НАУЧНИ ТРУДОВЕ НА УНСС (2) 2025, АКАДЕМИЧНО ИЗДАТЕЛСТВО – УНСС
ISSN (online): 2534-8957; ISSN (print): 0861-9344; http://unwe-research-papers.org/
DOI: https://doi.org/10.37075/RP.2025.2.12

EVALUATING CHALLENGES AND OPPORTUNITIES ASSOCIATED WITH CLOUD-BASED BIG DATA SOLUTIONS

Mariana Kovacheva[1]
e-mail: mkovacheva@unwe.bg

Abstract

Everyday large amounts of data are generated through different devices – from the smallest sensors to all smart technologies. All types of data are produced and to be used, it needs to be evaluated, categorized and stored. This article examines opportunities offered by cloud-based Big Data solutions which include real-time analytics, integration with different technologies, available on-demand computing resources and services, which make possible to analyse in an effective and simple way the large amounts of different types of data. Also challenges connected with cloud-based Big Data solutions for companies and industries are presented and considered.

Keywords: Big Data, cloud-computing, real-time data processing

JEL: I24, O33

Introduction

Big Data has become a powerful tool and revolutionizes how the organizations process, store, analyse and utilize the data gathered. Some of the main characteristics by which Big Data is defined are Volume, Velocity, Variety, Veracity and Value, and with them businesses are enabled to extract meaningful insights, which uncover trends and patterns. This revealed information helps to enhance the customer experience, to improve the company efficiency and to adapt innovations.

Managing and storing vast amounts of data require advanced technologies and infrastructure, where the cloud-based solutions come into hand. Cloud-based Big Data solutions offer great flexibility, scalability and cost-effectiveness as they combine them with the analytical power of Big Data frameworks. In this way data can be processed real-time, have global accessibility through the clod solutions and be able to enable integration with new technologies as Artificial Intelligence and Internet of Things.

This article explores the opportunities that cloud-based Big Data solutions give to the business as real-time analytics, scalability, integration, storage and

[1] Assist. Prof., PhD, Department of Information Technologies and Communications, UNWE, ORCID: 0009-0003-9072-8459

processing. Despite the potential of the cloud-based Big Data platforms have, they have significant challenges as data security, privacy concerns, regulatory compliances, etc. By analysing the opportunities and challenges of the cloud-based Big Data platforms, and identifying the best practices for implementation, this article offers a perspective to empower organizations in leveraging the full potential of Big Data in the cloud.

The research presented in this article is based on a literature review of existing studies, industry reports, and real-world applications of cloud-based Big Data solutions. By examining current technological advancements and case studies, the article provides a comprehensive understanding of the opportunities and challenges associated with adopting these solutions. The goal of the article is to present a comprehensive view of the topic, highlighting the most important aspects from a technological and business perspective.

Cloud-based Big Data Solutions

Big Data

By Gartner's definition, Big Data refers to information assets characterized by high volume, velocity, and variety, requiring cost-efficient and innovative data processing methods to drive deeper insights, improve decision-making, and enable process automation (Gartner, n.d.).

