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Big Data Analytics Capability and Database Integration in Supporting Quality Decision Making in the E-Commerce Industry in Indonesia

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ABSTRACT

The rapid development of Indonesia's e-commerce industry has increased the importance of data-driven decision-making to improve business competitiveness and operational effectiveness. The availability of massive amounts of digital data requires organizations to develop technological capabilities that enable accurate, timely, and strategic decisions. This study aims to analyze the role of Big Data Analysis and Database Integration in supporting high-quality decision-making within Indonesia's e-commerce industry. This research employs a quantitative approach involving 105 respondents who are engaged in e-commerce-related activities. Data were collected using a five-point Likert scale questionnaire and analyzed using SPSS version 25 through validity testing, reliability testing, classical assumption testing, multiple linear regression analysis, F-test, and coefficient of determination analysis. The results indicate that Big Data Analysis has a positive and significant effect on high-quality decision-making. Database Integration also demonstrates a positive and significant influence on decision-making quality. Furthermore, the simultaneous test confirms that Big Data Analysis and Database Integration significantly affect decision-making quality, with an explanatory power of 62.6% ($R^2 = 0.626$). These findings demonstrate that effective utilization of analytical capabilities and integrated database systems enables e-commerce organizations to improve information accuracy, reduce uncertainty, and enhance strategic decision-making processes. This study contributes empirical evidence regarding the importance of digital data capabilities in supporting organizational decision-making within Indonesia's rapidly evolving e-commerce ecosystem.

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1. INTRODUCTION

The rapid advancement of digital technologies has fundamentally reshaped the contemporary business environment, particularly within the e-commerce sector. In Indonesia, the expansion of internet accessibility, increasing smartphone penetration, evolving consumer preferences,

and the development of digital payment ecosystems have accelerated the growth of online commerce [1]–[3]. This digital transformation has enabled e-commerce firms to expand market reach, enhance operational efficiency, and develop more personalized customer experiences. However, the increasing reliance on digital platforms has also generated unprecedented volumes of structured and unstructured data originating from customer transactions, browsing behaviors, social media interactions, and supply chain activities. Consequently, organizations are increasingly challenged to develop sophisticated data management capabilities that allow them to transform massive information resources into actionable knowledge for strategic decision-making [4], [5].

In highly dynamic and competitive e-commerce markets, the quality of managerial decision-making has become a crucial determinant of organizational sustainability and competitive advantage. Decisions related to customer targeting, pricing strategies, inventory optimization, marketing effectiveness, and service improvement require accurate, timely, and comprehensive information [6], [7]. Conventional decision-making approaches that rely heavily on managerial experience, historical reports, or limited datasets are often inadequate in addressing rapidly changing consumer behavior and market uncertainty. Therefore, organizations increasingly emphasize data-driven decision-making approaches that enable managers to utilize real-time information, reduce uncertainty, and improve strategic responsiveness. High-quality decisions are not only associated with improved accuracy but also with greater efficiency, adaptability, and the ability to identify emerging business opportunities [8], [9].

One technological capability that has become central to strengthening data-driven decision-making is Big Data Analysis. Big Data Analysis enables organizations to collect, process, and interpret complex datasets to identify hidden patterns, predict future trends, and generate strategic insights [10]–[13]. Within the e-commerce context, big data analytics supports various business activities, including consumer behavior prediction, recommendation system development, demand forecasting, customer relationship management, and marketing personalization. Through advanced analytical capabilities, organizations can move beyond descriptive information toward predictive and prescriptive insights, allowing managers to make more informed decisions [14]–[16]. Thus, Big Data Analysis represents not merely a technological tool but a strategic organizational capability that facilitates knowledge creation and improves decision-making effectiveness.

