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# CHALLENGES AND PROSPECTS IN BIG DATA ANALYTICS: A COMPREHENSIVE REVIEW OF DEVELOPMENTS, HURDLES, AND FUTURE RESEARCH DIRECTIONS

***Abstract:*** *Big data and business analytics are trends that are positively affecting the business world. This comprehensive review article explores the shifting paradigms and dynamic trends within Big Data Technology (BDT), predominantly for last 5 years, based on an extensive literature review and comparative analysis methodology. It elucidates the transformative influence of big data analytics (BDA) in various sectors, emphasizing the rapid ascendance of cloud computing, Artificial Intelligence (AI) integration, and development of sophisticated analytics tools. The review leverages a wealth of academic literature and market research to underscore the predicted expansion of the big data market. This projected growth indicates the widespread adoption of BDT across industries, with healthcare becoming a significant consumer, motivated by the demand for personalized medicine and improved patient care. The review then navigates emerging trends such as open data usage and ethical concerns surrounding big data, indicating the increasing necessity for stringent guidelines for data use and robust individual data control mechanisms. This is derived from a methodical analysis of recent scholarly articles and industry reports. The article also scrutinizes the evolving definition of "big data" through comparative study of the 3V model and the expanded 7V model in various literature sources, reflecting the evolving nature of data and the unique challenges introduced by modern big data analytics. The review also outlines the challenges for successful implementation of big data projects and highlights the current open research directions of big data analytics. The reviewed areas of big data suggest that good management and manipulation of the large data sets using the techniques and tools of big data can deliver actionable insights that create business values.*

***Key words:*** *Big Data, Artificial Intelligence, Data analytics tools, traditional RDBMS.*

## Introduction

Data warehouse technology was introduced in the late 1980s by RDBMS companies to archive large amounts of data out of production databases. It is challenging to move data over the network and takes a long time to yield results. Big data has gained attention in government, industries, sciences, engineering, healthcare and medicine, finance and businesses, making it difficult to process. Organizations must design appropriate techniques to handle and process this large volume of data to ensure effective and efficient decision-making.

Big data and business analytics techniques have recently been created and put into use to examine a sizable amount of data produced by business enterprises. Real-time data analysis enables businesses to observe the past and predict the future. These four types of analytics (descriptive, predictive, diagnostic, prescriptive) offer significant commercial advantages but are progressively more challenging to utilize and deploy. BDA can enhance corporate organizational outcomes and sectors, including better healthcare service, higher educational standards, increased national security, and effective governance. It has the ability to aid decision-makers in gaining information into enabling laws that will ensure a secure environment for investors, assist waste managers in determining the kind of waste that is more frequently produced from a certain locality, and offer insight for the sharing of garbage collecting equipment.

This study aims to conduct a thorough investigation into big data and business. Analytics techniques for better business decision-making, technology frameworks, applications, and unresolved research issues. Additionally, the study aims to highlight the enormous benefits that big data has provided for businesses in industrialized nations and how indigenous business groups might mimic these benefits. With an emphasis on data security, management, characteristics, regulation, and compliances, the study also covers numerous problems that BDA must overcome.

The advancements and trends in BDT

The advancements and trends in BDT have significantly redefined the ways businesses and organizations operate, particularly in the years 2020-2023. In an era where data has become the lifeblood of industries, these latest trends not only reflect the evolution of BDT but also underscore the essential role it plays in shaping various sectors.

Firstly, the exponential rise of cloud computing platforms has transformed BDT. Companies are increasingly leveraging the cloud's scalability and cost-effectiveness to store, process, and analyze vast volumes of data [1]. This transition to cloud-based big data solutions has democratized access to BDT, enabling even small-scale enterprises without the resources for private data centers to harness the power of big data.

Another notable development is the intersection of BDT with artificial intelligence (AI). This synergy has automated a significant proportion of the data processing pipeline, including tasks such as data cleaning, analysis, and visualization [2]. AI integration not only amplifies the efficiency of data analysis but also permits human resources to devote their attention to strategic tasks, thereby optimizing the workflow.