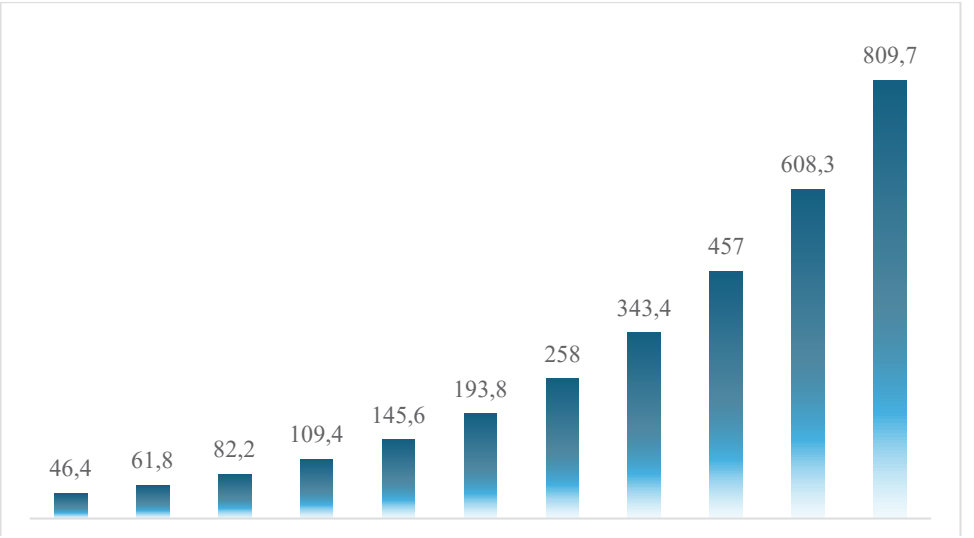
Depending on the sources from which the data is gathered it can be three types – structured, semi-structured and unstructured. The structure is important as it determines how the data will be organized, processed and analysed impacting the efficiency, scalability and cost-effectiveness. Proper structuring enables seamless integration, ensures data quality, supports advanced analytics, and facilitates real-time processing. It helps businesses optimize storage, reduce costs, and extract actionable insights, ultimately driving better decision-making and value creation.

Big Data refers to massive amounts of data that traditional methods cannot process, characterized by five key "V's". Variety, which highlights the diversity of data types (structured, semi-structured, and unstructured) (Yordanova & Stefanova, 2019). Volume, which reflects the immense amounts of data generated every second by various sources like social media. Velocity, referring to the speed at which data is generated and processed in real time. Value, emphasizing the importance of extracting meaningful and useful insights from data. Veracity, ensuring the data's accuracy and reliability. These characteristics underpin how Big Data is gathered, analysed, and utilized, with new attributes emerging as technology evolves (Tabov, 2024).

The development of the digital technologies and all devices generating data, the volume is growing very rapidly. It is expected that 181 zettabytes of data will be generated in 2025, which is almost 12 times more data compared to 2015, when only 15.5 zettabytes of data we generated. Every second 29 terabytes are generated, every minute – 1736 TB, every hour – 104 K TB, which makes 2.5 TB per day (Statista, 2024).

Traditional data processing methods cannot manage the volume, velocity and variety. Many industries like telecommunications, financial services, insurance, advertising, healthcare, technology, education, government, retail and manufacturing are adopting Big Data. Traditional methods for processing data cannot manage Big Data and this is the reason that more advanced tools and techniques are coming into action.

The global Big Data as a Service (BDaaS) market is expected to grow from USD 61.8 billion in 2024 to USD 809.7 billion by 2033, with a CAGR of 33.1% as shown in Figure 1. North America led the market in 2023 with a 37% share and USD 17.2 billion in revenue. (MarketUs)



Source: Made by the author based on statistics from Market Us

Figure 1: Forecast of Big Data as a Service

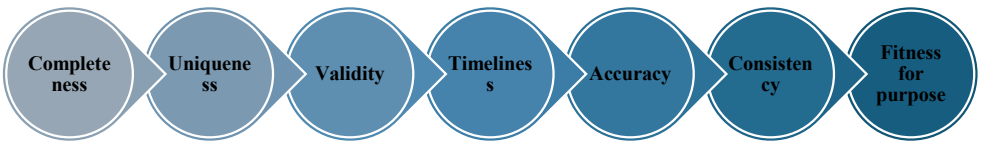
BDaaS provides cloud-based tools for data storage, processing, and analytics, enabling businesses to leverage Big Data without costly infrastructure. Growth is driven by rising demand for cost-efficient solutions, increasing data volumes, and the adoption of AI and machine learning. Key industries, including finance,

healthcare, and retail, benefit from BDaaS's scalability and advanced analytics, supporting remote work, operational efficiency, and improved decision-making.