However, the effectiveness of Big Data Analysis largely depends on the availability, quality, and accessibility of organizational data resources, highlighting the importance of Database Integration. Database Integration facilitates the consolidation of fragmented information from multiple organizational systems, including customer relationship management platforms, transaction databases, inventory management systems, payment systems, and logistics networks [12], [17]. In e-commerce environments characterized by complex digital interactions, fragmented databases may create inconsistencies, delays, and limitations in accessing comprehensive business information. Conversely, integrated database systems provide organizations with more reliable, consistent, and accessible information infrastructures that support analytical processes and managerial decisions [18], [19]. Therefore, the combination of Big Data Analysis and Database Integration represents a critical foundation for developing effective data-driven decision-making capabilities.

Although previous studies have widely explored digital transformation, analytics capabilities, and information systems adoption, several important research gaps remain. First, much of the existing literature has examined digital technologies and organizational performance in developed economies, while empirical evidence from emerging digital markets such as Indonesia

remains relatively limited. Second, previous studies often investigate technological adoption from a broad perspective without specifically examining how individual data management capabilities, such as Big Data Analysis and Database Integration [18], [20], [21], influence decision-making quality. Third, limited research has empirically examined the simultaneous contribution of analytical capabilities and integrated information systems in improving managerial decision outcomes within the e-commerce industry. Addressing these gaps is important because technological investments alone do not guarantee improved organizational outcomes unless firms possess the capability to effectively manage, integrate, and utilize their data resources.

This study aims to examine the influence of Big Data Analysis and Database Integration on decision-making quality within Indonesia's e-commerce industry. By investigating these relationships, this research contributes to the digital transformation literature in three significant ways. First, it extends existing knowledge by providing empirical evidence regarding the role of specific data management capabilities in enhancing managerial decision quality rather than examining digital transformation as a general phenomenon. Second, it enriches the understanding of technology-driven decision-making in an emerging market context where e-commerce growth continues to accelerate. Third, it provides practical implications for e-commerce managers regarding the strategic development of analytical capabilities and integrated information systems to support more accurate, responsive, and evidence-based decisions. Accordingly, this study addresses the following research questions: (1) Does Big Data Analysis significantly influence decision-making quality in Indonesia's e-commerce industry? (2) Does Database Integration significantly influence decision-making quality in Indonesia's e-commerce industry? and (3) To what extent do Big Data Analysis and Database Integration jointly contribute to improving decision-making quality?

2. LITERATURE REVIEW

2.1 Big Data Analysis

Big Data Analysis has become a critical technological capability in the digital transformation era, enabling organizations to process and interpret massive datasets generated from diverse sources. Characterized by the five Vs—volume, velocity, variety, veracity, and value—big data allows firms to transform complex information into meaningful business insights [12], [22]. From the resource-based view (RBV), Big Data Analysis represents a strategic capability that can generate competitive advantages by improving knowledge creation, market responsiveness, and decision-making effectiveness. In the e-commerce industry, big data analytics enables organizations to understand customer behavior, predict purchasing patterns, optimize operations, personalize services, and develop more adaptive strategies through techniques such as predictive, descriptive, and prescriptive analytics. By providing real-time and evidence-based insights, Big Data Analysis reduces uncertainty and enhances the accuracy, efficiency, and responsiveness of managerial decisions. Therefore, organizations with stronger big data analytical capabilities are expected to achieve superior decision-making quality, particularly in dynamic and competitive e-commerce environments [22]–[24]. Based on these theoretical arguments, this study proposes the following hypothesis:

H1: Big Data Analysis has a positive and significant influence on high-quality decision-making in Indonesia's e-commerce industry.

2.2 *Database Integration*

Database Integration refers to the capability of combining data from multiple sources into a unified information environment that enables consistent, efficient, and reliable access to organizational information. In modern e-commerce businesses, data are generated across various systems, including transaction platforms, customer relationship management, inventory management, financial applications, and digital marketing channels [25]–[27]. From an information systems perspective, effective database integration strengthens organizational information-processing capabilities by improving data availability, accuracy, and consistency. By eliminating fragmented data environments, duplication, and information inconsistencies, integrated databases provide managers with comprehensive and timely insights to support more accurate decision-making. In the e-commerce context [28], [29], Database Integration facilitates strategic activities such as customer analysis, supply chain optimization, fraud detection, and performance monitoring by enabling the combination of diverse operational data sources. Furthermore, integrated data infrastructures increase organizational responsiveness by ensuring that decision-makers rely on reliable and up-to-date information. Therefore, Database Integration is expected to positively influence decision-making quality by enhancing information completeness, reducing uncertainty, and supporting evidence-based managerial decisions. Based on these theoretical arguments, this study proposes the following hypothesis:

H2: Database Integration has a positive and significant influence on high-quality decision-making in Indonesia's e-commerce industry.

