

THE IMPACT OF BIG DATA ANALYTICS ON INVESTMENT DECISION MAKING IN CAPITAL MARKETS: A LITERATURE REVIEW

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e-ISSN 2686-0058

p-ISSN 2715-7695

Informasi Artikel

Tanggal masuk

08 November 2025

Tanggal revisi

11 Desember 2025

Tanggal diterima

30 Januari 2026

Kata Kunci:

*Big Data Analytics;
Investment; Capital
markets; Artificial
intelligence;
Predictive analytics*

ABSTRAK

Dampak analisis big data terhadap pengambilan keputusan investasi di pasar modal: tinjauan literatur. Studi ini mengusulkan untuk menganalisis dampak Big Data Analytics (BDA) terhadap pengambilan keputusan Investasi di pasar modal, fokus pada lima elemen utama BDA: Volume, Variasi, Kecepatan, Veracity, dan Value, hingga pengaruhnya terhadap efisiensi, akurasi, dan strategi investasi. Penelitian ini menggunakan metode tinjauan literatur kualitatif. Data sekunder dikumpulkan dari 20 jurnal internasional terpilih yang diakses melalui Scopus dan Semantic Scholar, kemudian dianalisis menggunakan perangkat lunak Publish or Perish, Microsoft Excel, dan Mendeley Desktop. Ruang lingkup penelitian mencakup publikasi dalam 5 tahun terakhir (2020-2024) yang relevan dengan topik tersebut. Hasil penelitian menunjukkan bahwa BDA secara signifikan meningkatkan pengambilan keputusan investasi melalui analisis data berskala besar yang mencakup Informasi pasar, Analisis Risiko, Analisis Kinerja, Faktor Psikologis, dan Faktor Eksternal. Teknologi seperti Kecerdasan Buatan (AI), pembelajaran mesin, dan blockchain memiliki bagian penting dalam meningkatkan kecepatan, akurasi, dan transparansi analisis. Penerapan BDA juga membantu mengurangi bias psikologis investor dan memitigasi risiko secara lebih efektif. Studi ini menyoroti nilai tambah BDA dalam menciptakan strategi investasi adaptif dan berbasis data di tengah dinamika pasar global.

ABSTRACT

The impact of big data analytics on investment decision making in capital markets: a literature review. This study proposes to analyze the impact of Big Data Analytics (BDA) on Investment decision-making in the capital market, focus on the five main elements of BDA: Volume, Variety, Velocity, Veracity, and Value, to their influence on efficiency, accuracy, and investment strategies. The research employs a qualitative literature review method. Secondary data were collected from 20 selected international journals accessed through Scopus and Semantic Scholar, then analyzed using Publish or Perish, Microsoft Excel, and Mendeley Desktop software. The scope of the research encompasses publications in the last 5 years (2020-2024) that are relevant to the topic. The results show that BDA significantly improves investment decision-making through large-scale data analysis that includes market Information, Risk Analysis, Performance Analysis, Psychological Factors, and External Factors. Technologies such as Artificial Intelligence (AI), machine learning, and blockchain has an important part of improving the speed, accuracy, and transparency of analysis. The implementation of BDA also helps reduce investors psychological bias and mitigate risks more effectively. This study highlights the added value of BDA in creating an adaptive and data-driven investment strategy amid global market dynamics.



INTRODUCTION

The capital market is a mechanism that allows the trading of securities such as money, stocks, and bonds. This market serves to bring together sellers and buyers of financial instruments, as well as provide a space for individuals and corporations to conduct buying and selling transactions related to financial assets. Investing in the capital market is becoming a popular way for investors because, In the dynamic and connected world of global finance, the ability to predict trends in the stock market is essential for investors and portfolio managers (Abass Adekunle & Joseph Adeyinka, 2024). The connection between these markets is growing stronger and more intertwined because of multiple reasons, including advancements in technology, changes in regulations, and the shifting approaches of those involved in the market. This global link goes beyond physical borders, uniting economies and investors worldwide, while also playing a major role in shaping financial trends and evaluating risks in capital markets.

