014) found that social network websites significantly contribute to the development of consumer-brand relationships by facilitating interaction and information exchange. Carlson et al., (2021) further demonstrated that online brand communities enhance customer engagement and strengthen loyalty across different contexts. In addition, Prakoesw et al., (2022) highlighted the role of marketing mix elements, including digital communication, in shaping customer satisfaction and loyalty. Marlinda et al., (2018) showed that customer loyalty is influenced by multiple decision-making factors in digital environments, reflecting the complexity of consumer behavior. Wasan, (2017) emphasized that technology-driven engagement strategies are essential for creating meaningful customer experiences in modern

marketing systems. Moran et al., (2019) demonstrated that communication strategies across multiple channels influence consumer perceptions and behavioral responses. Furthermore, recent conference findings “International Tourism, Hospitality and Gastronomy Congress, ITHGC 2022,” (2025) suggest that integrated communication approaches are increasingly relevant in dynamic markets, although empirical evidence remains limited.

Despite the growing body of literature on digital marketing and customer engagement, existing research has not sufficiently explained how digital and interpersonal communication channels interact within a unified framework. Most studies treat website quality, social media marketing, and personal selling as independent variables, without examining their combined or systemic effects. This fragmented approach limits the ability to understand how different communication channels jointly influence customer perceptions and behavior. In addition, brand loyalty is often conceptualized as a statistical mediator rather than as a core relational mechanism that drives long-term value creation. This creates a theoretical gap in explaining how communication strategies translate into sustainable brand equity. Furthermore, the majority of studies focus on consumer markets, leaving B2B industrial contexts relatively underexplored despite their higher complexity and relational intensity. The absence of an integrated perspective also limits the development of effective decision-making frameworks for marketing strategy. This limitation is particularly critical in industrial markets, where customer decisions are shaped by both informational evaluation and trust-based relational processes. Therefore, a more comprehensive model is needed to capture the interconnected roles of digital and interpersonal communication in shaping brand outcomes.

This study aims to examine the integrated effects of website quality, social media marketing, and personal selling on brand equity through brand loyalty in a B2B context. Specifically, it investigates how these communication channels influence brand equity both directly and indirectly through relational mechanisms. The study conceptualizes brand loyalty not merely as an intervening variable but as a central mechanism that connects communication strategies with long-term value creation. In doing so, it positions marketing communication as an integrated system that combines digital signaling and interpersonal interaction. The research employs a quantitative approach using SEM-PLS to test the proposed relationships among variables. The findings are expected to provide insights into the relative effectiveness of digital and interpersonal channels in shaping customer perceptions and behavior. By analyzing these relationships, the study contributes to a more comprehensive understanding of marketing communication in complex B2B environments. This perspective also enables the study to address the strategic tension between communication efficiency and relationship depth that often characterizes industrial marketing settings. Ultimately, the research seeks to offer both theoretical and managerial implications for optimizing brand equity through coordinated communication strategies.

This study contributes to the existing literature by advancing a more integrated perspective on marketing communication in B2B contexts. First, it bridges the gap between digital and interpersonal communication by conceptualizing them as complementary elements within a unified communication system rather than as separate strategies. Second, it repositions brand loyalty as a core relational mechanism that explains how communication efforts translate into sustainable brand equity, extending beyond its traditional role as a mediating variable. Third, the study provides empirical evidence from a B2B industrial context, which remains underrepresented in prior research despite its strategic importance. Fourth, it highlights the interplay between digital signaling and relational interaction, offering a more nuanced understanding of how trust and perception are formed in complex decision-making environments. Fifth, the findings contribute to the development of a more comprehensive framework for analyzing marketing effectiveness in industrial markets. Sixth, the study also provides a basis for integrating communication strategy into broader decision-support systems within organizations. Finally, this research extends the theoretical discourse on

integrated marketing communication by incorporating relational and systemic perspectives, thereby offering a more holistic explanation of brand value creation.

