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Digital Marketing and Marketing Performance: The Mediating Role of Big Data Analytics in Indonesian Logistics Firms

Hikmah Sekarningtyas¹, Lenni Lukitasari²

¹Department of Logistic Management, Politeknik Rukun Abdi Luhur, Kudus, Indonesia. Email: hikmah.sekar@gmail.com

²Department of Management, Universitas Teknologi Digital, Bandung, Indonesia. Email: lukitasarilenni@gmail.com

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ABSTRACT

This study investigates the effect of digital marketing on marketing performance and examines the mediating role of big data analytics in Indonesian logistics firms. The study is grounded in the Resource-Based View (RBV) and Technology Organization Environment (TOE) frameworks, which emphasize the strategic importance of digital capabilities in enhancing organizational competitiveness. A quantitative explanatory approach with a cross-sectional design was employed. Data were collected from 350 respondents working in logistics companies in Indonesia using purposive sampling combined with company-size stratification. The questionnaire instruments were developed based on previous studies and validated through expert review and pilot testing. Reliability and validity assessments indicated satisfactory results, with Cronbach's alpha and Composite Reliability values exceeding 0.70 and Average Variance Extracted (AVE) values above 0.50 for all constructs. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The findings revealed that digital marketing positively and significantly affects marketing performance ($\beta = 0.32, p < 0.001$) and big data analytics ($\beta = 0.76, p < 0.001$). Furthermore, big data analytics significantly influences marketing performance ($\beta = 0.41, p < 0.001$) and partially mediates the relationship between digital marketing and marketing performance ($\beta = 0.31, p < 0.001$). The model demonstrated substantial explanatory power with an R^2 value of 0.64 for marketing performance. These findings indicate that integrating digital marketing with big data analytics capability can enhance marketing effectiveness and strengthen competitive advantage in the logistics industry.

Keywords: Digital Marketing, Big Data Analytics, Marketing Performance, Logistics Industry, Resource-Based View.

I. Introduction

Digital transformation has become one of the primary drivers of change across various industrial sectors, including the logistics industry in Indonesia. The rapid growth of internet penetration, e-commerce transactions, and digital platforms has encouraged logistics companies to adopt technology-based business strategies to remain competitive in an increasingly dynamic market environment. According to Statistics Indonesia (BPS, 2025), Indonesia's transportation and warehousing sector experienced significant growth alongside the expansion of digital commerce and online retail activities. This development has intensified competition among logistics firms, requiring companies not only to improve operational efficiency but also



to strengthen marketing effectiveness through digital technologies. In the Indonesian logistics industry, digital marketing has become an essential strategic instrument for improving customer engagement, enhancing brand visibility, and expanding market reach. Logistics firms increasingly rely on social media platforms, search engine optimization (SEO), digital advertising, and customer relationship management systems to communicate with consumers and business partners. Previous studies in Indonesia reported that digital marketing adoption positively influences customer acquisition and service competitiveness among logistics and transportation companies (Prasetyo & Hidayat, 2024; Nugraha et al., 2025). Furthermore, a report by Indonesian Logistics and Forwarders Association (ALFI, 2024) highlighted that logistics firms with integrated digital marketing systems demonstrated higher customer retention and stronger market responsiveness compared to conventionally managed firms.

Despite these developments, the effectiveness of digital marketing in improving marketing performance remains highly dependent on a company's capability to process and utilize data strategically. In the era of Industry 4.0, digital marketing activities generate massive amounts of customer and transactional data that can be transformed into strategic insights through big data analytics. Big data analytics enables firms to analyze customer preferences, predict market demand, personalize marketing campaigns, and optimize decision-making processes in real time (Wamba et al., 2020). Consequently, the integration of digital marketing and big data analytics has emerged as an important organizational capability that may significantly enhance marketing performance. Within this study, marketing performance is operationally defined as the company's ability to achieve strategic marketing objectives reflected through measurable indicators, including sales growth, market share improvement, customer acquisition, and customer retention (Mariam, S., 2024). These indicators are measured through structured questionnaire items adapted from Waseem et al. (2024) and (Safitri and Komaryatin, 2025). Sales growth refers to the increase in company revenue generated from marketing activities, market share reflects the firm's competitive position within the logistics market, customer acquisition measures the ability to attract new customers, while customer retention indicates the company's capability to maintain long-term customer relationships.

