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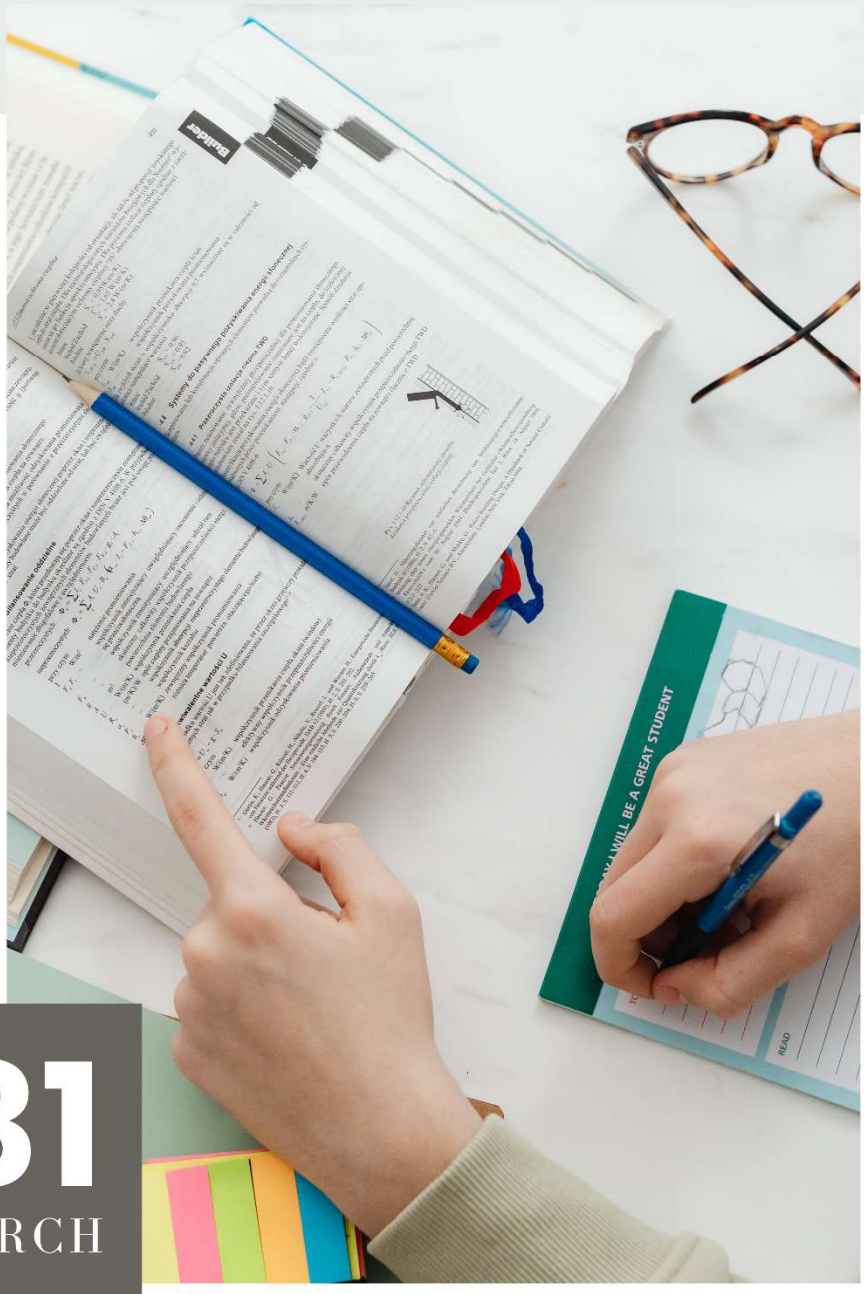
COLLECTION

Innovation, integration and modern problems in the scientific activities of young researchers and students: theory and practice



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Innovation, integration and modern problems in the scientific activities of young researchers and students: theory and practice collection of materials of the international scientific and practical conference on the topic

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In the collection of materials of the conference, the role and role of Science, Education and production in the era of globalization, the pressing problems of the issues of interaction of these processes, feedback on their solutions were presented by mature specialists of the field.