METHOD

Research Design

This study employs a quantitative explanatory research design to investigate the causal relationships among website quality, social media marketing, personal selling, brand loyalty, and brand equity within a B2B context. The explanatory approach is selected because the study aims to test theoretically grounded relationships and uncover the underlying mechanisms linking integrated marketing communication strategies to brand outcomes. A cross-sectional design is adopted, where data are collected at a single point in time to capture respondents' perceptions and experiences. This design is considered appropriate for analyzing structural relationships among latent constructs in a real-world business setting. Structural Equation Modeling using Partial Least Squares (SEM-PLS) is employed as the primary analytical technique due to its suitability for handling complex models with multiple constructs and indicators (DİRSEHAN & HENSELER, 2023 and Hair & Alamer, 2022 and Ofori et al., 2023). SEM-PLS is particularly advantageous for prediction-oriented research and for data that may not meet strict multivariate normality assumptions. In addition, the method allows simultaneous evaluation of both measurement and structural models, providing a comprehensive analytical framework. Therefore, the chosen research design ensures methodological rigor while aligning with the objective of examining integrated communication effects on brand equity formation.

Participants

The participants of this study consist of B2B customers of PT Gaya Makmur Tractors who have prior experience interacting with the company's marketing communication channels. A purposive sampling technique is employed to ensure that respondents possess relevant knowledge and experience related to the constructs being studied. The inclusion criteria require participants to have engaged with at least one of the company's communication channels, including website usage, social media interaction, or direct personal selling. This approach ensures that the data collected reflect informed evaluations rather than general impressions. A total of 302 valid responses are obtained, which exceeds the minimum recommended sample size for SEM-PLS analysis and supports stable parameter estimation (Batra, 2024 and Jo & Park, 2023 and Radzi et al., 2022). The sample size is also sufficient to capture variability in perceptions and enhance the robustness of the model. Data are collected through structured questionnaires distributed to eligible respondents within the company's customer network. By focusing on experienced participants, the study strengthens the reliability and contextual relevance of its findings.

Instrument

Data are collected using a structured questionnaire designed to measure all latent constructs included in the research model. Each construct is operationalized using multiple indicators adapted from established literature to ensure content validity and theoretical alignment. Website quality is measured through indicators related to usability, information accuracy, and system reliability, reflecting its role as a digital interface influencing customer perception. Social media marketing is assessed through engagement, interaction intensity, and content effectiveness in shaping brand awareness. Personal selling is measured through communication clarity, responsiveness, and relationship-building capabilities of sales representatives. Brand loyalty is operationalized through indicators reflecting repurchase intention, commitment, and long-term relational attachment to the brand. Brand equity is measured through perceived value, brand strength, and overall customer

preference toward the brand. All measurement items use a five-point Likert scale ranging from strongly disagree to strongly agree to ensure consistency in capturing respondent perceptions.

Table 1. Measurement Indicators and Sources is presented below to provide a detailed overview of the operationalization of each construct and to maintain transparency in measurement design.

Table 1. Measurement Indicators and Sources

Construct	Indicator Code	Measurement Item	Source
Website Quality	WQ1	The website is easy to navigate	Adapted from prior digital quality studies
	WQ2	The website provides accurate and useful information	
	WQ3	The website system is reliable and responsive	
Social Media Marketing	SMM1	Social media content is engaging	Adapted from social media marketing literature
	SMM2	The company actively interacts with customers	
	SMM3	Social media influences my perception of the brand	
Personal Selling	PS1	Sales representatives communicate clearly	Adapted from relationship marketing studies
	PS2	Sales representatives respond quickly	
	PS3	Personal interaction builds trust	
Brand Loyalty	BL1	I intend to repurchase from this company	Adapted from loyalty literature
	BL2	I feel committed to this brand	
	BL3	I prefer this brand over competitors	
Brand Equity	BE1	This brand has strong value	Adapted from brand equity theory
	BE2	This brand is superior to competitors	
	BE3	I have a positive perception of this brand	

Table 1 presents the operationalization of all constructs used in this study, ensuring alignment between theoretical concepts and empirical measurement. Each construct is measured using multiple indicators adapted from established literature, which strengthens the content validity and theoretical grounding of the instrument. Website quality is represented through indicators that capture usability, information accuracy, and system reliability, reflecting its role as a digital interface that shapes customer perception and trust. Social media marketing is operationalized through engagement, interaction, and content influence, highlighting its function in facilitating two-way communication and shaping brand awareness. Personal selling is measured through communication clarity, responsiveness, and relationship-building capacity, emphasizing its importance in establishing trust and long-term business relationships in a B2B context. Brand loyalty is reflected in indicators related to repurchase intention, commitment, and preference, which collectively represent the strength of the customer-brand relationship. Brand equity is measured through perceived value, brand superiority, and overall positive perception, capturing both functional and emotional dimensions of brand strength. Overall, the use of multiple indicators for each construct enhances measurement precision and supports the robustness of the subsequent SEM-PLS analysis (Khalufi et al., 2025 and Pumjaroen, 2025 and Vaithilingam et al., 2024).