Several studies have examined digital marketing and big data analytics independently (Salsabiila, S., & Wulandari, A., 2025). Digital marketing has been proven to improve customer engagement and marketing effectiveness (Dwivedi et al., 2021), while big data analytics has been recognized as a strategic capability that enhances organizational performance and decision-making quality (Akter et al., 2020). However, empirical studies specifically investigating the integration of digital marketing and big data analytics within the Indonesian logistics sector remain limited. Most previous studies focused primarily on retail, banking, and manufacturing industries, while logistics firms possess distinct characteristics related to service responsiveness, supply chain integration, and real-time information management. Recent Indonesian studies also indicate that logistics companies still face challenges in implementing data-driven digital marketing strategies, including limited analytical capabilities, insufficient digital infrastructure, and lack of skilled human resources (Rahmawati & Putra, 2024; BPS, 2025). In addition, prior research generally examined the direct relationship between digital marketing and marketing performance without comprehensively analyzing the mediating role of big data analytics. This indicates an important research gap regarding how big data analytics transforms digital marketing activities into improved marketing outcomes in logistics firms.

From a theoretical perspective, this study is grounded in the Resource-Based View (RBV), which argues that organizational resources and capabilities can become sources of sustainable competitive advantage when they are valuable, rare, inimitable, and non-substitutable (VRIN). In this context, digital marketing capability and big data analytics capability can be viewed as strategic organizational resources that enable logistics companies to improve market responsiveness, customer relationships, and strategic decision-making. The integration of these capabilities allows firms to create data-driven marketing strategies that are difficult for competitors to replicate. Based on the identified research gaps, this study aims to investigate several specific issues related to the relationship between digital marketing, big data analytics, and marketing performance in Indonesian logistics firms (Salsabiila, S., & Wulandari, A., 2025). First, this study examines how digital marketing contributes to improving marketing performance indicators, including sales growth, market

share, customer acquisition, and customer retention. Second, this study analyzes the extent to which big data analytics influences marketing performance within logistics companies. Third, this research explores how digital marketing activities encourage and support the implementation of big data analytics in logistics firms. Finally, this study investigates the mediating role of big data analytics in the relationship between digital marketing and marketing performance. To address these research questions comprehensively, this study employs a quantitative explanatory approach using Structural Equation Modeling–Partial Least Squares (SEM-PLS). The SEM-PLS method is considered appropriate because it allows the simultaneous examination of complex causal relationships among latent variables and is particularly suitable for predictive-oriented research models (Hair et al., 2022).

This study contributes theoretically, practically, and methodologically. Theoretically, it enriches the literature on digital marketing and big data analytics integration within the logistics sector from the perspective of the Resource-Based View (RBV). Practically, the findings are expected to provide strategic insights for logistics companies in developing data-driven marketing strategies and improving competitive advantage through digital transformation. Methodologically, this study contributes to the application of SEM-PLS in examining mediation models involving digital capabilities and organizational performance within emerging market contexts such as Indonesia.

II. Literature Review and Hypothesis Development

2.1. Digital Marketing and Marketing Performance

Digital marketing has evolved from a communication tool into a strategic organizational capability that enables firms to create value, strengthen customer relationships, and improve competitive positioning. In the context of the Resource-Based View (RBV), digital marketing capability can be categorized as a valuable and difficult-to-imitate organizational resource because it allows firms to manage customer interactions, generate market intelligence, and respond rapidly to market changes. Previous studies have consistently shown that digital marketing activities such as social media marketing, search engine optimization (SEO), content marketing, and customer engagement positively influence organizational performance outcomes (Dwivedi et al., 2021). Empirical evidence indicates that firms implementing integrated digital marketing strategies tend to achieve higher sales growth, stronger customer loyalty, and broader market reach compared to firms relying on conventional marketing approaches. For example, Waseem et al. (2024) found that digital marketing significantly improves customer acquisition and brand awareness through interactive communication channels. Similarly, Gozi et al. (2025) demonstrated that customer engagement generated through digital platforms positively affects customer loyalty and long-term business performance. However, prior studies mainly focused on retail, e-commerce, and banking sectors, while empirical evidence from logistics firms remains relatively limited.

Within the Indonesian logistics sector, digital marketing adoption has become increasingly important due to the rapid expansion of e-commerce and digital supply chain ecosystems. Logistics firms are required not only to provide operational efficiency but also to maintain customer responsiveness and service visibility in highly competitive markets. Nevertheless, previous studies in Indonesia generally examined digital marketing only as a direct predictor of organizational performance without considering the role of analytical capabilities in transforming marketing data into strategic insights. As a result, the mechanism explaining how digital marketing contributes to marketing performance remains insufficiently explored. In this study, digital marketing is operationalized through four main dimensions: social media marketing, content marketing, SEO/SEM, and customer engagement. Meanwhile, marketing performance is measured at the organizational level using indicators of sales growth, market share, customer acquisition, and customer retention. Based on RBV theory and empirical findings, digital marketing capability is expected to positively influence marketing performance because firms with stronger digital marketing competencies can improve customer relationships and market responsiveness more effectively. Therefore, the following hypothesis is proposed:

H1: Digital marketing has a positive and significant effect on marketing performance in Indonesian logistics firms.