Data quality

According to Gartner (n.d.) data quality is about how useful and relevant data is for an organization's key use cases, including AI and machine learning projects. It's typically a core objective of good data management and governance.

Data quality is a key factor in how effective the cloud-based Big Data solutions are according to IBM (n.d.). While these platforms offer great benefits like flexibility, scalability, and easy integration with other technologies, their value can drop significantly if the data they process is inaccurate, incomplete, or inconsistent. Poor data quality can lead to misleading analysis, which in turn affects decision-making and business strategies. The quality is evaluated based on different dimensions, which are used to categorize the following data quality metrics shown on Figure 2.



Source: Made by the author

Figure 2: Data quality metrics

- **Completeness** – This refers to how much of the required data is available and usable. If too much information is missing, analysis can become distorted or unreliable.
- **Uniqueness** – This ensures that data is free from duplicates. For instance, in a customer database, each customer should have a unique ID to avoid duplicate records that could distort reporting and analysis. Duplicate data not only wastes storage but can also lead to errors in communication, billing, or customer insights.
- **Validity** – Data needs to be in the correct format and adhere to business rules. This includes things like using valid date formats, correct email structures, or predefined numerical ranges. If data doesn't meet these requirements, it may not be usable for analysis or automation processes.
- **Timeliness** – This refers to how quickly data is available when it's needed. Some types of data lose their value if not processed in real-time. If there's a delay, it could lead to frustration and impact customer trust.

- **Accuracy** – Data must be correct and aligned with a reliable "source of truth." In organizations where multiple sources track the same information, it's important to define which one is primary and use others for validation.
- **Consistency** – This ensures that data remains uniform across different sources and reports. If two systems track the same metric but report different numbers, it creates confusion and undermines trust in the data.
- **Fitness for Purpose** – Ultimately, data should serve a meaningful business purpose. This means ensuring that datasets are relevant and useful for the specific task at hand. Sometimes, new or evolving datasets may need thorough evaluation to determine their effectiveness. By accessing data fitness, organizations can ensure they are working with information that genuinely adds value.

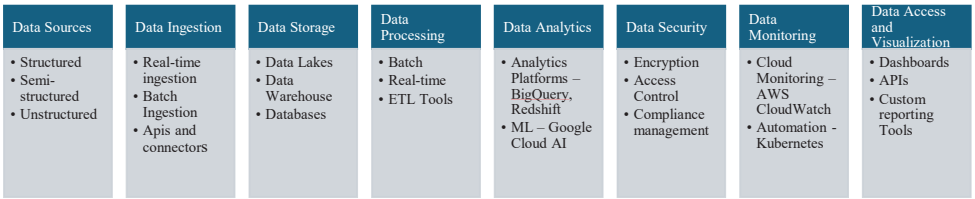
To overcome these issues, cloud-based Big Data platforms need to include tools for automatically cleaning, validating, and standardizing data. AI and machine learning can also help by detecting errors, identifying unusual patterns, and even predicting missing values. With high-quality data, businesses can make smarter, more confident decisions.

Cloud – based Big Data solutions

The shift toward cloud-based Bid Data solutions is driven by the need to handle different data sources, to be scalable, because of the large volumes of data generated, etc. These types of solutions offer flexible and affordable solutions for organizations of any size to store and process their data. Cloud-based data solutions are tools and services host on cloud platforms that help organizations store, manage, process and analyse data in an effective way (Islam, 2013).

The key advantages for using cloud-based solutions for Big Data are that they are scalable, good in processing, usually there are built-in analytics based on Artificial Intelligence or Machine Learning, good with integrating services and APIs, and there are safety measures taken.