Data Analysis Plan

The data analysis is conducted using SEM-PLS with a two-stage evaluation procedure consisting of measurement model assessment and structural model analysis. The measurement

model is first evaluated to ensure reliability and validity through indicator loadings, composite reliability, and average variance extracted (AVE) (Cheung et al., 2024 and Subhaktiyasa, 2024 and Wang et al., 2023). Convergent validity is confirmed when indicator loadings exceed recommended thresholds and AVE values are above acceptable levels. Discriminant validity is assessed using the Fornell-Larcker criterion and cross-loading analysis to ensure that each construct is empirically distinct. After establishing the adequacy of the measurement model, the structural model is evaluated to test the hypothesized relationships among constructs. This evaluation includes the analysis of path coefficients, coefficient of determination (R^2), and predictive relevance (Q^2) to assess explanatory and predictive power. Effect size (f^2) is also calculated to determine the relative contribution of each exogenous variable. In addition, mediation analysis is conducted to examine the indirect effects of marketing communication variables on brand equity through brand loyalty. This analytical approach provides a comprehensive understanding of both direct and indirect relationships within the model.

Additional Methodological Considerations

Several additional procedures are implemented to enhance the robustness and credibility of the research findings. Common method bias is assessed using Harman's single-factor test to determine whether a single factor accounts for the majority of variance in the data. The results indicate that common method bias is not a significant concern in this study. Multicollinearity among constructs is evaluated using variance inflation factor (VIF) values, which are found to be within acceptable thresholds. Data screening procedures are conducted to identify missing values, outliers, and inconsistencies prior to analysis. Ethical considerations are addressed by ensuring respondent anonymity and voluntary participation throughout the data collection process. In addition, respondents are informed about the purpose of the study and their rights as participants. These procedures contribute to the transparency and ethical integrity of the research. Overall, these methodological safeguards ensure that the study meets the standards of rigor expected in high-impact international publications.

RESULTS AND DISCUSSION

Results

The results of this study provide a comprehensive evaluation of both the measurement and structural models to ensure the robustness of the proposed framework. The measurement model assessment confirms that all indicators meet the required reliability and validity thresholds, indicating that the constructs are measured accurately. All factor loadings exceed the recommended value of 0.70, demonstrating strong indicator reliability. Composite reliability values for all constructs are above 0.70, confirming internal consistency across measurement items. The average variance extracted (AVE) values exceed 0.50, indicating adequate convergent validity for each construct. Discriminant validity is established using the Fornell-Larcker criterion and cross-loading analysis, ensuring that each construct is empirically distinct. These results indicate that the measurement model is robust and suitable for further structural analysis. Overall, the quality of the measurement model provides a solid foundation for interpreting the relationships among variables in the structural model.

Structural Model Evaluation

The structural model demonstrates strong explanatory and predictive capabilities in explaining brand loyalty and brand equity. The coefficient of determination (R^2) for brand loyalty is 0.548, indicating that website quality, social media marketing, and personal selling collectively explain a substantial portion of its variance. The R^2 value for brand equity is 0.623, suggesting that the model has strong explanatory power in predicting brand outcomes. Predictive relevance assessed through Q^2 values shows that both endogenous constructs have values above zero,

confirming the model's predictive capability. The standardized root mean square residual (SRMR) value is below the recommended threshold of 0.08, indicating a good model fit. These results collectively demonstrate that the proposed model is both statistically reliable and practically meaningful. The structural relationships among constructs are therefore interpreted within a well-fitting and predictive model. This strengthens the credibility of the subsequent hypothesis testing results.