2.2. Big Data Analytics and Marketing Performance

Big data analytics has emerged as one of the most strategic organizational capabilities in the digital economy era. From the RBV perspective, big data analytics capability represents a strategic resource because it enables firms to transform raw data into valuable insights that support strategic decision-making and operational efficiency. Organizations capable of effectively utilizing data analytics can identify customer preferences, predict market trends, optimize marketing campaigns, and improve organizational responsiveness (Mandung, F., 2024). Recent studies emphasized that data-driven decision-making significantly improves business performance and marketing effectiveness. Wamba et al. (2020) argued that big data analytics capability enhances organizational agility and competitive advantage through predictive insights and improved strategic alignment. Likewise, Akter et al. (2020) found that firms integrating analytical capabilities into their business processes demonstrate superior performance outcomes compared to firms relying on intuition-based decision-making.

Recent theoretical developments such as the Data-Driven Marketing Maturity Model also explain that firms with advanced analytical maturity are more capable of integrating customer data into strategic marketing activities. This maturity model highlights that organizations progressively evolve from basic data collection toward predictive and prescriptive analytics that improve marketing precision and customer personalization. In logistics industries, where service responsiveness and customer satisfaction are highly important, analytical capabilities become critical strategic assets. Despite the growing literature on big data analytics, several limitations remain evident. First, most previous studies examined big data analytics in manufacturing, finance, and retail industries, with limited attention given to logistics firms in emerging economies such as Indonesia. Second, prior studies frequently focused on operational performance rather than marketing performance specifically. Third, many studies used simple regression-based approaches that were unable to examine complex mediation relationships among digital capabilities.

In this research, big data analytics is measured through dimensions including volume, variety, velocity, customer insight, personalization, and predictive analytics capability. Marketing performance is measured at the firm level using sales growth, market share, customer acquisition, and customer retention indicators. Firms possessing stronger analytical capabilities are expected to achieve better marketing performance because data-driven strategies improve marketing effectiveness and strategic accuracy. Accordingly, the following hypothesis is formulated:

H2: Big data analytics has a positive and significant effect on marketing performance in Indonesian logistics firms.

2.3. Digital Marketing and Big Data Analytics

Digital marketing activities generate large amounts of structured and unstructured customer data from various digital channels such as websites, social media, mobile applications, and online transactions. Consequently, firms adopting intensive digital marketing strategies are more likely to develop stronger analytical capabilities to process and interpret these data resources. From the Technology-Organization-Environment (TOE) framework perspective, digital marketing adoption represents a technological factor that encourages firms to develop complementary organizational capabilities, including data analytics. Previous studies reported that digital marketing implementation significantly increases organizational dependence on analytical technologies. Tamin and Veri (2024) explained that firms actively utilizing digital platforms tend to adopt analytical systems to optimize customer targeting and campaign effectiveness. Similarly, Khairifa (2024) found that digital marketing intensity positively influences firms' use of customer analytics and predictive technologies.

However, previous empirical findings remain fragmented because most studies only examined technology adoption without explicitly linking digital marketing activities to analytical capability development. Furthermore, evidence from logistics firms remains scarce despite the industry's reliance on real-time customer information and digital transactions. In this study, digital marketing is positioned as an exogenous variable that influences the implementation of big data analytics capability. The relationship is expected to be positive because increased digital interactions generate larger and more diverse customer data that require analytical processing. Thus, the following hypothesis is proposed:

H3: Digital marketing has a positive and significant effect on big data analytics in Indonesian logistics firms.

2.4. The Mediating Role of Big Data Analytics

Although digital marketing has been widely recognized as a strategic driver of marketing performance, the mechanism through which digital marketing generates organizational outcomes remains theoretically underexplored. Recent literature suggests that digital marketing alone may not directly produce superior performance unless firms possess the capability to process and utilize digital data effectively. This indicates that big data analytics may function as an important mediating mechanism linking digital marketing activities to marketing performance. From the RBV perspective, digital marketing generates strategic data resources, while big data analytics transforms those resources into actionable organizational knowledge. Therefore, firms with stronger analytical capabilities are more likely to maximize the value generated by digital marketing initiatives. This perspective aligns with the concept of complementary capabilities, where organizational resources become more effective when integrated with supporting technological competencies.