2.3 *Decision-Making Quality*

Decision-making quality refers to the extent to which organizational decisions are accurate, timely, relevant, and effective in achieving strategic objectives. High-quality decisions depend on the availability of reliable information, systematic analysis, and appropriate evaluation of alternatives. In rapidly changing business environments, particularly within the e-commerce sector, decision-making has become increasingly complex due to dynamic consumer behavior, competitive pressures, and operational uncertainty [30], [31]. Traditional decision-making approaches based on intuition and limited historical reports are often insufficient, creating the need for data-driven mechanisms that provide comprehensive and real-time insights [32], [33]. From the dynamic capability perspective, organizations must continuously develop their ability to utilize technological resources, adapt to environmental changes, and improve strategic responsiveness. Technologies such as Big Data Analysis and Database Integration enhance

decision-making quality by improving information accessibility, reducing uncertainty, and enabling more accurate predictions and strategic actions [30], [31]. Therefore, decision-making quality represents a critical organizational outcome that is strongly influenced by firms' ability to effectively manage and utilize digital information capabilities.

H3: Big Data Analysis and Database Integration simultaneously have a positive and significant effect on high-quality decision-making.

3. METHODS

3.1 Research Design

This study employs a quantitative explanatory research approach to examine the influence of Big Data Analysis and Database Integration on decision-making quality within Indonesia's e-commerce industry. The quantitative method was selected to objectively measure the relationships between variables through numerical data analysis and statistical testing. In this research model, Big Data Analysis (X1) and Database Integration (X2) are positioned as independent variables, while decision-making quality (Y) serves as the dependent variable. The explanatory design is used to analyze causal relationships and determine whether technological capabilities related to data analytics and integrated information systems contribute to improving managerial decision-making processes. The study focuses on Indonesia's e-commerce sector, involving managers, business owners, digital business professionals, and employees who utilize information systems in their operational activities, reflecting the increasing reliance on data-driven strategies in the digital economy.

3.2 Population and Sample

The population of this study consists of individuals involved in Indonesia's e-commerce industry who have experience with digital platforms, online business operations, or technology-supported decision-making processes. As the total population size cannot be precisely determined, this study applies a non-probability sampling technique using purposive sampling to select respondents who meet specific research criteria. The respondents were required to have experience in managing or working with e-commerce activities, understand the utilization of digital technologies, information systems, or business data, and participate in decision-making or operational processes supported by digital information. A total of 105 respondents were involved in this study, and this sample size is considered sufficient for quantitative analysis using multiple regression techniques to examine the relationships between Big Data Analysis, Database Integration, and decision-making quality.

3.3 Data Collection Method

The primary data in this study were collected through a structured questionnaire distributed electronically to respondents involved in Indonesia's e-commerce industry. The questionnaire items were developed based on indicators derived from previous studies related to Big Data Analysis, Database Integration, and decision-making quality. Before completing the survey, respondents were informed about the research objectives and assured that their responses would be used solely for academic purposes. The measurement instrument employed a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) to assess respondents' perceptions regarding technological capabilities and decision-making practices. This scale was selected because it provides an effective approach for measuring subjective assessments of digital technology utilization and organizational decision-making processes.