BDT landscape has also seen an influx of new data analytics tools and techniques designed to extract meaningful insights from colossal data sets. Traditional methods, given their limitations in processing and interpreting such volumes of data, have given way to sophisticated algorithms capable of discerning complex patterns and trends [3].

According to Research and Market reports, the global market for big data is projected to grow significantly from USD 157.9 billion in 2020 to USD 268.4 billion by 2026, with a compound annual growth rate (CAGR) of approximately 12% during the forecast period. This growth is primarily attributed to the widespread adoption of BDA across various sectors, including healthcare, manufacturing, retail, and IT & telecom. The volume of big data is expected to reach a staggering 35 zettabytes by 2025. Among different industries, healthcare emerges as the largest consumer of big data, driven by the rising demand for personalized medicine and the continuous pursuit of improving patient care. [4].

Another emerging trend is the growing embrace of open data – data freely available to the public. [5] Companies and governments are expected to leverage open data more extensively to derive additional value from their existing data repositories.

Lastly, the ethical implications of big data are gaining increased attention. [6] As entities amass vast amounts of individual data, ethical guidelines for data use and robust mechanisms for individuals to control their data have become imperative.

In conclusion, the evolution and trends of BDT have reshaped multiple facets of businesses and science. The integration of cloud computing, AI, new analytical tools, and sector-specific applications exemplify its transformative power. Going forward, an emphasis on real-time analytics, open data, and data ethics is likely to guide its future developments.

Big data characteristics

The definition of "big data" has been a challenging question for researchers. To address this issue, industry analyst Doug Laney from Gartner introduced the 3V model in 2001, which outlines three essential characteristics that data must possess to be classified as "big data": volume, velocity, and variety. This model serves as a framework to determine whether data qualifies as big data. [7].

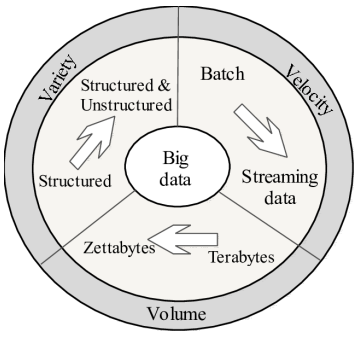


Figure 1 – Gartner's Vector Model

However, a scrutiny of current open source scientific literature reveals prevalent usage of the "7V" model, which is largely associated with big data and encompasses elucidation and attendant

challenges relating to the underlying data. Several subtypes can be distinguished among them, based upon variations identified in the literature and utilized in research. Certain authors produce diverse versions for analogous objectives [8].

| | |
|---|---|
| Volume | •Refers to the vast amount of data generated and collected. Modern big data analytics deals with significantly larger volumes of data than traditional data analysis, thanks to advancements in data storage and processing capabilities |
| Velocity | •Describes the speed at which data is generated, acquired, and processed. Big data analytics in the modern era focuses on analyzing data in real-time or near-real-time, enabling organizations to make faster and more informed decisions compared to traditional batch processing |
| Variety | •Represents the diverse types and formats of data, including structured, unstructured, and semi-structured data. Modern big data analytics incorporates a wide range of data sources such as text, images, audio, video, social media data, and sensor data, in addition to traditional structured data |
| Veracity | •Refers to the quality, accuracy, and reliability of data. Modern big data analytics faces challenges in dealing with the veracity of data due to the potential presence of noise, inconsistencies, errors, and biases. Advanced techniques, such as data cleansing and data validation, are employed to address these challenges |
| Value | •Emphasizes the importance of extracting meaningful insights and value from big data. Modern big data analytics focuses on identifying actionable insights and deriving business value from data-driven decision-making, enabling organizations to gain a competitive edge. |
| Variability | •Represents the dynamic and changing nature of data over time. Modern big data analytics handles data that can vary in terms of volume, velocity, and variety, allowing organizations to adapt and respond to evolving data patterns and trends |
| Visualisation | •Involves the graphical representation of data to facilitate understanding and interpretation. Modern big data analytics leverages advanced visualization techniques and tools to present complex data in intuitive and interactive visual formats, enabling users to explore and analyze data effectively |