Table 2. Structural Model and Hypothesis Testing Results

Hypothesis	Relationship	Path Coefficient	T-Statistic	P-Value	Result
H1	Website Quality → Brand Loyalty	0.312	5.421	0.000	Supported
H2	Social Media Marketing → Brand Loyalty	0.287	4.876	0.000	Supported
H3	Personal Selling → Brand Loyalty	0.354	6.102	0.000	Supported
H4	Brand Loyalty → Brand Equity	0.521	8.233	0.000	Supported
H5	Website Quality → Brand Equity	0.145	2.112	0.035	Supported
H6	Social Media Marketing → Brand Equity	0.131	2.045	0.041	Supported
H7	Personal Selling → Brand Equity	0.167	2.587	0.010	Supported

Table 2 presents the hypothesis testing results, showing that all proposed relationships are statistically significant and supported. Among the antecedents of brand loyalty, personal selling exhibits the strongest effect, followed by website quality and social media marketing. This indicates that interpersonal communication plays a dominant role in influencing customer commitment within a B2B context. Website quality and social media marketing also demonstrate significant contributions, highlighting the importance of digital channels in shaping customer perceptions. Brand loyalty shows the strongest direct effect on brand equity, emphasizing its central role as a mediating construct. The direct effects of website quality, social media marketing, and personal selling on brand equity are statistically significant but comparatively weaker. This pattern suggests that the influence of marketing communication on brand equity is partially mediated by brand loyalty. Overall, the results confirm the validity of the integrated communication model proposed in this study.

Table 3. Model Fit and Predictive Power

Construct	R ²	Q ²	Interpretation
Brand Loyalty	0.548	0.412	Moderate-Strong
Brand Equity	0.623	0.487	Strong

Table 3 summarizes the explanatory and predictive capabilities of the structural model. The R² values indicate that the model explains a substantial proportion of variance in both brand loyalty and brand equity. The value for brand equity is particularly strong, suggesting that the model effectively captures the determinants of brand value in a B2B context. The Q² values for both constructs are above zero, confirming the predictive relevance of the model. This indicates that the model not only explains existing relationships but also has the ability to predict future observations. The relatively high Q² values further reinforce the robustness of the model. These findings demonstrate that the model is not merely statistically significant but also practically meaningful. The combination of high R² and Q² values strengthens the overall validity of the research framework. Therefore, the model can be considered both explanatory and predictive in nature. In addition, these results suggest that the proposed framework is capable of offering reliable insights into how integrated communication strategies shape relational and brand-related outcomes in industrial markets. This strengthens the

argument that the model provides not only empirical support for the hypothesized relationships but also a solid analytical basis for managerial decision-making in B2B marketing contexts.

Table 4. Indirect Effects (Mediation Analysis)

Relationship	Indirect Effect	T-Statistic	P-Value	Mediation
Website Quality → Brand Loyalty → Brand Equity	0.162	4.231	0.000	Partial
Social Media → Brand Loyalty → Brand Equity	0.149	3.987	0.000	Partial
Personal Selling → Brand Loyalty → Brand Equity	0.184	4.765	0.000	Partial

Table 4 presents the mediation analysis results, highlighting the indirect effects of marketing communication variables on brand equity through brand loyalty. The findings indicate that all indirect relationships are statistically significant, confirming the mediating role of brand loyalty. Personal selling shows the strongest indirect effect, suggesting that its influence on brand equity is largely transmitted through customer loyalty. Website quality and social media marketing also demonstrate meaningful indirect effects, reinforcing their role in building relational outcomes. The presence of significant direct and indirect effects indicates partial mediation rather than full mediation. This suggests that marketing communication influences brand equity both directly and indirectly through loyalty formation. The results highlight the importance of considering mediation mechanisms in understanding brand value creation. Overall, brand loyalty emerges as a critical pathway through which communication strategies translate into brand equity.