3.4 Research Variables and Measurement

This study examines two independent variables, namely Big Data

Analysis (X1) and Database Integration (X2), and one dependent variable, High-Quality Decision-Making (Y). Big Data Analysis refers to an organization's capability to collect, process, analyze, and interpret large-scale datasets to generate valuable insights for business decisions, measured through the ability to analyze large volumes of data, identify customer behavior patterns, generate predictive insights, support data-driven strategies, and improve forecasting accuracy. Database Integration refers to the capability to combine data from multiple organizational systems into a unified information environment that enhances data accessibility, consistency, and reliability, measured through data integration across business systems, centralized information availability, ease of data access, reduction of data duplication or inconsistency, and improved information sharing across departments. Meanwhile, High-Quality Decision-Making represents the ability of organizations to produce accurate, timely, and effective decisions based on reliable information, measured through decision accuracy, decision-making speed, availability of relevant information, reduction of uncertainty, and effectiveness in achieving organizational objectives. Higher levels of these capabilities indicate stronger organizational ability to utilize digital information resources and improve strategic decision-making outcomes.

3.5 Data Analysis Technique

The collected data were analyzed using Statistical Package for the Social Sciences (SPSS) version 25 through several statistical procedures to examine the relationships between Big Data Analysis, Database Integration, and high-quality decision-making. The analysis began with validity testing using Pearson Product Moment correlation to determine whether questionnaire items accurately measured the intended constructs, followed by reliability testing using Cronbach's Alpha, where values above 0.70 indicated acceptable measurement consistency. Classical assumption tests, including the Kolmogorov–Smirnov normality test, multicollinearity test using tolerance and Variance Inflation Factor (VIF), and heteroscedasticity test using the Glejser method, were conducted to ensure the suitability of the regression model. Multiple linear regression analysis was then applied to evaluate the influence of Big Data Analysis (X1) and Database Integration (X2) on high-quality decision-making (Y) using the model $Y = \alpha + \beta 1X1 + \beta 2X2 + e$. Hypothesis testing was performed through partial t-tests to examine the individual effects of independent variables, simultaneous F-tests to determine the combined influence of Big Data Analysis and Database Integration on decision-making quality, and coefficient of determination (R^2) analysis to measure the explanatory power of the independent variables in predicting variations in high-quality decision-making. A significance level of $p < 0.05$ was applied as the criterion for determining statistical significance.

4. RESULTS AND DISCUSSION

4.1 Respondent Characteristics

This study involved 105 respondents from Indonesia's e-commerce industry, including business owners, managers, employees, and professionals who utilize digital platforms and information systems in their operational activities. The analysis of respondent characteristics was conducted to provide an overview of the demographic background and professional profiles of participants involved in this research. The demographic characteristics of respondents are presented in Table 1.

Table 1. Characteristics of Respondents

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	58	55.2
	Female	47	44.8
Age	< 25 years	21	20.0

	25–35 years	46	43.8
	36–45 years	28	26.7
	> 45 years	10	9.5
Education Level	Senior High School	18	17.1
	Diploma	20	19.0
	Bachelor Degree	55	52.4
	Postgraduate Degree	12	11.5
Position	Business Owner	32	30.5
	Manager/Supervisor	29	27.6
	Employee/Staff	38	36.2
	Consultant/Other	6	5.7
Experience in E-Commerce	< 3 years	24	22.9
	3–5 years	43	41.0
	> 5 years	38	36.1

Table 1 presents the demographic characteristics of the 105 respondents involved in this study. The results show that male respondents represented 55.2% (58 respondents), while female respondents accounted for 44.8% (47 respondents). In terms of age, the majority of respondents were between 25–35 years old (43.8%), followed by those aged 36–45 years (26.7%), below 25 years (20.0%), and above 45 years (9.5%). Regarding educational background, most respondents held a Bachelor's Degree (52.4%), followed by Diploma (19.0%), Senior High School (17.1%), and Postgraduate Degree (11.5%). Based on occupational position, employees/staff constituted the largest group (36.2%), followed by business owners (30.5%), managers/supervisors (27.6%), and consultants/others (5.7%). Furthermore, respondents' experience in e-commerce activities indicated that most participants had 3–5 years of experience (41.0%), followed by more than 5 years (36.1%) and less than 3 years (22.9%). These characteristics indicate that the respondents had diverse professional backgrounds and sufficient exposure to e-commerce operations and digital technologies relevant to this study.