Table 1 – 7V model of Big Data

These additional V's of big data highlight the evolving nature of data and the unique challenges and opportunities presented by modern BDA compared to traditional data analysis. By comparison, BDA offers advantages over traditional data systems. They are able to process more data faster and in larger volumes. However, reliability issues require ongoing attention to ensure the validity of information derived from big data. As such, enterprises seeking to leverage big data should consider the considerations outlined in the Gartner Vector Model and its enhanced version and carefully strategize their big data initiatives.

Prospective for BDA Methods

In order to explore, visualize, identify, and communicate patterns or trends in data, analytics makes use of statistical techniques (such as measures of central tendency, graphs, etc.), information system software (such as data mining, sorting routines), and operations research methodologies (such as linear programming). The analytics method in a big data environment demonstrates how to use the potent data analytics tool to get a competitive edge and spot new business prospects. There are 4 categories that may be used to group analytics methodologies *(9)*:

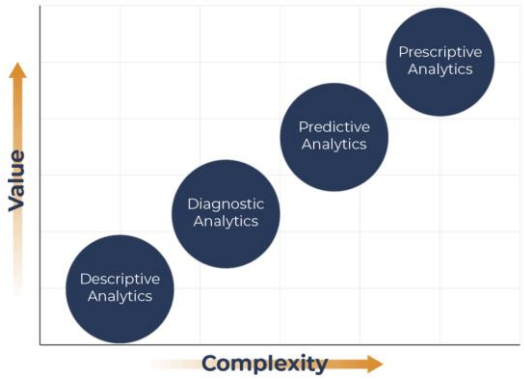


Figure 2 – Four Types of Analytics

Descriptive Analytics

Descriptive analytics focuses on understanding historical data to provide insights into what has happened in the past. This approach involves summarizing and visualizing data to identify patterns, trends, and relationships. For instance, insurance companies have been successfully utilizing Descriptive Analytics and data mining to conduct more accurate policy pricing. By leveraging

the variety of big data available at multiple sources, these companies transform low-value raw data into high-value information for business decision-makers. The use of BDA can create benefits, such as cost savings, better decision making, and higher product and service quality. BDA has been widely adopted across industries for core business functions, such as accounting, marketing, supply chain, and operations [10].

Diagnostic Analytics

Diagnostic analytics aims to determine why certain events or outcomes occurred by analyzing historical data. It involves a more in-depth investigation to uncover the root causes behind observed patterns or trends. For example, a study assessed the impact of BDA on public health, focusing on health indicators and core priorities in the World Health Organization (WHO) General Programme of Work 2019/2023 and the European Programme of Work (EPW). The study identified the most relevant challenges and opportunities of these tools with respect to people's health, demonstrating a diagnostic approach to understanding the effects of BDA on public health [11].

Predictive Analytics:

Predictive analytics utilizes historical data to forecast future outcomes or trends. It employs statistical models and machine learning algorithms to make predictions based on patterns and relationships found in the data. For example, in the context of supply chain management (SCM), demand forecasting is key to addressing uncertainties. Businesses use forecasting models to understand and fulfill customer needs and expectations, analyzing consumption behavior and preferences using customer data and transaction records. With the adoption of BDA and machine learning, demand forecasting has evolved towards intelligent forecasts that learn from historical data and adjust to predict the ever-changing demand in supply chains. This improves efficiency and aligns supply chain activities with predictions [12].