The portfolio management is one of the most important activities carried out in the market. This activity focuses on investment related decision making for an individual or institution by considering investment policies, objectives, asset allocation, risk, and performance. (Iraqi et al., 2021). Investments are made in the hope of getting good returns in the future. This seems appealing to many people because it allows them to be involved in decision-making through investments. Investors can make decisions and re-evaluate their ability to make the right choices by analyzing the results of those investments. However, investment decision-making is a difficult task for investors, especially because of the various biases that can lead one to emphasize or ignore information, or refuse to acknowledge the opportunities that exist (Mari Flores & Salvador Montaña, 2021).

In the past few years, the advancement of Big Data technology has accelerated across multiple industries, including business, government, and research, with accounting being no exception. Companies now deal with an unmatched volume of semi-structured and unstructured data that they need to utilize and oversee to remain innovative, efficient, and competitive. On the one hand, Big Data came about due to the recognition of opportunities in various fields, and was quite vague in terms of usage (Listya et al., 2023). The importance of Big Data technology as the main foundation in responding to and managing these challenges is becoming increasingly real. The application of this technology has opened the door to competitive advantage, provided clarity in decision-making, and opened up new potential in optimizing business operations. In an era where every sale, purchase, and online interaction generates data, companies must realize that the true value of data lies not only in the quantity, but rather in the ability to analyze and dig into insights from the complexity of that information. Therefore, Big Data is not just a technological tool but an important catalyst in business transformation. Its ability to parse diverse and thorough data provides a foundation for identifying trends, understanding customer behavior, and designing strategies that are adaptive to market changes.

Recent studies highlight the significance of BDA in enhancing investment decision-making. Krishnasamy & Senthuran (2025) revealed that the dimensions of volume, variety, and velocity substantially improve the quality of accounting information, which in turn influences investment decisions. Li (2024) demonstrated that BDA strengthens market risk analysis through real-time financial data processing. Similarly, Muchlis (2023) found that financial institutions implementing BDA achieve superior efficiency and sustainability performance compared to traditional firms. Nevertheless, emerging literature emphasizes the need for deeper investigation. Khairy & Ibrahim (2025) reported that data accuracy and analytic model reliability are crucial determinants of financial market efficiency. Zhu (2025) further pointed out that algorithmic bias, data security, and insufficient regulatory adaptation remain critical barriers to effective BDA implementation.

Given these research gaps and evolving challenges, this study seeks to revisit and analyze the impact of BDA on investment decision-making in capital markets. It aims to provide a comprehensive

framework that explains how BDA's five dimensions contribute to greater efficiency, accuracy, and adaptability in investment decision making in the capital market.

LITERATURE REVIEW

Before making a decision to invest, must know several dimensions and subdimensions, and the following is a table of dimensions and subdimensions of the big data and investment decision-making category in the capital market.

Table 1. Dimensions and Subdimensions

No	Dimension	Subdimension	Indicator
1	Big Data	Volume	a. Data Size (terabyte, petabyte, zettabyte). b. Storage Scale (on-premises, cloud). c. Data Sources (IoT, social media, transactions).
		Variety	a. Structured Data (relational database). b. Semi-structured data (XML, JSON). c. Unstructured Data (text, images, video, audio).
		Velocity	a. Incoming Data Frequency (real-time, batch). b. Processing Latency (analytical process time). c. Dynamic Source (sensors, live streaming).
		Veracity	a. Data Quality (accuracy, validity). b. Data uncertainty (missing values, noise). c. Data Security (integrity and confidentiality).
		Value	a. Business Benefits (cost savings, increased revenue). b. New Knowledge (market insights, consumer behavior). c. Competitive Advantage (data-driven decision-making).
2	Investment Decision Making in the Capital Market	Market Information	a. Market liquidity b. Stock price trends c. Up-to-date information from news and financial reports.
		Risk Analysis	a. Identify investment risks b. Investor risk tolerance c. Diversify for risk mitigation.
		Performance Analysis	a. Return on Investment (ROI) b. Financial ratios (PER, DER, ROE, etc.) c. Historical performance of the asset.
		Psychological Factors	a. Perilaku investor (fear and greed) b. Decision bias (anchoring, overconfidence).

No	Dimension	Subdimension	Indicator
			c. Sorry to pass.
		External Factors	a. Government policy b. Interest rates and inflation c. Global economic and geopolitical conditions.