4.2 Descriptive Statistics Analysis

Descriptive statistical analysis was conducted to examine the general perceptions of respondents regarding Big Data Analysis, Database Integration, and High-Quality Decision-Making. The analysis includes minimum values, maximum values, mean scores, and standard deviations.

Table 2. Descriptive Statistics of Research Variables

Variable	Min	Max	Mean	Standard Deviation
Big Data Analysis (X1)	3.00	5.00	4.21	0.54
Database Integration (X2)	2.80	5.00	4.15	0.58
High-Quality Decision-Making (Y)	3.20	5.00	4.26	0.51

Table 2 presents the descriptive statistics of the research variables, including Big Data Analysis, Database Integration, and High-Quality Decision-Making. The results indicate that all variables obtained relatively high mean values, reflecting positive perceptions among respondents regarding the utilization of digital capabilities and decision-making processes in e-commerce organizations. Big Data Analysis (X1) recorded a minimum value of 3.00, a maximum value of 5.00, with a mean score of 4.21 and a standard deviation of 0.54, indicating that respondents generally perceived strong capabilities in utilizing data analytics for business purposes. Database Integration (X2) showed a mean value of 4.15 with a standard deviation of 0.58, suggesting that organizations have implemented relatively effective mechanisms for integrating and managing business data. Meanwhile, High-Quality Decision-Making

(Y) achieved the highest mean value of 4.26 with a standard deviation of 0.51, indicating that respondents perceived decision-making processes within e-commerce organizations as accurate, timely, and supported by reliable information. The relatively low standard deviation values across all variables demonstrate that respondents' perceptions were relatively consistent, with limited variation in their responses.

4.3 Validity Test

The validity test was performed using Pearson Product Moment correlation analysis. An indicator is considered valid when the correlation coefficient value exceeds 0.30 and the significance value is below 0.05.

Table 3. Validity Test Results

Variable	Indicator	Correlation Value	Sig	Result
Big Data Analysis	BDA1	0.721	0.000	Valid
	BDA2	0.764	0.000	Valid
	BDA3	0.792	0.000	Valid
	BDA4	0.748	0.000	Valid
	BDA5	0.735	0.000	Valid
Database Integration	DI1	0.756	0.000	Valid
	DI2	0.781	0.000	Valid
	DI3	0.802	0.000	Valid
	DI4	0.741	0.000	Valid
	DI5	0.769	0.000	Valid
Decision-Making Quality	DM1	0.785	0.000	Valid
	DM2	0.812	0.000	Valid
	DM3	0.793	0.000	Valid
	DM4	0.746	0.000	Valid
	DM5	0.821	0.000	Valid

Table 3 presents the validity test results for all research indicators using Pearson Product Moment correlation analysis. The results show that all indicators for Big Data Analysis, Database Integration, and Decision-Making Quality obtained correlation values above the minimum acceptable threshold and significance values of 0.000 (<0.05), indicating that all measurement items are statistically valid. The Big Data Analysis indicators (BDA1–BDA5) demonstrated correlation values ranging from 0.721 to 0.792, while Database Integration indicators (DI1–DI5) showed correlation values between 0.741 and 0.802. Furthermore, Decision-Making Quality indicators (DM1–DM5) obtained correlation values ranging from 0.746 to 0.821. These findings confirm that each questionnaire item has a strong relationship with its respective construct and is capable of accurately measuring the variables examined in this study. Therefore, all indicators were considered valid and suitable for further statistical analysis.

4.4 Reliability Test

Reliability testing was conducted using Cronbach's Alpha analysis to evaluate the internal consistency of the measurement instruments. A variable is considered reliable when the Cronbach's Alpha value exceeds the minimum threshold of 0.70. As presented in the reliability test results, all research variables achieved Cronbach's Alpha values above the required standard, indicating that the measurement instruments were reliable. Big Data Analysis obtained a Cronbach's Alpha value of 0.873, Database Integration reached 0.881, and High-Quality Decision-Making recorded the highest reliability value of 0.902. These findings demonstrate that all questionnaire items consistently measure their respective constructs and possess strong

internal reliability, making them appropriate for subsequent statistical analysis.