The architecture of cloud-based Big Data solutions enables efficient storage, processing, analysis, and visualization of vast datasets by leveraging cloud capabilities like scalability and distributed computing. Key components shown on Figure 3 include:



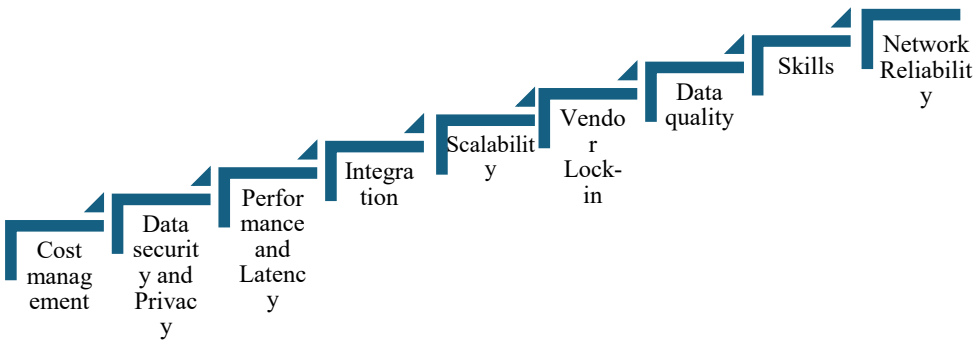
Source: Made by the author

Figure 3: Key components of cloud-based Big Data solutions

- **Data Sources**: Collect data from structured (databases), semi-structured (IoT feeds), and unstructured (social media) sources.
- **Ingestion Layer:** Captures data via real-time tools (Apache Kafka) or batch methods (Azure Data Factory).
- **Storage Layer:** Utilizes data lakes (AWS S3) for raw data, warehouses (BigQuery) for structured analytics, and NoSQL/relational databases.
- **Processing Layer**: Transforms data through batch tools (Apache Spark) or real-time processing (e.g., AWS Lambda).
- **Analytics & Machine Learning**: Applies AI/ML tools (BigQuery, Redshift, Google Cloud AI) and visualization platforms (Power BI) to generate insights.
- **Security**: Ensures encryption, access control, and regulatory compliance (GDPR).
- **Monitoring**: Tracks performance and optimizes resources using tools like AWS CloudWatch.
- **Data Access**: Delivers insights via dashboards, APIs, and reports for decision-making.
- This architecture ensures scalable, secure, and actionable Big Data solutions (Borodo, et al., 2016).

Challenges and Opportunities for cloud-based Big Data solutions

Companies move onto cloud-based solutions to be able to deal with the large volumes of data generated daily. (Vajjhala & Ramollari, 2016). As every new technology, there are many opportunities and challenges in the process of adoption and usage of the cloud-based systems. Depending on the industries and organizations that are adopting the cloud-based solutions there could possibly be different challenges as shown on Figure 4.



Source: Made by the author

Figure 4: Challenges for cloud-based Big Data solutions

Challenges

- Cost Management
- Cloud services pay-as-you-go pricing model can quickly spiral into unexpected and overwhelming costs, especially when businesses don't have a clear view of how they're using resources. Storing massive datasets, transferring data frequently, or running real-time processing can all inflate cloud bills. On top of that, hidden charges – like fees for exporting data from the cloud – and inefficiencies in scaling can make it even harder to predict and control expenses.
- Without proper cost management, businesses may struggle to find the right balance between keeping costs low and maintaining performance. To avoid these pitfalls, companies can use special tools to track spending, set budgets and alerts to stay on top of costs, and archive data that isn't frequently accessed to save on storage (Sharmah et al., 2022).
- Data Security and Privacy
- Handling sensitive data in cloud-based Big Data solutions comes with its share of risks, including cyber threats like data breaches, unauthorized access, and theft. These risks are further complicated by the shared responsibility model of cloud providers, where security is a joint effort between the provider and the customer. If either side falls short, sensitive information can be exposed.

A security vulnerability can lead to financial losses, regulatory penalties for failing to comply with standards, and a significand loss of customer confidence. Common problems like poorly configured cloud settings or a lack of proper encryption can leave valuable data wide open to attack.