Previous studies generally examined either the direct effect of digital marketing on performance or the direct impact of big data analytics on organizational outcomes. Only limited studies investigated mediation relationships, and most focused on customer engagement or innovation capability as mediating variables. Moreover, previous research often failed to distinguish whether mediation effects were partial or full. This study proposes a partial mediation model, where digital marketing directly affects marketing performance while also indirectly influencing performance through big data analytics capability. The partial mediation assumption is theoretically justified because digital marketing can independently improve customer interaction and market visibility, while big data analytics strengthens these effects through data-driven decision-making and predictive insights. Therefore, the following hypothesis is formulated:

H4: Big data analytics partially mediates the relationship between digital marketing and marketing performance in Indonesian logistics firms.

2.5. Theoretical Gap and Research Contribution

Based on the reviewed literature, several important research gaps can be identified. First, prior studies predominantly focused on retail, manufacturing, and financial sectors, while empirical evidence from Indonesian logistics firms remains limited. Second, previous research generally examined digital marketing and big data analytics separately rather than integrating both constructs within a comprehensive analytical framework. Third, many earlier studies relied on direct-effect models and failed to investigate the mediating mechanism through which big data analytics transforms digital marketing capability into marketing performance outcomes. Additionally, prior studies often lacked strong theoretical integration between digital capability theories and strategic management perspectives such as the Resource-Based View (RBV). This study addresses these limitations by integrating digital marketing capability and big data analytics capability within an RBV-based framework and examining their direct and indirect relationships using SEM-PLS. Furthermore, this study contributes methodologically by employing a mediation-based structural model capable of

simultaneously examining complex causal relationships among latent constructs in the Indonesian logistics industry context.

III. Research Model

This study employed a quantitative research approach with an explanatory cross-sectional design to investigate the causal relationships among digital marketing, big data analytics, and marketing performance in Indonesian logistics firms. A cross-sectional design was selected because this study aimed to examine simultaneous relationships among latent variables within a single period of observation. This design is considered appropriate for identifying predictive and associative relationships between organizational capabilities and performance outcomes in the context of digital transformation (Hair et al., 2022). The study is grounded in the Resource-Based View (RBV) and Technology–Organization–Environment (TOE) frameworks. From the RBV perspective, digital marketing capability and big data analytics capability are considered strategic organizational resources that contribute to sustainable competitive advantage. Meanwhile, the TOE framework explains that technological adoption, organizational readiness, and environmental pressures encourage firms to adopt data-driven digital marketing practices (Tornatzky & Fleischer, 2021). Based on these theoretical perspectives, this study developed a structural framework connecting digital marketing, big data analytics, and marketing performance.

Table 1. Research Hypotheses

Code	Hypothesis
H1	Digital marketing has a positive and significant effect on marketing performance.
H2	Big data analytics has a positive and significant effect on marketing performance.
H3	Digital marketing has a positive and significant effect on big data analytics.
H4	Big data analytics partially mediates the relationship between digital marketing and marketing performance.

3.1. Population and Sampling Technique

The population of this study consisted of logistics companies operating in Indonesia that had implemented digital technology in marketing and customer communication activities. The unit of analysis was organizational representatives directly involved in digital marketing and data analytics activities, including marketing managers, digital marketing managers, customer relationship officers, and marketing data analysts. This study employed a purposive sampling technique combined with stratification based on company size to minimize potential selection bias and ensure the representativeness of the sample. The participating companies were classified into small, medium, and large logistics firms according to their operational scale and number of employees. The purposive sampling approach was considered appropriate because this study required respondents who possessed specific knowledge and experience related to digital marketing and data analytics activities within logistics companies.

Table 2. Inclusion Criteria for Respondents

No	Inclusion Criteria
1	Respondents work in logistics or transportation-related companies operating in Indonesia.
2	Respondents possess at least one year of experience in marketing or digital-related activities.
3	Companies actively utilize digital platforms for marketing communication and customer interaction.
4	Respondents understand digital marketing implementation and customer data management.

A total of 350 valid responses were collected and analyzed. The sample size satisfies the “10-times rule” commonly recommended in PLS-SEM analysis, where the minimum sample should be at least ten times the largest number of structural paths directed toward a latent construct (Hair et al., 2022). Since the maximum number of structural relationships directed at one construct in this model was three, the minimum required sample size was substantially exceeded.

Table 3. Respondent Screening Process

Stage	Number of Responses
Distributed questionnaires	412
Incomplete responses removed	38
Responses not meeting inclusion criteria	24
Final valid responses	350

3.2. Questionnaire Development and Pilot Testing

The questionnaire instrument was developed through several systematic stages to ensure content validity and measurement reliability. First, questionnaire items were adapted from established studies related to digital marketing, big data analytics, and marketing performance. Second, the initial instrument draft underwent expert review involving three academic experts in digital marketing and two industry practitioners from logistics firms to evaluate clarity, relevance, and contextual suitability. Third, a pilot test was conducted involving 40 respondents from logistics companies who were not included in the final sample. The pilot test results demonstrated satisfactory reliability values. Cronbach’s alpha values for all constructs exceeded the recommended threshold of 0.70, indicating strong internal consistency reliability (Hair et al., 2022).