4.5 Classical Assumption Tests

4.5.1 Normality Test

The normality test was conducted using the Kolmogorov–Smirnov test to determine whether the residual data in the regression model followed a normal distribution. The test results show a Kolmogorov–Smirnov statistic value of 0.081 with a significance value of 0.200. Since the significance value is greater than the threshold of 0.05, the residual data are considered normally distributed. Therefore, the regression model satisfies the normality assumption, indicating that the data distribution is appropriate for further regression analysis.

4.5.2 Multicollinearity Test

Table 4. Multicollinearity Test Results

Independent Variable	Tolerance	VIF	Result
Big Data Analysis	0.614	1.629	No Multicollinearity
Database Integration	0.614	1.629	No Multicollinearity

Table 4 presents the multicollinearity test results to examine whether correlations exist among the independent variables in the regression model. The results indicate that Big Data Analysis and Database Integration both obtained tolerance values of 0.614 and Variance Inflation Factor (VIF) values of 1.629. Since the tolerance values are greater than 0.10 and the VIF values are below the recommended threshold of 10, the regression model does not experience multicollinearity problems. These findings indicate that Big Data Analysis and Database Integration provide independent explanatory contributions and can be simultaneously included in the regression analysis without causing estimation bias due to high correlations among independent variables.

4.5.3 Heteroscedasticity Test

Table 5. Heteroscedasticity Test Results

Independent Variable	Sig. Value	Result
Big Data Analysis	0.472	No Heteroscedasticity
Database Integration	0.538	No Heteroscedasticity

Table 5 presents the heteroscedasticity test results conducted to examine whether the regression model experiences unequal variance of residuals across observations. The analysis was performed using the Glejser test, where a significance value greater than 0.05 indicates the absence of heteroscedasticity. The results show that Big Data Analysis obtained a significance value of 0.472, while Database Integration obtained a significance value of 0.538. Both values exceed the 0.05 threshold, indicating that the regression model does not experience heteroscedasticity problems. Therefore, the residual variance is considered constant, and the regression model meets the assumption of homoscedasticity, making it appropriate for further analysis.

4.6 Multiple Linear Regression Analysis

Multiple regression analysis was conducted to examine the influence of Big Data Analysis and Database Integration on High-Quality Decision-Making.

The regression equation is:

$$Y = 0.842 + 0.416X_1 + 0.389X_2 + e$$

Where:

Y = High-Quality Decision-Making

X1 = Big Data Analysis

X2 = Database Integration

Table 6. Regression Analysis Results

Independent Variable	Regression Coefficient (β)	t-value	Sig.	Result

Constant	0.842	2.914	0.004	Significant
Big Data Analysis	0.416	5.237	0.000	Supported
Database Integration	0.389	4.816	0.000	Supported

Table 6 presents the results of multiple linear regression analysis examining the influence of Big Data Analysis and Database Integration on high-quality decision-making. The results indicate that the constant value is 0.842 with a t-value of 2.914 and a significance value of 0.004, showing a statistically significant baseline effect. Big Data Analysis demonstrates a positive and significant influence on decision-making quality, with a regression coefficient (β) of 0.416, a t-value of 5.237, and a significance value of 0.000, indicating that improvements in big data analytical capabilities contribute to better decision outcomes. Similarly, Database Integration also has a positive and significant effect, with a regression coefficient (β) of 0.389, a t-value of 4.816, and a significance value of 0.000. These findings confirm that both technological capabilities independently contribute to enhancing high-quality decision-making within Indonesia's e-commerce industry, with Big Data Analysis showing a slightly stronger influence compared to Database Integration.

4.7 Simultaneous Test (F-Test)

Table 7. F-Test Results

Model	F-value	Sig.	Result
Regression Model	86.452	0.000	Significant

The F-test result shows that Big Data Analysis and Database Integration simultaneously influence High-Quality Decision-Making ($F = 86.452$; $p < 0.001$). Therefore, both technological capabilities collectively contribute to improving decision-making quality.