Prescriptive Analytics

Prescriptive analytics aims to provide recommendations or actions to optimize decision-making processes. It utilizes advanced techniques, such as optimization algorithms and simulation models, to generate actionable insights. An example of Prescriptive Analytics in practice is seen in SideTrade's use of this approach to gain a deeper understanding of a client's true payment behavior. Through prescriptive analytics, SideTrade is able to score clients based on their payment track-record. This method creates transparency and accuracy, allowing SideTrade and its clients to better account for costly payment delays. It's a demonstration of how prescriptive analytics can inform strategic decisions and optimize business practices [13].

Challenges of Big data and Analytics

BDA continues to transform various industries, with organizations leveraging data-driven insights to gain a competitive edge. However, this potential is accompanied by significant challenges. Understanding these challenges and the measures that industry leaders are taking to address them provides crucial insights for others looking to leverage Big Data.

• Data Quality and Veracity: Ensuring the accuracy, consistency, and reliability of data remains a challenge. IBM, for instance, is addressing this issue by employing robust data governance practices and advanced data quality tools that help identify, report, and correct data inconsistencies and inaccuracies [14].

• Data Privacy and Security: With increasing privacy concerns and regulatory demands, data privacy and security have become critical issues [15]. Google addresses these concerns by employing advanced encryption techniques, anonymization of sensitive data, and rigorous access control mechanisms to ensure the security and privacy of user data.

• Data Integration: The heterogeneous nature of data sources complicates data integration [16]. Amazon Web Services (AWS) offers solutions like AWS Glue, a fully managed ETL service that makes it easy to move data among various data stores.

• Data Storage and Processing: The massive volumes of Big Data require innovative storage and processing solutions. For many years, Remote Sensing (RS) systems have been amassing substantial quantities of data, the management and analysis of which exceed the capabilities of standard software tools and desktop computing resources. To tackle the issues associated with big data analysis, Google has devised a cloud-based platform known as Google Earth Engine (GEE). This platform is specifically designed to aid in the processing of large geospatial data across vast regions and enable prolonged environmental monitoring [17].

• Lack of Skilled Professionals: The shortage of professionals skilled in BDA is a significant hurdle. Educating both employees and leadership about the technology and its potential applications can greatly streamline the integration of Big Data in the oil and gas sector [18].

• Real-time Processing: Real-time data processing is increasingly important for many businesses [19]. Businesses are using big data from various sources such as social media and search engines to create better marketing strategies for online ads. When companies have a lot of data to work with, it can be hard for them to use it quickly and make comparisons. It's essential to know that there isn't a lot of research on how these things work together. The exploration involves finding big data and using batch and real-time processing to analyze structured and unstructured datasets. These methods help with analyzing the data. Therefore, in addition to ideas for further study, this paper creates conversations between computer science concepts like Apache Storm and Hadoop and B2B marketing perspectives. It analyzes how these concepts affect modern marketing strategies.

• Understanding and Interpreting Results: In the field of criminology, understanding and interpreting the results of big data can present significant challenges. The complexity and volume of data can make it difficult to discern meaningful patterns, especially when dealing with disparate data sources, such as crime reports, social media data, and surveillance footage. Furthermore, ethical issues arise concerning privacy and the potential for bias in the algorithms used to analyze the data, which could lead to unfair targeting or misinterpretation of crime trends. [20]. For example, this article discusses how math is changing criminal justice with big data, algorithms, and machine learning. New tools blur regulatory boundaries, undercut safeguards, and eliminate subjective narratives. After introducing 'algorithmic justice' and related research, the article demonstrates how big data and algorithms alter crime knowledge production. It analyzes how a certain perception of crime breaks set criminal procedure regulations. Ends with socio-political context of algorithmic justice.

• Cost: The cost of implementing and maintaining BDA systems is substantial. According to Amazon research, building and maintaining data warehouses can cost between $19,000 and $25,000 every year for each terabyte. This means that to keep a big storage of information called a data warehouse, which has 40TB of information, a company needs to spend about $880,000 every year. This is almost $1 million. It costs about $22,000 to look after each TB of information [21]. As an alternative to local data centers, global companies have begun to promote their platforms as a subscription service. Small companies can now use the computing resources of cloud solutions paying only for the resource used.