Table 4. Pilot Test Reliability Results

Variable	Number of Items	Cronbach’s Alpha	Interpretation
Digital Marketing	8	0.88	Reliable
Big Data Analytics	10	0.90	
Marketing Performance	8	0.91	

The final questionnaire employed a five-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). Data collection was conducted online using Google Forms over a three-month period. To ensure anonymity and reduce social desirability bias, respondents were informed that their responses would remain confidential and used exclusively for academic purposes.

3.3. Measurement of Variables

All constructs in this study were operationalized as reflective measurement models because the indicators represented manifestations of the latent variables and were expected to correlate with one another (Becker et al., 2023).

Table 5. Operational Definition of Variables

Variable	Dimensions/Indicators	Sample Item	Source
Digital Marketing	Social media marketing, Content marketing, SEO/SEM implementation, Customer engagement	“Our company actively utilizes social media platforms to engage customers.”	Ahmad & Rosli (2023); Tamin & Veri (2024)

Variable	Dimensions/Indicators	Sample Item	Source
Big Data Analytics	Volume, Variety, Velocity, Customer insight, Personalization capability, Predictive analytics capability	"Our company utilizes customer data analytics to predict market demand trends."	Khairifa (2024)
Marketing Performance	Sales growth, Market share, Customer acquisition, Customer retention	"Digital marketing activities contribute to increasing customer acquisition."	Waseem et al. (2024); Safitri & Komaryatin (2024)

No reverse-scoring procedures were used because all questionnaire items were positively worded to minimize respondent confusion.

3.4. Data Collection Procedure and Ethical Considerations

Data collection was conducted online through Google Forms distributed via professional networks, logistics associations, and email communication. Before completing the questionnaire, respondents received an informed consent statement explaining the study objectives, voluntary participation, confidentiality assurance, and the right to withdraw at any time. This study complied with research ethics principles regarding anonymity, confidentiality, and responsible data management. All collected data were stored securely and used solely for academic purposes. Ethical approval for this study was obtained from the institutional research ethics committee of the authors' affiliated institution.

3.5. Justification for Using PLS-SEM

This study utilized Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4 software for data analysis. PLS-SEM was selected because it is appropriate for predictive-oriented studies and theory development involving complex structural relationships among latent variables. In addition, PLS-SEM is robust for non-normal data distributions and suitable for mediation analysis involving reflective constructs and medium sample sizes (Hair et al., 2022; Becker et al., 2023). Before analysis, missing data were examined. Since the percentage of missing responses was below 5%, missing values were handled using mean substitution techniques. Data normality was also assessed, and the results indicated non-normal distribution patterns, further supporting the suitability of PLS-SEM.

Table 6. Justification for Using PLS-SEM

Criteria	Explanation
Non-normal data	Data distribution was non-normal based on skewness and kurtosis values.
Predictive orientation	The study aimed to predict marketing performance outcomes.
Complex mediation model	The model included direct and indirect relationships.
Reflective constructs	All variables were modeled reflectively.
Sample adequacy	Sample size exceeded the minimum PLS-SEM requirement.

3.6. Data Analysis Procedure

The data analysis process consisted of two major stages: evaluation of the measurement model (outer model) and evaluation of the structural model (inner model).

a. Measurement Model Evaluation

The outer model evaluation assessed construct validity and reliability through indicator loadings (> 0.70), Composite Reliability (CR > 0.70), Cronbach's Alpha (> 0.70), and Average Variance Extracted (AVE > 0.50). Discriminant validity was evaluated using the Fornell–Larcker Criterion and Heterotrait–Monotrait Ratio (HTMT < 0.85).

Table 7. Measurement Model Evaluation Criteria

Measurement Criteria	Threshold
Factor Loading	> 0.70
Cronbach's Alpha	> 0.70
Composite Reliability (CR)	> 0.70
Average Variance Extracted (AVE)	> 0.50
HTMT	< 0.85

If HTMT values exceeded the threshold, additional indicator purification procedures would be conducted to improve construct distinctiveness.

b. Structural Model Evaluation

The structural model evaluation examined the hypothesized relationships among constructs using path coefficients (β), t-statistics, p-values, effect size (f^2), predictive relevance (Q^2 Stone–Geisser), and coefficient of determination (R^2). Bootstrapping analysis was conducted using 5,000 resamples with a significance level of $\alpha = 0.05$. Relationships were considered statistically significant when t-values exceeded 1.96 and p-values were below 0.05 (Hair et al., 2022).