To minimize these risks, organizations need to take proactive measures. Encrypting data, whether it's stored or being transferred, provides a vital layer of protection. Implementing identity and access management (IAM) systems with role-based access ensures only the right people can access sensitive data. Regularly reviewing cloud configurations and keeping an eye out for unusual activity can help catch potential security issues before they become major problems (Raija, 2024).

- **Performance and Latency**

Cloud-based Big Data solutions often must handle data from users and systems located in different parts of the world. As data travels across networks, it can create delays, which can affect how quickly data is processed and how responsive applications are. These delays can cause problems for time-sensitive applications. For example, fraud detection systems, IoT devices, or e-commerce platforms need to respond instantly. Any delay in processing can disrupt these critical operations, leading to missed opportunities or even system failures. By processing data closer to where it's generated the time it takes to transmit and process it (Raija, 2024).

- **Integration**

Integrating cloud-based Big Data solutions with existing on-premises systems or other cloud services can be tricky. It often involves dealing with compatibility issues, inconsistent data formats, and the need for a lot of development work. If integration isn't done well, it can lead to data silos, where information gets trapped in separate systems and isn't shared across the organization. This also increases the risk of data being duplicated or inconsistent, making it harder to get accurate insights (Sharmah et al., 2022).

- **Scalability**

While cloud platforms offer scalability, organizations often struggle to scale effectively due to poorly designed architecture or limitations in resource allocation. Poor scalability can cause performance issues during high demand periods or lead to wasted resources when demand is low (Raija, 2024).

- **Vendor Lock-in**

Cloud providers often use proprietary technologies, which can make it difficult and expensive to move data, applications, or workflows to a different platform.

Vendor lock-in limits flexibility and increases dependency on one provider and makes it harder to take advantage of innovations or competitive offerings from other providers. (Sharmah et al., 2022).

- **Data quality**

Managing data governance and quality in a distributed cloud environment is challenging, especially when dealing with multiple data sources and formats as structured, semi-structured and unstructured data. Poor data quality can under-

mine decision-making, lead to compliance issues, and impact the accuracy of analytics (Raija, 2024).

• **Skills**

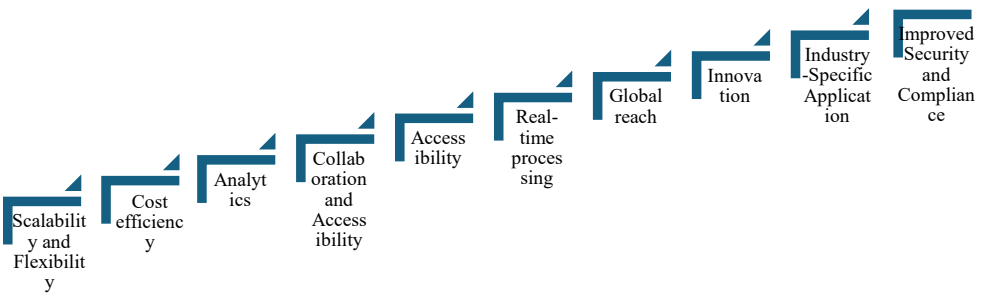
Cloud-based Big Data solutions often require expertise in cloud architecture, data engineering, and machine learning, which may not be available within the organization. A lack of skilled professionals can result in inefficient cloud setups, delayed projects, and a reliance on expensive third-party services. Other reason could be if the legacy systems in the company are designed on outdated programming languages. One of the biggest challenges here is if it is a custom-built application on some technology that is outdates and there are no employees to support it, and a migration to the cloud could be impossible (Borodo et al., 2016).

• **Network Reliability**

Cloud services depend on internet connectivity, which can be impacted by outages, limited bandwidth, or unstable connections. Network issues can disrupt access to cloud services, causing delays in business operations and reducing productivity (Borodo et al., 2016).