The table of dimensions and subdimensions in BDA and investment decision-making in the capital markets is:

1. Two Main Dimensions

- a. BDA: Represents how large amounts of data are managed and analyzed to improve the efficiency and accuracy of decisions.
- b. Investment Decision-Making: Describes how investors and financial institutions use data to assess risk, performance, and investment opportunities in the capital market.

2. Subdimensions of BDA

- a. Volume: Massive amounts of data from various sources such as transactions, financial reports and social media.
- b. Variety: Data sourced from both structured (financial database) and unstructured formats (investor comments on social media, news, etc.).
- c. Velocity: Real-time data processing speed to support fast and responsive decision-making.
- d. Veracity: The validity and accuracy of data to avoid bias in analysis and investment decisions.
- e. Value: The value obtained from Big Data in improving investment insights and efficiency of capital market strategies.

3. Subdimensions of Investment Decision Making

- a. Market Information: Big Data provides access to real-time data on market movements, stock trends, and economic news.
- b. Risk Analysis: Identify risk patterns with predictive algorithms that are able to reduce uncertainty in investments.
- c. Performance Analysis: Evaluation of the performance of stocks and investment portfolios based on technical and fundamental indicators.
- d. Psychological Factors: Reduce investors' cognitive biases with more accurate data and based on objective analysis.
- e. External Factors: The influence of regulations, global economic conditions, and technological developments on investment strategies.

RESEARCH METHOD

This journal is made using a research method with a literature review study approach, by processing and studying research that is relevant to topics that are specific in depth to previous studies that have been carried out previously is a very crucial component in the process of implementing new research. The object of the research is BDA in Investment Decision Making in the Capital Market, and the type of data used is secondary data by collecting, identified, selected and analyzing the data. The

scope of data used for data collection comes from a search of international journals Scopus and Semantic Scholar. Regarding the constraints related to the scientific articles used in this journal, only those disseminated through open access are considered.

Data analysis tools use Publish or Perish software, Microsoft Excel software and Mendeley Desktop. Data collection techniques include: (1) searching for previous journals based on the category of title words saying "Investment decision-making from BDA" and "The impact of BDA on the capital market" within 5 years with Publish or Perish software; (2) collect journal title data in CSV format into Microsoft Excel and identify duplicate journal titles that can be accessed (open access); (3) download files in PDF (Portable Document Format) format from all journals whose data has been collected; and (4) input the selected PDF data files into the Mendeley Desktop software. The following is a table of the flow of previous journals related to BDA on Investment Decision Making in the Capital Market.