Table 8. Structural Model Evaluation Criteria

Criteria	Interpretation
t-value	> 1.96
p-value	< 0.05
$f^2 = 0.02$	Small effect
$f^2 = 0.15$	Medium effect
$f^2 = 0.35$	Large effect
$Q^2 > 0$	Predictive relevance exists
$R^2 = 0.25$	Weak explanatory power
$R^2 = 0.50$	Moderate explanatory power
$R^2 = 0.75$	Strong explanatory power

The results were presented through comprehensive structural model tables and a fully labeled SEM-PLS path diagram illustrating the direct and indirect relationships among variables.

IV. Research Result

4.1. Respondent Profile and Preliminary Analysis

This study analyzed 350 valid responses collected from logistics companies operating in Indonesia. The respondents consisted primarily of marketing managers, digital marketing specialists, customer relationship officers, and marketing data analysts who were directly involved in digital marketing and customer data management activities. Most respondents represented medium- and large-scale logistics companies with active adoption of digital technologies in marketing communication and customer

engagement processes. The diversity of respondents in terms of company size and operational scale strengthened the representativeness of the data and reduced potential organizational bias.

Before conducting the SEM-PLS analysis, preliminary data screening and assumption testing were performed. Data normality was examined using skewness and kurtosis values, which indicated non-normal data distribution. This finding further justified the use of Partial Least Squares Structural Equation Modeling (PLS-SEM), as the method is robust for non-normal datasets and suitable for predictive-oriented research involving complex structural models (Hair et al., 2022). Furthermore, multicollinearity diagnostics were assessed using Variance Inflation Factor (VIF) values. The results showed that all VIF values ranged between 1.42 and 3.11, which were below the recommended threshold of 5.00, confirming the absence of multicollinearity issues among the exogenous variables. To reduce the possibility of Common Method Variance (CMV), several procedural remedies were implemented during data collection, including respondent anonymity, randomization of questionnaire item order, and assurance that responses would only be used for academic purposes. In addition, Harman's single-factor test was conducted to statistically examine CMV. The result indicated that the first factor explained 38.4% of the total variance, which was below the recommended threshold of 50%, suggesting that CMV was not a significant concern in this study.

4.2. Measurement Model Evaluation

The measurement model evaluation was conducted to assess the validity and reliability of all constructs used in the study. All constructs were modeled as reflective constructs and evaluated using factor loadings, Cronbach's alpha, Composite Reliability (CR), Average Variance Extracted (AVE), and discriminant validity measures. The results showed that all indicator loadings exceeded the recommended threshold of 0.70, indicating satisfactory convergent validity. Composite Reliability values ranged from 0.91 to 0.93, while Cronbach's alpha coefficients ranged from 0.88 to 0.91, demonstrating strong internal consistency reliability. Furthermore, all AVE values exceeded 0.50, indicating that each construct explained more than 50% of the variance of its indicators.

Table 9. Construct Reliability and Validity Results

Variable	Cronbach's α	Composite Reliability	AVE	Interpretation
Digital Marketing	0.88	0.91	0.67	Valid and Reliable
Big Data Analytics	0.90	0.92	0.69	
Marketing Performance	0.91	0.93	0.71	

Discriminant validity was assessed using both the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT). The results indicated that the square roots of AVE for all constructs were greater than their inter-construct correlations. In addition, all HTMT values were below 0.85, confirming satisfactory discriminant validity.

Table 10. HTMT Discriminant Validity Results

Constructs	HTMT Value	Threshold
Digital Marketing → Big Data Analytics	0.74	< 0.85
Digital Marketing → Marketing Performance	0.71	< 0.85
Big Data Analytics → Marketing Performance	0.79	< 0.85

The content validation process was also conducted prior to the main survey through expert review involving three academics and two logistics industry practitioners. The Content Validity Ratio (CVR) values for all questionnaire items ranged from 0.78 to 0.92, indicating that all indicators were considered relevant and representative for measuring the constructs. A complete appendix containing all questionnaire indicators, measurement scales, item statements, and reference sources is provided in Appendix A. All indicators were measured using a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Sample

items included statements such as “Our company actively utilizes social media platforms to engage customers” and “Our company utilizes customer data analytics to predict market demand trends.”

4.3. Structural Model Evaluation

The structural model evaluation was conducted to test the proposed hypotheses and assess the predictive capability of the model. Bootstrapping analysis was performed using 5,000 resamples with a significance level of $\alpha = 0.05$. To ensure coefficient stability, a sensitivity analysis comparing 1,000 and 5,000 resamples was also conducted, and the results demonstrated consistent coefficient patterns across both procedures. The R^2 value for Big Data Analytics was 0.58, indicating that digital marketing explained 58% of the variance in big data analytics capability. Meanwhile, the R^2 value for Marketing Performance was 0.64, suggesting that digital marketing and big data analytics jointly explained 64% of the variance in marketing performance. These values indicate moderate-to-strong explanatory power according to SEM-PLS standards.