Addressing these challenges demands a strategic and proactive approach that encompasses both technical and managerial efforts. By learning from industry leaders, organizations can more effectively navigate the complexities of Big Data analytics.

**Summary and future research directions**

This article discussed the recent developments, challenges, and solutions pertaining to BDA. The pervasive growth of data, enabled by technologies like the Internet of Things, social media, and cloud computing, has facilitated the rise of BDA. This technology provides the potential to derive valuable insights from massive, complex data sets, enabling informed decision-making across various sectors including healthcare, retail, and more.

However, realizing the potential of Big Data is not without challenges. These include ensuring data quality and veracity, maintaining data privacy and security, integrating heterogeneous data, handling storage and processing needs, addressing the shortage of skilled professionals, managing real-time processing, interpreting and understanding analytical results, and managing associated costs.

While significant strides were made in the domain of BDA, there remains a wealth of research opportunities. Some open research directions include:

- Advanced Data Privacy and Security Measures: With the growing emphasis on data privacy and stringent regulations, research on more advanced, efficient privacy-preserving and secure BDA is critical.
- Data Quality Management: As the volume of data continues to grow, ensuring data veracity remains a significant challenge. Developing new methodologies and techniques for efficient data quality management in Big Data is a promising research area.
- Scalable and Real-time Big Data Processing: As the demand for real-time insights grows, research into more efficient and scalable real-time Big Data processing methodologies is required.

- Interpretable Machine Learning and AI: As AI and machine learning continue to play a crucial role in BDA, research into making these models more interpretable and explainable is essential to increase trust and usability.
- Ethical and Regulatory Considerations: As the Big Data landscape continues to evolve, there is a need for ongoing research into the ethical implications and regulatory considerations surrounding BDA.

Continued advancements in these areas will significantly contribute to unlocking the full potential of BDA, driving further transformation across various sectors.

## References


1. Berisha, B., Mëziu, E., & Shabani, I. (2022). Big data analytics in Cloud computing: an overview. Journal of Cloud Computing, 11(1), 24.
2. Davenport, T.H., & Ronanki, R. (2021). Artificial Intelligence for the real world (2018). Harvard Business Review.
3. Mannering, F., Bhat, C.R., Shankar, V., & Abdel-Aty, M. (2020). Big data, traditional data and the tradeoffs between prediction and causality in highway-safety analysis. Analytic methods in accident research, 25, 100113.
4. Big Data Market. Online source: https://www.marketdataforecast.com/market-reports/big-data-market
5. Himanen, L., Geurts, A., Foster, A. S., & Rinke, P. (2019). Data-driven materials science: status, challenges, and perspectives. Advanced Science, 6(21), 1900808.
6. Chen, W., & Quan-Haase, A. (2020). Big data ethics and politics: Toward new understandings. Social Science Computer Review, 38(1), 3-9.
7. Berisha, B., Mëziu, E. & Shabani, I. Big data analytics in Cloud computing: an overview. J Cloud Comp 11, 24 (2022). https://doi.org/10.1186/s13677-022-00301-w
8. González García, C., & Álvarez-Fernández, E. (2022). What Is (Not) Big Data Based on Its 7Vs Challenges: A Survey. Big Data and Cognitive Computing, 6(4), 158. https://doi.org/10.3390/bdcc6040158
9. Ajah, I. A., & Nweke, H. F. (2019). Big Data and Business Analytics: Trends, Platforms, Success Factors and Applications. Big Data and Cognitive Computing, 3(2), 32. https://doi.org/10.3390/bdcc3020032
10. Lee, I., & Mangalaraj, G. (2022). Big Data Analytics in Supply Chain Management: A Systematic Literature Review and Research Directions. Big Data and Cognitive Computing, 6(1), 17. https://doi.org/10.3390/bdcc6010017
11. Borges do Nascimento I., Marcolino M., Abdulazeem H., Weerasekara I., Azzopardi-Muscat N., Gonçalves M., Novillo-Ortiz D. Impact of Big Data Analytics on People's Health: Overview of Systematic Reviews and Recommendations for Future Studies J Med Internet Res 2021;23(4):e27275 URL: https://www.jmir.org/2021/4/e27275 DOI: 10.2196/27275
12. Seyedan, M., Mafakheri, F. Predictive big data analytics for supply chain demand forecasting: methods, applications, and research opportunities. J Big Data 7, 53 (2020). https://doi.org/10.1186/s40537-020-00329-2
13. What is Prescriptive Analytics? Online source: https://www.talend.com/resources/what-is-prescriptive-analytics/
14. Bhattarai, B.P., Paudyal, S., Luo, Y., Mohanpurkar, M., Cheung, K., Tonkoski, R., Hovsapian, R., Myers, K.S., Zhang, R., Zhao, P., Manic, M., Zhang, S. and Zhang, X. (2019), Big data analytics in smart grids: state-of-the-art, challenges, opportunities, and future directions. IET Smart Grid, 2: 141-154. https://doi.org/10.1049/iet-stg.2018.0261
15. Tawalbeh, L. A., Muheidat, F., Tawalbeh, M., & Quwaider, M. (2020). IoT Privacy and security: Challenges and solutions. Applied Sciences, 10(12), 4102
16. Ferraris, A., Mazzoleni, A., Devalle, A., & Couturier, J. (2019). Big data analytics capabilities and knowledge management: impact on firm performance. Management Decision, 57(8), 1923-1936
17. Amani, M., Ghorbanian, A., Ahmadi, S.A., Kakooei, M., Moghimi, A., Mirmazloumi, S. M., ... & Brisco, B. (2020). Google earth engine cloud computing platform for remote sensing big data applications: A comprehensive review. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 13, 5326-5350.
18. Mohammadpoor, M., & Torabi, F. (2020). Big Data analytics in oil and gas industry: An emerging trend. Petroleum, 6(4), 321-328.