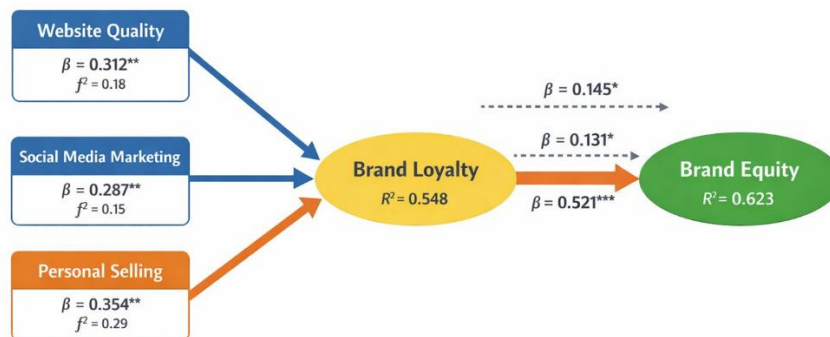


Figure 1. Structural Model Results

Figure 1 visualizes the structural relationships among all constructs, providing a clear representation of both direct and indirect effects. The diagram highlights brand loyalty as the central mediating variable connecting marketing communication channels to brand equity. Personal selling appears as the strongest driver of brand loyalty, reinforcing the importance of interpersonal interaction. Website quality and social media marketing also contribute significantly, though with slightly lower effect sizes. The strongest path in the model is observed between brand loyalty and brand equity, emphasizing its strategic importance. Direct effects from communication variables to brand equity are present but comparatively weaker. This confirms that loyalty plays a dominant role in translating communication efforts into brand value. Overall, the figure provides a coherent visualization of the integrated communication framework.

Discussion

The findings of this study provide a nuanced understanding of how digital and interpersonal communication channels jointly shape brand-related outcomes in a B2B context. While website quality and social media marketing significantly influence brand loyalty, their effects appear to be more supportive rather than dominant. This finding aligns with prior research emphasizing the role of digital platforms in facilitating engagement and information exchange (Park & Kim, 2014 and Carlson et al., 2021). However, the results suggest that digital communication alone may not be sufficient to generate strong relational commitment in complex industrial markets. In contrast to the

common assumption that digital transformation diminishes the role of traditional channels, this study indicates that digital tools primarily function as enablers rather than substitutes. This creates a critical tension between efficiency-driven digitalization and relationship-driven interaction. Digital communication enhances accessibility and transparency, but it lacks the depth required to build trust in high-stakes decision environments. Therefore, the effectiveness of digital channels should be understood within the broader context of integrated communication strategies rather than as standalone solutions.

The dominance of personal selling in influencing brand loyalty represents one of the most important and potentially counterintuitive findings of this study. Despite the increasing reliance on digital platforms, interpersonal interaction remains the most influential driver of customer commitment in the examined context. This finding is consistent with relationship marketing theory, which emphasizes the role of trust, personalization, and direct interaction in building long-term relationships (Wasan, 2017 and Moran et al., 2019). However, the strength of this effect suggests that the importance of personal selling may be underestimated in contemporary marketing discourse. Rather than being replaced by digital technologies, personal selling appears to be reinforced by them, creating a hybrid communication environment. This challenges the dominant narrative that digital transformation leads to the decline of traditional marketing practices. Instead, the findings indicate that personal selling continues to serve as the primary mechanism for trust formation in B2B markets. This insight contributes to a more balanced understanding of how different communication channels interact in practice. Consequently, firms should reconsider the strategic allocation of resources between digital and interpersonal communication efforts.

A central contribution of this study lies in the identification of brand loyalty as a critical mediating mechanism linking communication strategies to brand equity. The strong effect of brand loyalty on brand equity confirms its role as a key driver of long-term brand value. This finding supports previous studies highlighting the importance of loyalty in sustaining competitive advantage (Prakoesw et al., 2022 and Marlinda et al., 2018). However, this study extends existing literature by demonstrating that loyalty functions not only as an outcome but also as a transmission mechanism through which communication efforts are converted into brand value. The presence of partial mediation indicates that communication strategies operate through both direct and relational pathways. This dual mechanism provides a more comprehensive explanation of how brand equity is formed in complex environments. It also suggests that focusing solely on direct effects may lead to an incomplete understanding of marketing effectiveness. Therefore, this study positions brand loyalty as a central construct within integrated marketing communication frameworks. This perspective advances theoretical understanding by linking communication effectiveness with relational dynamics in a unified model.