Table 11. Structural Model Results

Hypothesis	Relationship	β	t-value	p-value	f^2	Q^2	Result
H1	Digital Marketing → Marketing Performance	0.32	4.85	$p < 0.001$	0.18	0.39	Supported
H2	Big Data Analytics → Marketing Performance	0.41	6.12	$p < 0.001$	0.24	0.39	
H3	Digital Marketing → Big Data Analytics	0.76	12.45	$p < 0.001$	0.58	0.42	
H4	Digital Marketing → Big Data Analytics → Marketing Performance	0.31	5.27	$p < 0.001$	0.16	0.39	

The predictive relevance (Q^2) values for endogenous constructs were above zero, confirming that the structural model possessed adequate predictive capability.

4.4. Mediation Analysis

The mediation effect of big data analytics was examined using the bootstrapped indirect effect approach with a 95% bias-corrected confidence interval (BCa CI). The indirect effect of Digital Marketing on Marketing Performance through Big Data Analytics was statistically significant ($\beta = 0.31$, $t = 5.27$, $p < 0.001$), with a 95% BCa confidence interval ranging from 0.198 to 0.427, which did not include zero. These findings confirmed the presence of a significant mediation effect. Furthermore, because the direct effect of Digital Marketing on Marketing Performance remained significant after including the mediator, the mediation type was classified as partial mediation rather than full mediation. This result suggests that digital marketing directly enhances marketing performance while simultaneously improving performance indirectly through enhanced analytical capability.

4.5. Comparative Analysis with Previous Studies

The findings of this study are generally consistent with previous studies emphasizing the strategic role of digital marketing and big data analytics in organizational performance improvement. However, the effect size of Big Data Analytics on Marketing Performance in this study was relatively stronger compared to findings reported in retail and banking sectors.

Table 12. Comparison with Previous Studies

Study	Sector	β : DM → MP	β : BDA → MP	R^2 MP
Waseem et al. (2024)	Retail	0.29	—	0.48

Akter et al. (2020)	Manufacturing	—	0.33	0.52
Current Study	Logistics	0.32	0.41	0.64

The stronger coefficient of Big Data Analytics → Marketing Performance in the logistics context can be explained by the industry's reliance on real-time information processing, supply chain optimization, route efficiency, and customer responsiveness. Logistics firms require accurate predictive capabilities to manage customer demand fluctuations, delivery scheduling, and service reliability. Consequently, analytical capability becomes more strategically valuable in logistics firms than in sectors where operational coordination is less data intensive.

V. Discussion

The findings of this study demonstrate that digital marketing and big data analytics play important strategic roles in improving marketing performance within Indonesian logistics firms. The statistical results revealed that digital marketing has a positive and significant effect on marketing performance, indicating that the implementation of digital-based marketing activities contributes to improving sales growth, market share, customer acquisition, and customer retention. This finding supports previous studies by Dwivedi et al. (2021) and Waseem et al. (2024), which emphasized that digital marketing enables firms to strengthen customer engagement and improve market responsiveness through interactive digital communication channels. In the context of logistics companies, digital marketing activities such as social media marketing, content marketing, SEM implementation, and digital customer engagement allow firms to increase service visibility and improve communication effectiveness with customers in increasingly competitive digital markets.

From the perspective of the Resource-Based View (RBV), digital marketing capability can be categorized as a strategic organizational resource because it enables firms to develop valuable customer relationships and strengthen market positioning. The ability of logistics companies to utilize digital platforms effectively allows them to respond more quickly to customer needs and market changes. This capability becomes increasingly important in the logistics industry, where customer responsiveness, delivery reliability, and service transparency are critical determinants of competitiveness. However, the present study also emphasizes that the positive contribution of digital marketing to marketing performance should not be generalized across all organizational contexts. The effectiveness of digital marketing strategies may vary depending on company size, technological readiness, and organizational capability in managing digital transformation. Therefore, the conclusion regarding improved customer loyalty and retention should be interpreted within the specific context of logistics firms that actively adopt digital technologies and customer-oriented communication strategies.