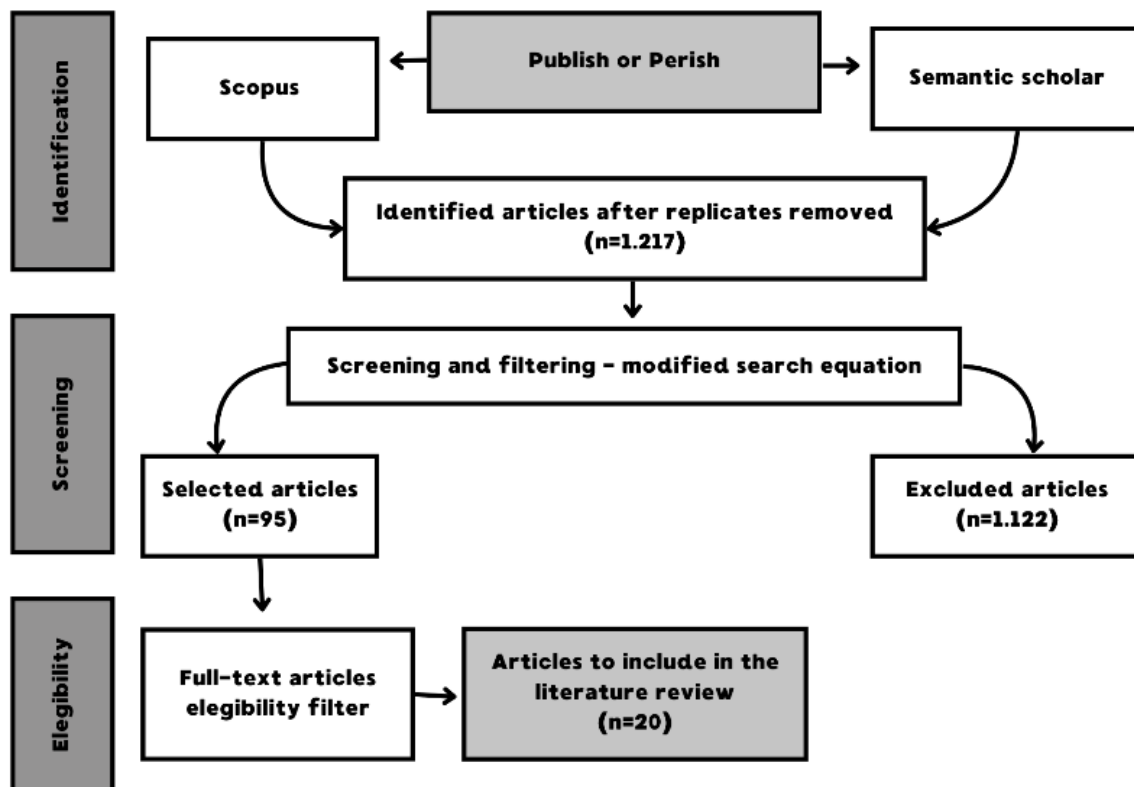


Figure 1. Flow of Recruitment and Selection of Previous Journals

RESULTS AND DISCUSSION

Results

In various journals, the results of the selection of international journals relevant to research on the impact of BDA on investment decision-making in the capital market are shown. From the various journals searched, as many as 20 journals were selected for further analysis. These journals come from two main sources, namely:

Table 2. International Journal Results

No	Journal Source	Number of Journals
1	Scopus	5
2	Semantic scholar	15
Total Journal		20

The results show an increase in scientific publications related to the impact of BDA on investment decision-making in the capital market during the 2020-2024 period. These findings reflect the high interest in research on the role of BDA in capital markets and investment decision-making.

Table 3. Results of Dimensions and Subdimensions of International Journals

Name of journal	Findings in the journal of big data analytics and investment decision-making in the capital market
Unlocking financial innovation through strategic investments in information management: a systematic review(Garad et al., 2024)	Financial market big data, including transaction data, financial statements, and market sentiment (structured and unstructured), is collected in real-time to support fast and accurate decisions. Data validation is important for accuracy, risk mitigation, and compliance. Big Data, AI, and Machine Learning technologies improve efficiency, trend analysis, customer behavior, and help predict and mitigate risks through real-time monitoring. Technologies such as blockchain, AI, and cloud computing also drive product innovation, increase profitability, and support more rational investment decisions. Regulation, data governance, and collaboration with regulator and fintech are key to innovation and safe investment decision-making.
Stock market prediction using artificial intelligence: A systematic review of systematic reviews(Rouf et al., 2021)	BDA, AI, and Machine Learning support the analysis of market trends, customer behavior, and market dynamics for more accurate and rational investment decisions. Technologies such as Blockchain, historical analysis, and real-time data help mitigate risks and improve security. AI and cloud computing improve efficiency, product innovation, and profitability. The combination of historical, technical, social media, and news data strengthens market predictions. Data quality challenges are addressed with feature selection techniques (e.g. PCA). AI models such as LSTM and SVM improve prediction accuracy and provide economic value. Data regulation and governance are key to supporting innovation and investment decisions.
Gender diversity, education diversity and big data analytics investments - A test of moderation(Chong et al., 2024)	Big data from 161 companies in Malaysia (surveys, director demographics, annual reports) supports accurate and reliable data-driven strategic decisions. Big Data investments improve performance and competitiveness through the analysis of market trends, customer preferences, and risk identification. Big Data also strengthens performance evaluation and decision efficiency. Gender diversity on the board of directors encourages innovation. Government policies, technology, and global market dynamics are accelerating the adoption of BDA