The integrated perspective proposed in this study represents a key theoretical advancement in the marketing communication literature. While previous studies have often examined digital engagement and personal interaction separately, this study demonstrates that their combined effects provide a more comprehensive explanation of brand outcomes (Carlson et al., 2021 and Moran et al., 2019). The findings suggest that different communication channels operate through distinct but complementary mechanisms. Digital channels primarily influence cognitive evaluation and perception formation, whereas personal selling drives affective commitment and trust development. This complementary relationship highlights the importance of alignment between technological efficiency and relational depth. Furthermore, this study explicitly extends integrated marketing communication theory by incorporating mediation mechanisms into the analysis. It also challenges the implicit assumption that communication channels function independently rather than interactively. By integrating signaling theory and relationship marketing perspectives, this study

provides a more holistic framework for understanding customer behavior. As a result, it offers a more robust theoretical foundation for future research in both digital and relational marketing domains.

Despite its contributions, the findings of this study should be interpreted within certain boundary conditions that define their applicability. First, the study is conducted within a B2B industrial context, where purchasing decisions are complex, high-value, and relationship-driven. This context may amplify the importance of personal selling compared to B2C environments, where digital interaction may play a more dominant role. Second, the study focuses on a specific industry, which may limit the generalizability of the findings to other sectors with different market dynamics. Third, the cross-sectional design captures relationships at a single point in time, which may not fully reflect long-term changes in communication effectiveness. Future research could explore longitudinal approaches to examine how these relationships evolve over time. In addition, comparative studies between B2B and B2C contexts could provide deeper insights into the role of communication channels. Further investigation into industry-specific factors may also enhance the generalizability of the findings. Overall, these boundary conditions provide important directions for future research while reinforcing the contextual relevance of the current study.

Implication

This study provides both theoretical and managerial implications that contribute to a deeper understanding of integrated marketing communication in B2B contexts. From a theoretical perspective, the findings extend integrated marketing communication theory by demonstrating that digital and interpersonal channels operate through distinct but complementary mechanisms. The study also advances relationship marketing theory by positioning brand loyalty not only as an outcome but as a mediating mechanism that links communication strategies to brand equity formation. This integrated perspective challenges the conventional view that digital transformation diminishes the relevance of personal interaction. Instead, it highlights the coexistence of efficiency-driven and relationship-driven communication processes within a unified framework. From a managerial perspective, the results suggest that firms should avoid over-reliance on digital platforms and instead adopt a balanced communication strategy. Companies should leverage digital channels to enhance information accessibility while simultaneously strengthening personal selling to build trust and long-term relationships. Therefore, strategic alignment between digital communication and interpersonal interaction becomes critical for optimizing brand performance in B2B markets.

Limitations

Despite its contributions, this study is subject to several limitations that should be acknowledged when interpreting the findings. First, the study is conducted within a specific B2B industrial context, which may limit the generalizability of the results to other industries with different characteristics. The nature of high-involvement and relationship-driven transactions in this context may amplify the importance of personal selling compared to other settings. Second, the use of a cross-sectional research design restricts the ability to capture dynamic changes in customer perceptions and behavior over time. As a result, the causal relationships identified in this study should be interpreted with caution. Third, the study relies on self-reported data, which may introduce potential biases such as common method variance. Although statistical procedures were applied to minimize these risks, they cannot be entirely eliminated. Furthermore, the study focuses on a limited set of variables, which may not fully capture the complexity of brand equity formation. These limitations provide important boundaries for interpreting the results and highlight opportunities for further investigation.

Suggestions

Future research should build upon the findings of this study by exploring several promising directions that can further advance the field. First, longitudinal studies are needed to examine how

the relationships among communication strategies, brand loyalty, and brand equity evolve over time. Such approaches would provide deeper insights into the dynamic nature of customer relationships in B2B contexts. Second, comparative studies between B2B and B2C settings could help identify contextual differences in the effectiveness of digital and interpersonal communication channels. This would contribute to a more nuanced understanding of how marketing strategies should be adapted across different markets. Third, future research could incorporate additional variables such as customer experience, trust, or perceived risk to enrich the explanatory power of the model. Exploring moderating variables, such as industry type or organizational size, may also provide valuable insights into boundary conditions. In addition, qualitative approaches could complement quantitative findings by capturing deeper insights into customer perceptions and decision-making processes. Overall, these directions offer opportunities to refine and extend the integrated communication framework proposed in this study.