The results further indicate that big data analytics exerts a stronger influence on marketing performance compared to digital marketing capability alone. This finding suggests that the capability to collect, process, and analyze customer and operational data is highly critical in the logistics sector. Unlike many other industries, logistics firms operate in environments characterized by dynamic customer demand, real-time supply chain coordination, delivery scheduling, and operational uncertainty. Consequently, data-driven decision-making becomes an essential organizational capability for improving service effectiveness and marketing outcomes. This finding is consistent with studies conducted by Wamba et al. (2020) and Akter et al. (2020), which argued that organizations possessing strong analytical capabilities are more capable of generating competitive advantage through predictive insights and strategic responsiveness. The stronger coefficient of the relationship between big data analytics and marketing performance in this study compared to findings from retail or manufacturing sectors can be explained by the operational characteristics of logistics firms. Logistics companies depend heavily on accurate information flows, customer tracking systems, route optimization, and demand forecasting to maintain service quality and customer satisfaction. Through big data analytics, firms can analyze customer behavior patterns, optimize delivery routes, personalize marketing communication, and predict future market trends more accurately. Therefore, analytical capability functions

not only as a technological support system but also as a core strategic asset that directly contributes to organizational performance improvement.

Another important finding of this study is the significant mediating role of big data analytics in the relationship between digital marketing and marketing performance. The mediation analysis confirmed that digital marketing indirectly improves marketing performance through enhanced analytical capability. This result indicates that digital marketing activities alone may not fully generate superior organizational outcomes unless companies possess the capability to transform digital data into actionable strategic insights. In other words, digital marketing generates large volumes of customer and market data, while big data analytics enables firms to process and utilize those data effectively for strategic decision-making purposes. The mediation result strengthens the argument that digital marketing and big data analytics should be viewed as complementary organizational capabilities rather than independent strategic resources.

From a theoretical perspective, the findings strongly support the Resource-Based View (RBV), which argues that sustainable competitive advantage emerges from valuable, rare, inimitable, and non-substitutable (VRIN) resources. In this study, digital marketing capability and big data analytics capability collectively function as strategic organizational resources that are difficult for competitors to replicate. Firms capable of integrating digital customer engagement with data-driven analytical systems are more likely to achieve superior market responsiveness, customer relationship management, and strategic adaptability. The integration of these capabilities enables logistics firms to develop more accurate and personalized marketing strategies, thereby improving organizational competitiveness in the digital economy era.

In addition, the findings also align with recent perspectives on Data-Driven Marketing Maturity, which emphasize that organizations with advanced analytical maturity tend to achieve better marketing effectiveness and customer personalization. Logistics firms that possess stronger analytical capabilities are more capable of transforming customer data into predictive insights that improve marketing precision and operational efficiency. Therefore, this study highlights that organizational investment in digital marketing should be accompanied by investment in data analytics infrastructure, human resources, and analytical competencies to maximize business performance outcomes. Overall, the findings of this study confirm that digital transformation in logistics firms should not be limited to digital communication adoption alone. Instead, organizations need to integrate digital marketing activities with analytical capabilities to create sustainable competitive advantage and improve marketing performance in increasingly data-driven business environments.

VI. Conclusion

This study examined the relationships among digital marketing, big data analytics, and marketing performance in Indonesian logistics firms using the SEM-PLS approach. The findings demonstrate that digital marketing positively and significantly influences marketing performance, while big data analytics exhibits an even stronger positive effect on marketing performance. In addition, digital marketing significantly affects big data analytics capability, indicating that digital marketing activities generate valuable organizational data resources that can be transformed into strategic insights. The mediation analysis further confirmed that big data analytics partially mediates the relationship between digital marketing and marketing performance. This finding suggests that the effectiveness of digital marketing strategies depends not only on digital communication activities but also on the organization's capability to process and utilize customer data strategically. Theoretically, this study contributes to the integration of Resource-Based View (RBV) and data-driven marketing perspectives by demonstrating that digital marketing and big data analytics function as complementary strategic capabilities that enhance organizational competitiveness. Methodologically, the study contributes by applying mediation-based SEM-PLS analysis with robustness checks including sensitivity analysis, discriminant validity testing, and Common Method Variance assessment.

Despite these contributions, several limitations should be acknowledged. First, the cross-sectional design limits the ability to capture temporal changes and long-term causal relationships among variables.

Second, the study relied on self-reported survey data, which may still contain subjective response bias despite procedural and statistical controls. Third, the research focused exclusively on Indonesian logistics firms, limiting the generalizability of findings to other sectors or countries. Future research is recommended to employ longitudinal panel data to examine the long-term impact of digital marketing and analytical capabilities on organizational performance. Researchers are also encouraged to adopt mixed-method approaches combining quantitative and qualitative techniques to obtain deeper insights into organizational digital transformation processes. Furthermore, future studies may incorporate additional variables such as artificial intelligence capability, customer experience, organizational agility, or innovation capability to increase the explanatory power of the research model. Multi-group analysis based on company size, regional characteristics, or technology adoption levels is also recommended to explore contextual differences across organizations.

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