Opportunities

As Big Data gets involved in everyday life with fast pace, large companies are already investing on and using Big Data. Small and medium companies also can use Big Data, but they lack financial resources and technical skills. These new technologies are unlocking great opportunities – Figure 5 for companies and whole industries and because of that we will look more into depth.



Source: Made by the author

Figure 5: Opportunities for cloud-based Big Data solutions

• **Scalability and Flexibility**

Cloud-based Big Data solutions can provide on-demand scalability depending on the current demands of the companies. This kind of flexibility is useful for industries that have seasonal spikes or companies / projects that are still unclear

about the resources needed. Cloud-based solutions are particularly good to experiment with new solutions – applications, innovative data models or explore advanced analytical processes without the additional time and expense for on-premises systems.

• **Cost efficiency**

The pay-as-you-go model has two sides. It can be either a challenge or an opportunity for the organization. On one side this model provides a cost-effective alternative to the investment needed for traditional on-premises infrastructure. There is no need for an investment for servers, storage, operational costs for maintenance, upgrades, etc. Everything is covered by the cloud platforms and allows businesses to fir their needs without being worried that the resources won't be enough, or too much will be paid, if too many resources are purchased and not used. Cost efficiency helps companies, especially small and medium ones, to avoid unnecessary cost and to be competitive on the market (Vajihala & Ramdlari, 2016).

On the other hand, pay-as-you-go model can quickly bring big costs to the companies if they do not have a clear view how the resources are used. Cost management is needed to find the balance of keeping the cost low, use the needed resources and maintain good performance (Balachandran & Prasad, 2017).

• **Analytics**

Cloud-based Big Data platforms allow seamless integration of Machine Learning and Artificial Intelligence offering advanced data analytics and predictive modelling. These types of platforms allow companies to unlock insights from big datasets, to identify trends, patterns and opportunities in real-time which helps the companies to be competitive (Balachandran & Prasad, 2017). In addition to that in the cloud-based Big Data solutions, there are pre-built AI and ML services, which help the companies to make innovations faster and to take data-driven decisions effectively as they use better models (Sandhu, 2022).

• **Collaboration and Accessibility**

Cloud-based solutions in general centralize tools and data, as they make everything available to the company and team from everywhere. For organizations with diffused or remote teams, cloud platforms provide real-time access to shared datasets and analytics tools, ensuring smooth collaboration and informed decision-making across the company. Additionally, these platforms seamlessly integrate with various software applications, creating a centralized ecosystem where employees can work productively without constantly switching between different tools (Balachandran & Prasad, 2017).

• **Accessibility**

Cloud platforms make it possible for companies to have access to advanced Big Data tools, removing the financial and technical difficulties traditionally associated with building and maintaining complex infrastructure.

These cloud-based solutions enable businesses of all sizes, including small organizations and nonprofits, to utilize powerful analytics, data visualization, and AI capabilities. By eliminating the need for extensive technical expertise or large-scale resources, organizations can concentrate on deriving insights, making strategies, and driving innovation (Uantilus Innovation, 2023).

- **Real-time processing**

Cloud-based solutions empower businesses to process and analyse data in real time, providing a critical edge in industries where decision-making drives success. With advanced tools for data analytics, organizations can react immediately to changing conditions (Balachandran & Prasad, 2017). This capability is especially valuable in scenarios such as fraud detection, IoT systems, and stock trading, where even minor delays can lead to missed opportunities or significant risks (Sandhu, 2022).

- **Global reach**

Using cloud-based Big Data solutions give an opportunity to the companies to operate across numerous regions / countries, giving businesses the ability to expand globally without the need for costly local infrastructure. Organizations can deploy applications and analytics closer to their users, reducing latency and improving performance. This global accessibility makes it easier for businesses to enter new markets quickly and efficiently while delivering a consistent user experience (Uantilus Innovation, 2023).