In addition, research on the scientific and practical topic, carried out in the economics, Exact Sciences, Natural Sciences and socio-humanities during the globalization period, information is presented in the scientific and practical fields, which includes the latest innovative technologies in the fields of production.

It can be argued that this collection is one of the specific intersections of current thoughts and innovative ideas of the world of science. This scientific and practical conference was actively attended by professors and scientific researchers engaged in scientific research in Uzbekistan and foreign countries. In increasing the position of the scientific and practical conference, the professors and teachers of domestic and foreign higher educational institutions made a significant contribution.

Professors and teachers of foreign higher educational institutions who actively participated in the work of the conference made a worthy contribution to the high level of interaction with scientists of our country. The processes of international cooperation with foreign countries and exchange with them in the field of Science in the era of globalization have a positive effect on the development of Higher Education, the fields of Science and production. The materials of this conference are special in that they include a wide range of research, from theoretical developments to practical solutions, demonstrating the diversity of approaches and directions in this area.

In conclusion, it should be noted that this scientific and practical conference will be a very useful collection for everyone who is interested in modern research in the fields of further development of Higher Education, Science, Education and production in the era of globalization. The authors are responsible for the content and quality of the articles and abstracts included in the collection.

DATA ANALYTICS VS DATA SCIENCE: CONCEPTS, DIFFERENCES, AND THEIR ROLE IN THE MODERN ECONOMY

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Abstract: The rapid development of digital technologies has led to the exponential growth of data in nearly every sector of the global economy. As organizations increasingly rely on data-driven decision-making, the disciplines of data analytics and data science have become fundamental tools for extracting insights from large and complex datasets. Although these terms are often used interchangeably, they differ significantly in their scope, methodologies, and practical applications. This article examines the conceptual foundations of data analytics and data science, identifies the key differences between the two disciplines, and analyzes their role in modern economic systems. The study highlights that data analytics focuses primarily on analyzing historical data to support business decision-making, whereas data science integrates statistics, programming, and machine learning techniques to develop predictive models and generate new knowledge from data. The findings indicate that both fields play complementary roles in enhancing organizational performance, improving economic efficiency, and supporting innovation in the digital economy.

Keywords: data analytics, data science, big data, business analytics, machine learning, digital economy, data-driven decision making

In the contemporary digital economy, data has become one of the most valuable strategic resources for organizations, governments, and financial institutions. The expansion of digital platforms, online services, and information technologies has led to the generation of massive volumes of data, often referred to as "big data." This phenomenon has fundamentally transformed the way organizations operate, making data-driven decision-making a central component of modern management and economic strategy. As a result, new interdisciplinary fields such as data analytics and data science have emerged to address the challenges associated with collecting, processing, and interpreting large-scale datasets. While both disciplines aim to extract meaningful insights from data, they differ in terms of their methodological approaches, analytical tools, and strategic objectives. Understanding the distinction between these fields is therefore essential for organizations seeking to leverage data effectively in competitive markets [1].

Data analytics can be broadly defined as the process of examining, transforming, and interpreting datasets in order to identify patterns, trends, and relationships that can inform decision-making. The primary objective of data analytics is to provide actionable insights based on existing data, allowing organizations to understand past performance and optimize current operations. This process typically involves statistical analysis, data visualization, and descriptive

modeling techniques. In business environments, data analytics is widely used to evaluate sales performance, analyze customer behavior, monitor operational efficiency, and assess financial results. Analytical tools such as Microsoft Excel, SQL, Tableau, and Power BI are commonly employed in this process because they allow analysts to manipulate structured datasets and generate visual representations of complex information. Through these tools, organizations can convert raw data into meaningful information that supports strategic planning and operational improvements [2].