19. Jabbar, A., Akhtar, P., & Dani, S. (2020). Real-time big data processing for instantaneous marketing decisions: A problematization approach. Industrial Marketing Management, 90, 558-569.
20. Završnik, A. (2021). Algorithmic justice: Algorithms and big data in criminal justice settings. European Journal of criminology, 18(5), 623-642.
21. Amazon Redshift – The New AWS Data Warehouse by Jeff Barr. Online source: https://aws.amazon.com/ru/blogs/aws/amazon-redshift-the-new-aws-data-warehouse/

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## ҮЛКЕН ДЕРЕКТЕРДІ ТАЛДАУДЫҢ ҚИЫНДЫҚТАРЫ МЕН ОНЫҢ БОЛАШАҒЫ: ДАМУ, КЕДЕРГІЛЕР ЖӘНЕ БОЛАШАҚ ЗЕРТТЕУ БАҒЫТТАРЫН ТОЛЫҚҚАНДЫ ҚАРАСТЫРУ

*Бұл жан-жақты ақпараттық мақала әдебиеттерді кең шолу және салыстырмалы талдау әдістемесі негізінде соңғы 5 жылдағы үлкен деректер технологиясының өзгерген парадигмалары мен динамикалық тенденцияларын зерттейді. Ол әртүрлі секторлардағы үлкен деректер аналитикасының трансформациялық әсерін корсетеді, бұлттық есептеулердің жылдам таралуын, жасанды интеллект интеграциясын және күрделі аналитикалық құралдарды әзірлеуді көрсетеді. Шолу ашық деректерді пайдалану және үлкен деректерге қатысты этикалық мәселелер сияқты жаңа тенденцияларды қарастырады, бұл деректерді пайдаланудың қатаң ережелеріне және жеке деректерді басқарудың сенімді механизмдеріне деген қажеттіліктің артып келе жатқанын көрсетеді. Бұл соңғы ғылыми мақалалар мен зерттемелерді әдістемелік талдаудан туындайды. Мақалада сонымен қатар 3V моделі мен кеңейтілген 7V моделін салыстырмалы түрде зерттеу арқылы "үлкен деректердің" дамып келе жатқан анықтамасы егжей-тегжейлі қарастырылады. Шолу сонымен қатар үлкен деректер жобаларын сәтті жүзеге асырумен байланысты мәселелерді баяндайды және үлкен деректерді талдау саласындағы зерттеулердің ағымдағы ашық бағыттарын көрсетеді. Қарастырылған үлкен деректер аймақтары үлкен деректер жиынтығын дұрыс басқару және оларды үлкен деректер әдістері мен құралдарын пайдалану арқылы манипуляциялау бизнес үшін құндылық тудыратын пайдалы ақпаратты қамтамасыз ете алатынын көрсетеді.*