Name of journal	Findings in the journal of big data analytics and investment decision-making in the capital market
A study on big data analytics and innovation: From technological and business cycle perspectives(Sivarajah et al., 2024)	Big data (structured and unstructured) supports innovation, cost efficiency, and enterprise competitiveness through fast analysis and maintained validity. BDA helps identify consumer trends, market needs, risks, profitability, growth, and market share. The adoption of BDA is influenced by leadership and managerial perception, as well as driven by technological and policy developments towards clean energy and sustainability.
Towards data and analytics-driven B2B-banking for green finance: A cross-selling use case study (Chang et al., 2024)	This article discusses BDA in B2B banking, especially for green finance. Diverse data (CRM, transactions, investment patterns, market sentiment) are analyzed with Machine Learning (e.g. Random Forest, Neural Networks, SVM) to support cross-selling opportunities, understand green markets, and manage sustainable investment risk. Big Data improves operational efficiency, profitability, marketing strategies, and supports green financial product offerings. Trust in accurate data reduces psychological bias in investment decisions. Global regulations and trends are driving bank compliance with industry standards and investor expectations.
Influence of Big Data Analytics on Decision-Making Processes in Financial Firms in South Africa (Zodwa Dlamini, 2024)	This article discusses the use of BDA by financial companies in South Africa to process big data (transactions, market trends, customer behavior) to support strategic decisions in real-time. BDA improves operational efficiency, customer service, prediction, and risk management, while reducing human bias. The main challenge is the accuracy and credibility of the data, so data governance and security are essential. Regulations, banking policies, and global trends also affect the implementation of BDA.
Correction to: Past, present, and future of sustainable finance: insights from big data analytics through machine learning of scholarly research (Kumar et al., 2024)	This article discusses BDA in sustainable finance research by analyzing 5,970 citations from the 25 most influential articles (journal articles, metadata, empirical studies). Big Data and Machine Learning help identify trends, sustainable investment risks, and the impact of environmental and social factors (ESG) on investment value. The study also highlights the challenges of data accuracy, the influence of investor sentiment (e.g. from social media), as well as the role of regulations, green policies, and global trends (e.g. COP26) in investment decisions.
Big Data Analytics for Financial Decision Making in Malaysia (Khadijah, 2024)	This article discusses BDA in sustainable finance research, which combines data from scientific publications, investment trends, and ESG stock markets. Big Data and Machine Learning help understand the risks of sustainable investments, the impact of environmental and social factors (ESG), and the influence of investor sentiment. The volume and diversity of data enable in-depth analysis to support quick decisions, reduce bias, improve prediction accuracy, and optimize investment decisions and financial institutions'

Name of journal	Findings in the journal of big data analytics and investment decision-making in the capital market
	competitiveness. Global regulations and trends (e.g. COP26) also play an important role.
Using Big Data Analytics and Heatmap Matrix Visualization to Enhance Cryptocurrency Trading Decisions (Ni et al., 2024)	This article discusses BDA to analyze the volatility of Bitcoin and Ethereum (2016–2022), using large amounts of daily price and trading data. Big Data supports the rapid detection of buy/sell signals (e.g. via Bollinger Bands and heatmaps), with the BBTS strategy (60-day MA and adjusted standard deviation) proven to increase profitability and reduce risk and psychological bias. Data validation (e.g. from Bitmex) is important for accuracy. Big Data also enables rapid responses to market and policy changes, with significant influence from government regulations and global conditions.
Assessing the impact of big data analytics on decision-making processes, forecasting, and performance of a firm (Chatterjee et al., 2023)	BDA enables real-time analysis of operational patterns, market trends, and customer preferences, helping companies make fast, accurate, and objective decisions. Data diversity and reliability support bias reduction, risk management, operational efficiency, and improved financial performance and sustainable competitiveness. Regulation and global market dynamics drive better adaptation and strategy through BDA.
Real-time Analytics in Financial Market Forecasting: A Big Data Approach (Balbaa et al., 2023)	This article discusses the use of BDA and machine learning models such as RBDF ² M, LSTM, ARIMA, and GARCH for real-time financial market predictions using historical, macroeconomic, and high-frequency trading data. The RBDF ² M model has been proven to be more accurate and faster than conventional methods, aiding in risk management, reducing transaction costs, and cognitive bias, thus supporting more rational investment decisions. Clear regulations and policies are needed to prevent market manipulation.
The Impact of Big Data Analytics on Investment Efficiency and Financial Performance: Evidence from Saudi Stock Market (Boreik et al., 2023)	BDA improves the analysis of investment patterns and the financial efficiency of companies by leveraging diverse and real-time data to support informed and responsive investment decisions. This article highlights BDA role in improving access to Saudi Arabia's stock market information, aiding in risk identification and improving financial performance (ROA, ROE, investment efficiency). BDA also reduces decision bias and is supported by Vision 2030 policies, capital market regulations, and the digitalization of the financial sector.
Predictive Analytics in Business Analytics: Decision Tree (Lee et al., 2022)	Large datasets from the health, education, and manufacturing sectors (structured and unstructured data) are processed in real-time with rigorous validation to avoid bias and support data-driven decisions. Predictive analytics, including the use of Decision Trees, helps detect investment risk, optimize portfolios, and reduce cognitive bias. External factors such as regulations, the global economy, and technology also influence decision-making.