- **Innovation**

Cloud-based platforms act as an accelerator for innovation, giving businesses the flexibility and resources to rapidly experiment, prototype, refine their ideas and in this way to be competitive on the market.

As there are no limitations from the traditional infrastructure, organizations can explore new applications, develop products, and test concepts with minimal initial costs. With access to advanced services like IoT integration, quantum computing, and sophisticated AI tools, companies can unlock opportunities and foster innovation across various industries (Vajihala & Ramdlari, 2016).

- **Industry-Specific Application**

Cloud-based Big Data platforms offer industry-specific solutions, equipping organizations with specialized tools and applications to manage their unique challenges effectively.

In the retail sector cloud-based analytics support personalized recommendations and efficient inventory management. Manufacturing benefits from predictive maintenance, which minimizes downtime, while healthcare leverages advanced analytics to enhance patient care and enable groundbreaking genomic research. These tailored applications empower businesses to streamline operations, to foster growth and to be competitive on the market (Balachandran & Prasad, 2017).

• **Improved Security and Compliance**

Today's cloud-based Big Data solutions deliver sophisticated security tools and features to help businesses safeguard sensitive information and adhere to regulatory requirements. Key protections, such as encryption, role-based access controls, and automated monitoring, minimize the risk of data breaches. Additionally, compliance-focused services streamline adherence to regulations enabling businesses to uphold customer trust while navigating the complexities of regulated industries (Uantilus Innovation, 2023).

Cloud-based Big Data solutions have transformed the way businesses store, process, and analyse information. They offer flexibility, scalability, and seamless integration with cutting-edge technologies like AI and IoT. However, while these advantages are revolutionary, they also come with challenges that organizations need to tackle. One major concern is data security and privacy – storing large volumes of sensitive data in the cloud makes businesses more vulnerable to breaches and regulatory issues. Another key challenge is data quality – if the data is incomplete, inaccurate, or inconsistent, the insights drawn from it can be misleading. Companies also face integration difficulties, ensuring that cloud solutions work smoothly with existing on-premise systems. Last but not least is the cost management, while cloud computing can be cost-efficient, expenses can spiral out of control if resources aren't optimized properly.

The opportunities are vast for businesses that approach cloud-based Big Data the right way. AI-powered analytics, automated data management, and scalable cloud resources allow organizations to process data faster and make smarter decisions. To truly benefit from cloud-based Big Data, businesses need to focus on improving data quality, strengthening security, and optimizing cloud usage to keep costs under control and with the right strategy, companies can unlock the full power of their data, drive innovation, and stay ahead in today's digital world.

Conclusion

In conclusion, Big Data refers to vast amounts of diverse information generated from a wide range of sources like IoT devices, social medias, e-commerce, etc. As these datasets expand in size and complexity, cloud-based solutions have become crucial for businesses to effectively store, process, and extract valuable insights, fostering innovation, improving operations, and supporting data-driven decision-making.

Companies have good chance to expand their operations, improve collaboration, reduce expenses, and promote innovation in a variety of sectors with cloud-based Big Data solutions. Businesses may improve their operations and take better decisions, if they have the freedom to use cutting-edge technology like Artificial Intelligence and Machine Learning, evaluate data in real-time, and modify

resources as needed. Businesses can also experiment and test out new concepts with cloud platforms without having to make significant upfront costs.

Issues including cost control, data security, managing integrations, and preventing vendor lock-in remain to be addressed. Businesses must adopt robust security measures, uphold sound data governance, and keep up with new developments and adopting new emerging technologies. Examples from the real world, ranging from small startups utilising reasonably priced cloud services to major corporations utilising Artificial Intelligence for data analysis, demonstrate how cloud technology is revolutionising enterprises in a variety of industries. To maximise the benefits of their cloud-based Big Data solutions, enterprises must remain adaptable, give security a priority, and stay up to date to emerging trends as cloud computing continues to develop.