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## ПРОБЛЕМЫ И ПЕРСПЕКТИВЫ В АНАЛИТИКЕ БОЛЬШИХ ДАННЫХ: КОМПЛЕКСНЫЙ ОБЗОР РАЗРАБОТОК, ПРЕПЯТСТВИЙ И БУДУЩИХ НАПРАВЛЕНИЙ ИССЛЕДОВАНИЙ

*В этой всеобъемлющей обзорной статье исследуются меняющиеся парадигмы и динамические тенденции в технологии больших данных, преимущественно за последние 5 лет, на основе обширного обзора литературы и методологии сравнительного анализа. В нем раскрывается преобразующее влияние аналитики больших данных в различных секторах, подчеркивается быстрое распространение облачных вычислений, интеграция искусственного интеллекта и разработка сложных инструментов аналитики. В обзоре рассматриваются новые тенденции, такие как использование открытых данных и этические проблемы, связанные с большими данными, что указывает на растущую потребность в строгих правилах использования данных и надежных механизмах контроля отдельных данных. Это вытекает из методического анализа последних научных статей и отраслевых отчетов. В статье также подробно рассматривается развивающееся определение «больших данных» посредством сравнительного изучения модели 3V и расширенной модели 7V в различных литературных источниках, отражающих*

*меняющийся характер данных и уникальные проблемы, связанные с современной аналитикой больших данных. В обзоре также излагаются проблемы, связанные с успешной реализацией проектов по работе с большими данными, и освещаются текущие открытые направления исследований в области аналитики больших данных. Рассмотренные области больших данных показывают, что надлежащее управление большими наборами данных и манипулирование ими с использованием методов и инструментов больших данных могут обеспечить действенную информацию, создающую ценность для бизнеса.*

***Ключевые слова:*** *большие данные, искусственный интеллект, инструменты анализа данных, традиционные СУБД.*

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## ИССЛЕДОВАНИЕ И РАЗРАБОТКА КРОССПЛАТФОРМЕННОГО ПРИЛОЖЕНИЯ ДЛЯ ПРОСМОТРА ФИЛЬМОВ И СЕРИАЛОВ С ИНТЕГРАЦИЕЙ CHAT GPT AI

***Аннотация:*** *В статье приведены результаты исследования и разработка кроссплатформенного приложения для просмотра фильмов и сериалов с интеграцией Chat GPT AI . В современном мире выбор фильмов и сериалов становится все более сложным из-за огромного объема доступного контента. Пользователи ищут инструменты, которые помогли бы им находить и наслаждаться интересными фильмами и сериалами. Основным вкладом этой статьи является представление разработанного кроссплатформенного приложения, объединяющего в себе возможность просмотра фильмов и сериалов с искусственным интеллектом ChatGPT. Приложение предоставляет уникальные функции, включая мощный поиск и фильтрацию контента, персонализированные рекомендации на основе предпочтений пользователя и возможность взаимодействия с ChatGPT для получения рекомендаций и общения. Мы подробно рассматриваем ключевые аспекты приложения, включая его функциональность и пользовательский интерфейс, а также предоставляем технические детали и решения,*