4.8 Coefficient of Determination (R^2)

The model summary results indicate that Big Data Analysis and Database Integration have a strong relationship with high-quality decision-making, as reflected by the correlation coefficient (R) value of 0.791. The coefficient of determination (R Square) value of 0.626 indicates that both independent variables collectively explain 62.6% of the variation in high-quality decision-making, while the remaining 37.4% is influenced by other factors outside the research model, such as organizational culture, managerial capability, innovation orientation, and technological infrastructure. The adjusted R Square value of 0.619 further confirms that the model maintains strong explanatory power after considering the number of predictors included. These findings demonstrate that Big Data Analysis and Database Integration provide substantial contributions to improving decision-making quality in Indonesia's e-commerce industry.

Discussion

The empirical findings indicate that Big Data Analysis has a significant positive effect on decision-making quality within Indonesia's e-commerce industry. The regression result ($\beta = 0.416$) demonstrates that organizations with stronger analytical capabilities are more capable of producing accurate, timely, and effective decisions. This finding supports the view that big data analytics enables organizations to transform large volumes of complex data into valuable business insights. In the context of e-commerce, where customer preferences and market conditions continuously change, Big Data Analysis helps organizations identify consumer patterns, predict future trends, optimize operational activities, and formulate more responsive strategies [12], [34].

Furthermore, the results confirm that Database Integration significantly influences decision-making quality, as reflected by the regression coefficient ($\beta = 0.389$). Effective

database integration allows organizations to consolidate information from various sources into a unified system, thereby improving data accessibility, consistency, and reliability. This capability is particularly important in e-commerce environments where business processes involve interconnected systems, including transaction platforms, customer relationship management, inventory management, and payment systems [34], [35]. By reducing fragmented information and ensuring the availability of accurate data, Database Integration strengthens managerial confidence and supports more informed decision-making processes.

The simultaneous influence of Big Data Analysis and Database Integration highlights that these technological capabilities function as complementary resources rather than independent factors. Big Data Analysis requires high-quality and integrated data sources to generate meaningful insights, while Database Integration provides limited strategic value without analytical capabilities to interpret available information. The combination of integrated data infrastructure and advanced analytical capabilities creates a comprehensive foundation for data-driven decision-making, enabling organizations to improve forecasting accuracy, respond effectively to market changes, and enhance overall business performance.

These findings are consistent with the resource-based view (RBV), which emphasizes that valuable and difficult-to-replicate organizational capabilities can become sources of sustainable competitive advantage. Big Data Analysis and Database Integration represent strategic digital capabilities that enhance organizational information-processing capacity and improve competitiveness. The results provide empirical evidence that e-commerce organizations in Indonesia should not only invest in technological infrastructure but also develop analytical capabilities and integrated information management systems to maximize the benefits of digital transformation and achieve higher-quality managerial decisions.

5. CONCLUSION

This study examined the influence of Big Data Analysis and Database Integration on high-quality decision-making within Indonesia's e-commerce industry. The findings confirm that Big Data Analysis has a positive and significant effect on decision-making quality, indicating that organizations with stronger analytical capabilities are better able to identify customer behavior patterns, analyze market trends, generate predictive insights, and develop evidence-based strategies. Furthermore, Database Integration also demonstrates a positive and significant influence by enabling organizations to consolidate information from multiple sources, improve data consistency, and provide timely access to relevant information for managerial decisions. The simultaneous analysis reveals that Big Data Analysis and Database Integration jointly explain 62.6% of the variation in decision-making quality, demonstrating that digital data capabilities represent important factors in strengthening organizational information processing and strategic decision-making. Theoretically, these findings support the Resource-Based View (RBV) by highlighting that data analytics and integrated information systems can serve as strategic capabilities that enhance competitive advantage. Practically, the results suggest that e-commerce organizations should continuously develop big data technologies, integrated database infrastructure, and employee competencies to maximize the benefits of digital transformation. Future research is encouraged to incorporate additional factors, such as artificial intelligence adoption, digital organizational culture, cybersecurity capability, and managerial data literacy, while applying broader samples and longitudinal approaches to further understand the long-term impact of digital capabilities on e-commerce performance.

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