While data analytics focuses primarily on analyzing historical data, data science represents a broader and more complex discipline that combines statistical modeling, programming, and machine learning techniques to generate predictive and prescriptive insights. Data science extends beyond descriptive analysis by incorporating advanced algorithms capable of discovering hidden patterns within large and unstructured datasets. Data scientists frequently use programming languages such as Python and R, along with machine learning frameworks, to build predictive models that can forecast future outcomes and automate decision-making processes. For example, financial institutions use data science techniques to detect fraudulent transactions, predict credit risk, and optimize investment portfolios. Similarly, e-commerce platforms apply machine learning algorithms to analyze consumer behavior and generate personalized product recommendations. These capabilities illustrate how data science enables organizations to move from retrospective analysis toward predictive and intelligent systems [3].

Although data analytics and data science share common foundations in statistics and data processing, several key distinctions differentiate the two disciplines. Data analytics is primarily concerned with interpreting existing data in order to answer specific business questions, whereas data science focuses on developing models and algorithms capable of generating new insights from large datasets. In practice, data analysts often work with structured datasets derived from business transactions or operational databases, while data scientists frequently deal with complex and unstructured data sources such as social media content, sensor data, and web activity logs. Furthermore, data analytics typically relies on established statistical techniques and visualization methods, whereas data science incorporates advanced computational techniques including artificial intelligence, neural networks, and deep learning models. Consequently, data science can be considered an evolution of data analytics that integrates computational intelligence with traditional statistical analysis [4].

The distinction between these disciplines can be further illustrated through their roles within organizations. Data analysts are generally responsible for preparing reports, dashboards, and visualizations that help managers interpret business performance indicators. Their work often involves answering questions such as “What happened?” and “Why did it happen?” by examining historical data and identifying patterns. In contrast, data scientists focus on developing predictive models that address questions such as “What will happen next?” and “How can we optimize outcomes?” This predictive capability is particularly valuable in industries

such as finance, healthcare, telecommunications, and manufacturing, where accurate forecasting can significantly improve operational efficiency and reduce risk. By integrating machine learning algorithms with large-scale datasets, data scientists can uncover complex relationships that may not be visible through traditional analytical methods [5].

In modern economic systems, both data analytics and data science play critical roles in improving organizational performance and supporting innovation. Companies that effectively utilize data analytics can enhance operational efficiency by identifying inefficiencies, optimizing supply chains, and improving customer service strategies. For example, retailers use analytical tools to monitor consumer purchasing behavior and adjust pricing strategies accordingly. Financial institutions rely on data analytics to evaluate creditworthiness, manage risk, and detect anomalies in transaction patterns. At the same time, data science enables organizations to develop more sophisticated decision-support systems that integrate predictive analytics and artificial intelligence. These systems can automatically analyze vast datasets in real time, providing decision-makers with valuable insights that would otherwise remain hidden [6].

The significance of these technologies is also evident in emerging digital economies such as Uzbekistan, where rapid technological development is creating new opportunities for data-driven innovation. In recent years, financial institutions, telecommunications companies, and e-commerce platforms in Uzbekistan have increasingly adopted data analytics tools to analyze customer behavior, optimize marketing campaigns, and improve operational efficiency. Government institutions are also exploring the use of data-driven technologies to support economic planning and digital transformation initiatives. As digital infrastructure continues to expand, the integration of data science methodologies into economic management systems is expected to play an increasingly important role in improving productivity and competitiveness [7].

In conclusion, data analytics and data science represent two closely related but distinct disciplines that are central to the functioning of modern digital economies. While data analytics focuses on analyzing historical data to generate descriptive insights that support business decisions, data science incorporates advanced computational methods and machine learning techniques to develop predictive models and uncover new knowledge from complex datasets. Both disciplines contribute significantly to improving organizational efficiency, enhancing economic competitiveness, and supporting innovation across multiple industries. As the volume and complexity of data continue to grow, organizations that successfully integrate both analytical approaches into their decision-making processes will be better positioned to adapt to rapidly changing economic environments and maintain sustainable competitive advantages.

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