CONCLUSION

This study provides a comprehensive understanding of how integrated marketing communication strategies influence brand equity through the mediating role of brand loyalty in a B2B context. The findings confirm that both digital channels, represented by website quality and social media marketing, and interpersonal communication, represented by personal selling, significantly contribute to the formation of brand loyalty and brand equity. However, the results reveal that personal selling remains the most influential factor in building customer commitment, highlighting the continued importance of relational interaction in complex industrial markets. This challenges the prevailing assumption that digital transformation diminishes the relevance of traditional communication channels. Furthermore, the study demonstrates that brand loyalty serves as a critical mechanism through which communication strategies are translated into long-term brand value. The presence of both direct and indirect effects indicates that brand equity is formed through a combination of cognitive evaluation and relational engagement. By integrating digital and interpersonal perspectives within a single framework, this study advances theoretical understanding of marketing communication in B2B settings. Ultimately, the findings underscore the importance of adopting a balanced and integrated communication strategy to achieve sustainable brand performance in increasingly complex market environments.

AUTHOR CONTRIBUTIONS STATEMENT

JFP contributed to the conceptualization of the study, research design, data analysis using SEM-PLS, and drafting of the manuscript. **DM** was responsible for data collection, instrument development, and contributed to data analysis and preparation of the results section. **AL** contributed to manuscript editing, refinement of the discussion and implications, and overall language polishing to meet international publication standards.

REFERENCES

- Ahmad, F., Mustafa, K., Hamid, S. A. R., Khawaja, K. F., Zada, S., Jamil, S., Qaisar, M. N., Vega-Muñoz, A., Contreras-Barraza, N., & Anwer, N. (2022). Online Customer Experience Leads to Loyalty via Customer Engagement: Moderating Role of Value Co-creation. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.897851>
- Batra, S. (2024). Exploring the application of PLS-SEM in construction management research: A bibliometric and meta-analysis approach. *Engineering, Construction and Architectural Management*, 32(4), 2697–2727. <https://doi.org/10.1108/ECAM-04-2023-0316>
- Bhagat, S., & Kim, D. J. (2023). Examining users' news sharing behaviour on social media: Role of perception of online civic engagement and dual social influences. *Behaviour & Information Technology*, 42(8), 1194–1215. <https://doi.org/10.1080/0144929X.2022.2066019>