Future research can focus on optimizing data quality and governance in cloud-based environments, ensuring enhanced security and compliance in cross-border data processing, and exploring cost-efficient strategies for long-term Big Data storage and analytics. Additionally, investigating the role of edge computing in complementing cloud-based Big Data processing and the impact of quantum computing on Big Data analytics could provide valuable insights into the next generation of data management and processing techniques.

References

Йорданова, С. & Стефанова, К. (2019). *Предизвикателствата на големите данни – същност*, *характеристики* и *технологии*, 1(1/2019), с. 13-31. (Yordanova, S. & Stefanova, K., 2019, Predizvikatelstva na golemite danni – Sushtnost, harakteristiki I tehnologii, 1(1/2019), s. 13-31).

Balachandran, B., & Prasad, S. (2017). Challenges and Benefits of Deploying Big Data Analytics in the Cloud for Business Intelligence, 112, pp. 1112-1122, https://doi.org/10.1016/j.procs.2017.08.138

Borodo, S. M., Shamsuddin, S., M. & Hasan, S. (2016). Big Data Platforms and Techniques, Indonesian Journal of Electrical Engineering and Computer Science, 1, pp. 191-200, https://doi.org/10.11591/ijeecs.v1.i1.pp191-200

Gartner. (n.d.). Big Data definition, available at: https://www.gartner.com/en/information-technology/glossary/big-data

Gartner. (n.d.). Data Quality: Best Practices for Accurate Insights, available at: https://www.gartner.com/en/data-analytics/topics/data-quality

IBM. (n.d.). What is data quality?, available at: https://www.ibm.com/think/topics/data-quality#:~:text=Data%20quality%20measures%20how%20well,governance%20initiatives%20within%20an%20organization.Market.Us. (n.d.). Big Data as a Service Market, available at: https://market.us/report/big-data-as-a-service-market/

Intellias. (2024). Big Data in the Cloud: Benefits, Challenges & Solutions, available at: https://intellias.com/big-data-cloud/

Islam, Z. (2013). A Cloud Based Platform for Big Data Science [Linköping University], available at: https://liu.diva-portal.org/smash/get/diva2:690525/FULLTEXT01.pdf

Raija, V. (2024). Exploring Challenges and Solutions in Cloud Computing: A Review of Data Security and Privacy Concerns, 4, pp. 121-144, https://doi.org/10.60087/jaigs.v4i1.86

Sandhu, A. (2022). Big Data with Cloud Computing: Discussions and Challenges, 5, pp. 32-40, https://doi.org/10.26599/BDMA.2021.9020016

Sharmah, D., Kalwar, G., Kharmujai, P., & Sahu, A. (2022). Cloud Computing: Challenges and Solutions. 2, available at: https://www.researchgate.net/publication/370210903_Cloud_Computing_Challenges_and_Solutions

Tabov, Y. (2024). Web Data Processing in the Digital Age: Challenges and Solutions. Innovative Information Technologies For Economy Digitalization (I I T E D), pp. 223-228, available at: https://www.unwe.bg/doi/iited/2024/IITED.2024.28.pdf

Taylor, P. (2024). Volume of data/information created, captured, copied, and consumed worldwide from 2010 to 2023, with forecasts from 2024 to 2028, Statista, available at: https://www.statista.com/statistics/871513/worldwide-data-created/

Uantilus Innovation. (2023). The Benefits of Cloud-Based Big Data Platforms, available at: https://quantilus.com/article/the-benefits-of-cloud-based-big-data-platforms/#:~:text=Cloud%2Dbased%20big%20data%20platforms%20offer%20greater%20collaboration%20opportunities%20than,to%20collaborate%20on%20data%20analysis.

Vajjhala, N., & Ramollari, E. (2016). Big Data using Cloud Computing – Opportunities for Small and Medium-sized Enterprises. 4, pp. 129-137, https://doi.org/10.26417/ejes.v4i1.p129-137