Name of journal	Findings in the journal of big data analytics and investment decision-making in the capital market
Applications of Big Data Analytics in Investment Management: A Review and Future Research Agenda Using TCM Framework (Eachempati & Srivastava, 2022)	This article discusses the role of BDA in capital market investments with an asset volume of over \$100 trillion, leveraging structured and unstructured data (social media, sentiment) in real-time. BDA improves the accuracy of risk analysis and portfolio performance through machine learning, as well as helps understand investor sentiment and reduce cognitive bias. Regulations, government policies, and global trends also influence the implementation of BDA for more effective market adaptation and smart investment decision-making.
Machine learning techniques and data for stock market forecasting: A literature review (Kumbure et al., 2022)	The volume and diversity of stock market data (price, sentiment, global factors) support thorough analysis and accurate AI predictions, with high processing speeds for quick response to volatility. Machine learning models (ARIMA, SVM, LSTM) use technical and fundamental data as well as sentiment analysis from news and social media to identify risks and reduce investment uncertainty. External factors such as economic policy and crises are also taken into account in market predictions. The value of Big Data lies in increasing profitability, reducing risk, and optimizing trading strategies.
Stock market prediction using machine learning techniques: A decade survey on methodologies, recent developments, and future directions (C. Y. Lin & Lobo Marques, 2024)	Big data of the stock market, both structured (price, volume) and unstructured (sentiment, news), is processed in real-time using machine learning (LSTM, SVM, DNN) for fast and accurate predictions. Data quality challenges are addressed with validation and feature selection (PCA). Social media sentiment helps understand investors' emotions in volatile markets. External factors such as government policies and global conditions also influence investment predictions and decisions. Big Data improves prediction accuracy, reduces risk, and supports higher returns on investment.
Stock Trend Prediction Using Candlestick Charting and Ensemble Machine Learning Techniques with a Novelty Feature Engineering Scheme(Y. Lin et al., 2021)	Big data from 3,455 Chinese stocks (2000–2017), including structured (price, volume) and unstructured (candlestick patterns, technical indicators) data, processed in real-time with machine learning (Random Forest, LSTM, SVM) for investment predictions. The use of candlesticks and machine learning ensembles results in accurate investment signals (>60%), reduces risk and psychological bias, and supports optimal data-driven decisions. Factors such as market volatility, transaction costs, and global events continue to affect investment results.
Big data analytics influence on financial performance and market value: Intellectual capital as a proxy (Nejjari & Aamoum, 2021)	This article discusses the use of BDA in the financial sector through data from 29 companies on the Casablanca Stock Exchange (2013–2019), including financial statements and market capitalization. The BDA, with the VIC validation method, helps measure capital efficiency (CEE), human capital (HCE), and structural capital (SCE), which have a positive effect on financial performance (ROA, ROE). BDA reduces intuitive bias and supports more objective decisions,

Name of journal	Findings in the journal of big data analytics and investment decision-making in the capital market
	with the influence of economic and regulatory policies on investment efficiency and adoption of BDA.
How and when do big data investments pay off? The role of marketing affordances and service innovation (De Luca et al., 2021)	Big data from the digitization of transactions, communications, and industrial interactions (structured and unstructured) is processed in real-time to analyze market opportunities, understand customer behavior, and support rapid responses. Big Data investments drive service innovation, efficiency, profitability, and competitive advantage, while reducing risk, cognitive bias, and uncertainty. Industrial digitalization and government policies are accelerating the adoption of Big Data in transformation and improving investment performance.
Big data analytics in government: Improving decision making for R&D investment in Korean SMEs (Kim et al., 2020)	Big Data enables an in-depth analysis of the Korean government's R&D investment patterns and their impact on SME commercialization and innovation, with the speed and reliability of data supporting more effective policies. The article highlights the use of decision trees and cluster analysis to identify commercialization success factors, reduce the risk of failure, and evaluate effectiveness through success rates, timing, sales, and job creation. The influence of bias, government policies, and economic conditions is also considered.