- Carlson, J., Rahman, S. M., Rahman, M. M., Wyllie, J., & Voola, R. (2021). Engaging Gen Y Customers in Online Brand Communities: A Cross-National Assessment. *International Journal of Information Management*, 56. <https://doi.org/10.1016/j.ijinfomgt.2020.102252>
- Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Wang, L. C. (2024). Reporting reliability, convergent and discriminant validity with structural equation modeling: A review and best-practice recommendations. *Asia Pacific Journal of Management*, 41(2), 745–783. <https://doi.org/10.1007/s10490-023-09871-y>
- DİRSEHAN, T., & HENSELER, J. (2023). Modeling indices using partial least squares: How to determine the optimum weights? *Quality & Quantity*, 57(4), 521–535. <https://doi.org/10.1007/s11135-022-01515-5>
- Hair, J., & Alamer, A. (2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, 1(3), 100027. <https://doi.org/10.1016/j.rmal.2022.100027>
- International Tourism, Hospitality and Gastronomy Congress, ITHGC 2022. (2025). *Lecture Notes in Networks and Systems*, 1451 LNNS.
- Jo, H., & Park, D.-H. (2023). Mechanisms for successful management of enterprise resource planning from user information processing and system quality perspective. *Scientific Reports*, 13(1), 12678. <https://doi.org/10.1038/s41598-023-39787-y>
- Khalufi, N. A. M., Sheikh, R. A., Khan, S. M. F. A., & Onn, C. W. (2025). Evaluating the Impact of Sustainability Practices on Customer Relationship Quality: An SEM-PLS Approach to Align with SDG. *Sustainability*, 17(2). <https://doi.org/10.3390/su17020798>
- Krisprimandoyo, D. A., Sufa, S. A., Wardani, D. T., & Widiyanto, S. (2024). Exploring the Relationship between Social Media Engagement, Customer Reviews, and Brand Perceptions: A Comprehensive Study in Retail Industry. *International Journal of Business, Law, and Education*, 5(2), 1584–1591. <https://doi.org/10.56442/ijble.v5i2.597>
- Marlinda, L., Rusiyati, S., Adi, W. T., Maisyaroh, Komarudin, R., & Salim, A. (2018). Selection of factors affecting women's loyalty in buying goods in Indonesian e-marketplaces using the profile machine method. *Journal of Theoretical and Applied Information Technology*, 97(8), 2166–2178.
- Moran, M. B., Heley, K., Baldwin, K., Xiao, C., Lin, V., & Pierce, J. P. (2019). Selling tobacco: A comprehensive analysis of the U.S. tobacco advertising landscape. *Addictive Behaviors*, 96, 100–109. <https://doi.org/10.1016/j.addbeh.2019.04.024>
- Ofori, E. K., Aram, S. A., Saalidong, B. M., Gyimah, J., Niyonzima, P., Mintah, C., & Ahakwa, I. (2023). Exploring new antecedent metrics for safety performance in Ghana's oil and gas industry using partial least squares structural equation modelling (PLS-SEM). *Resources Policy*, 81, 103368. <https://doi.org/10.1016/j.resourpol.2023.103368>
- Park, H., & Kim, Y.-K. (2014). The role of social network websites in the consumer-brand relationship. *Journal of Retailing and Consumer Services*, 21(4), 460–467. <https://doi.org/10.1016/j.jretconser.2014.03.011>
- Prakoesw, C. R. S., Hidayah, N., & Dewi, A. (2022). A Scoping Review of Research on Brand Image, Marketing Mix, Patient Hospital Satisfaction, And Loyalty in Indonesia. *Res Militaris*, 12(2), 964–983.
- Pumjaroen, J. (2025). Forecasting Economic Cycles with Time Series PLS-SEM: Evaluating Reflective vs. Formative Specification of PCA-Derived Indicators. *Journal of Business Cycle Research*, 21(2), 237–260. <https://doi.org/10.1007/s41549-025-00116-z>
- Radzi, A. R., Rahman, R. A., & Almutairi, S. (2022). Modeling COVID-19 Impacts and Response Strategies in the Construction Industry: PLS-SEM Approach. *International Journal of Environmental Research and Public Health*, 19(9). <https://doi.org/10.3390/ijerph19095326>
- Subhaktiyasa, P. G. (2024). PLS-SEM for Multivariate Analysis: A Practical Guide to Educational Research using SmartPLS. *EduLine: Journal of Education and Learning Innovation*, 4(3), 353–365. <https://doi.org/10.35877/454RI.eduline2861>
- Teepapal, T. (2025). AI-driven personalization: Unraveling consumer perceptions in social media engagement. *Computers in Human Behavior*, 165, 108549. <https://doi.org/10.1016/j.chb.2024.108549>

- Ting, L., & Ahn, J. (2023). Understanding the roles of interaction and trust in formation of loyalty toward customer-to-customer (C2C) platforms. *Asia Pacific Journal of Marketing and Logistics*, 35(10), 2565–2581. <https://doi.org/10.1108/APJML-12-2022-1072>
- U-on, V., Wantanee, K., & Torthienchai, N. (2025). Trust as a mediator between brand experience and loyalty: evidence from student engagement through digital communication and institutional systems in Thai universities. *Scientific Culture*, 11(4), 51. <https://doi.org/10.5281/zenodo.11042505>
- Vaithilingam, S., Ong, C. S., Moisescu, O. I., & Nair, M. S. (2024). Robustness checks in PLS-SEM: A review of recent practices and recommendations for future applications in business research. *Journal of Business Research*, 173, 114465. <https://doi.org/10.1016/j.jbusres.2023.114465>
- Wang, S., Cheah, J.-H., Wong, C. Y., & Ramayah, T. (2023). Progress in partial least squares structural equation modeling use in logistics and supply chain management in the last decade: A structured literature review. *International Journal of Physical Distribution & Logistics Management*, 54(7–8), 673–704. <https://doi.org/10.1108/IJPDLM-06-2023-0200>
- Wasan, P. (2017). Managing technologies for consumer engagement. In V. Jauhari (Ed.), *Hospitality Marketing and Consumer Behavior: Creating Memorable Experiences* (pp. 261–289). Apple Academic Press. <https://doi.org/10.1201/9781315366227>