Discussion

From the result on the dimensions of BDA: (1) Volume, indicates that large amounts of data from various sources, such as financial transactions, financial reports, and market sentiment, allow for a more in-depth analysis of investment trends and patterns. Big data plays a role in optimizing strategic decisions and operational efficiency of companies and supporting the accuracy of market predictions; (2) Variety, emphasizing the importance of data diversity, whether structured, such as financial statements and technical indicators, or unstructured, such as social media sentiment and financial news. This diversity of data provides more comprehensive insights into market dynamics and enables machine learning-based analysis to identify investment patterns and trends; (3) Velocity, underscores that the speed of data processing in real-time is a crucial factor in responding to market changes. Technologies such as AI and machine learning enable rapid analysis that supports more adaptive and data-driven decision-making in a dynamic market environment; (4) Veracity, focuses on the importance of data validation and accuracy to ensure the reliability of the information used in investment analysis. Accurate data management reduces bias, improves market predictions, and supports transparency in decision-making; (5) Value, shows how BDA technology provides added value for financial industry players. The implementation of this technology improves operational efficiency, optimizes investment strategies, and supports financial product innovation. The resulting value also contributes to more effective risk management and increased long-term profitability.

In the other dimensions of investment decision-making in the capital market: (1) Market Information, refers to the availability, accuracy, and timeliness of financial market data that investors rely on. BDA enables the extraction and integration of real-time information from diverse sources such as stock prices, trading volumes, news feeds, and analyst reports, facilitating more informed, responsive, and strategic investment decisions. (2) Risk Analysis, Big Data-based, allows for more accurate identification and mitigation of potential risks. The use of predictive models such

as SVM, LSTM, and Random Forest helps in detecting market volatility and assessing the impact of external factors on the value of investments; (3) Performance Analysis, demonstrates that the integration of BDA in investments improves operational efficiency and profitability. Data-driven evaluation helps in the selection of more optimal investment strategies and supports the growth of investment portfolios; (4) Psychological Factors, investment decision-making is also influenced by trust in analytical technology. The use of machine learning and data analysis helps reduce cognitive bias and increase rationality in the decision-making process; (5) External Factors, such as government regulations, financial policies, and global market dynamics, also influence the implementation of BDA in investment. Adaptation to regulatory changes and the use of appropriate technology is an important strategies in increasing investment effectiveness.

INTERCONNECTION

This study between dimensions and subdimensions shows that the use of BDA has a significant impact on smarter, more efficient, and data-based investment decision-making. With the integration of increasingly evolving technology, companies and investors can optimize their strategies in the face of challenges and opportunities in the financial markets. It is evident by looking at the interconnection between the dimensions and subdimensions that BDA can affect investment decision-making can be observed in the image.

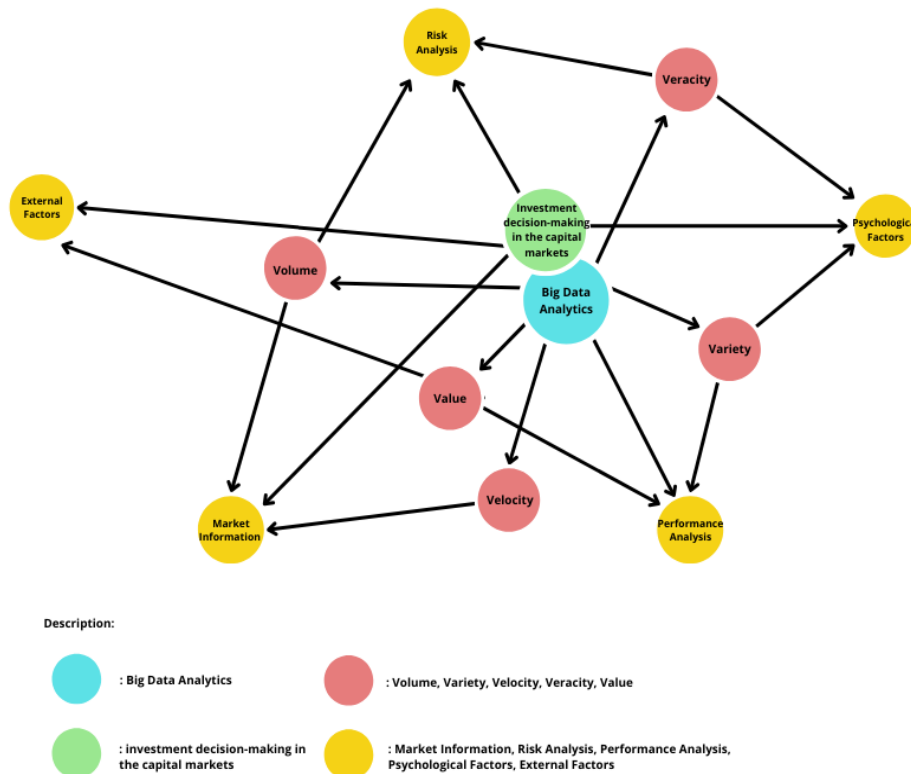


Figure 2. Dimensions and Subdimensions Interconnection

The image above illustrates the interconnection between dimensions and subdimensions in BDA and investment decision-making in the capital markets. Interconnection Between Subdimensions: (1) Volume relates to Market Information and Risk Analysis, as large amounts of data allow for the detection of market trends and risk patterns. High data volume enables more accurate forecasting, identification of anomalies, and deeper insights into long-term market behaviors; (2) Variety has an impact on Performance Analysis and Psychological Factors, as the diversity of data sources helps investors understand market dynamics and reduce decision bias. The inclusion of structured, semi-structured, and unstructured data (e.g., news, social media sentiment, and financial reports) enriches the quality of analysis; (3) Velocity accelerates access to Market Information, allowing investors to react more quickly to changing market conditions. Real-time data flow ensures that investment

strategies are always aligned with current events and market fluctuations; (4) Veracity improves the quality of Risk Analysis and Psychological Factors, ensuring the reliability of data in reducing uncertainty. By filtering out inaccurate or misleading data, investors can make more confident and informed decisions; (5) Value contributes to External Factors and Performance Analysis, supporting more efficient and innovative investment strategies. This means that every dataset used must generate actionable insight that brings measurable benefits to the decision-making process.

This image shows how BDA affects various aspects of investment decision-making. Each subdimension is interconnected, creating a more efficient, accurate, and adaptive analysis system for global market dynamics.

CONCLUSION

This research analyzes how BDA influences investment choices in the capital market. BDA is essential in handling vast quantities of data to enhance the effectiveness and precision of investment analysis. The research emphasizes that technologies like predictive analytics, artificial intelligence, and blockchain enhance data-informed decision-making by making it faster and more precise. This research recognizes five key aspects of Big Data Analytics (BDA): volume, variety, velocity, veracity, and value. The extensive amount of information from financial transactions, financial reports, and market feelings enables more thorough examination of investment patterns. The diversity of data from both organized and disorganized sources offers a wider comprehension of market behaviors. The speed at which real-time data is processed is crucial for reacting to significant market fluctuations. The concept of veracity highlights the necessity for data verification to guarantee the precision and dependability of the analysis, while the aspect of value demonstrates how the use of big data analytics enhances profitability, efficiency in operations, and risk management. In the realm of making investment decisions, market data gathered through Big Data Analytics (BDA) assists investors in evaluating market liquidity, stock price movements, and economic changes. The use of AI models like SVM, LSTM, and Random Forest for risk analysis enables more precise risk management. Evaluating investment performance based on data also enhances the efficiency of investment strategies. Psychological elements in decision-making, including cognitive bias and reliance on technology, are likewise affected by Big Data Analytics (BDA). Furthermore, external elements like government rules and worldwide economic situations influence how effectively BDA is applied in investment. The findings of the research indicate that utilizing BDA greatly enhances the quality of investment decision-making. This improvement is evident in operational efficiency, the precision of market forecasts, and the optimization of investment strategies.

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