Journal of Research in Innovative Teaching and Inclusive Learning
Volume: 4 Issue: 5 Year:2026
ISSN:3030-3036|http://journals.proindex.uz

Information Analytics and Decision Support Systems

Urozova Nigora Toshmurodovna
Samarkand Institute of Economics and service teacher
nigoraorozova73@gmail.com

Ibodilloyev Davlatjon Ilyor ugli
Samarkand Institute of Economics and Service
Student of Group 125, Majoring in Finance
davlatibodillayev@gmail.com

Abdullayev Javohir Karimovich
Samarkand Institute of Economics and Service
Student of Group 125, Majoring in Finance
abdullayevj2007@gmail.com

To'xtayev Zuxriddin O'ktamqul o'g'li
Samarkand Institute of Economics and Service
Student of Group 125, Majoring in Finance
Toxtayevzuhriddin121@gmail.com

Abstract: This article provides a comprehensive analysis of the role and significance of information analytics and Decision Support Systems (DSS) in modern management. The study examines the importance of these systems in processing large volumes of data, conducting in-depth analysis, and supporting effective managerial decision-making in enterprises and organizations. The main components of DSS—database, model base, analytical module, and user interface—are explored from a scientific perspective. Furthermore, the integration of advanced technologies such as artificial intelligence, Big Data, and business analytics into decision-making processes is analyzed. The paper also highlights the current state, existing challenges, and future development prospects of implementing information analytics systems in Uzbekistan. The findings indicate that the effective use of these systems significantly enhances management efficiency, reduces errors, and improves the quality of strategic decisions.

Keywords: Information analytics, Decision Support Systems (DSS), Big Data, artificial intelligence, business analytics, managerial decision-making, database, model base, digital economy, optimization

Introduction

Today, efficient management of enterprises and organizations, strategic planning, and increasing competitiveness require fast and accurate data processing. The rapid development of the digital economy, the sharp growth in data volume, and the variability of market demand are making management processes more complex. In such conditions, information analytics systems and decision support systems (DSS) play an important role in improving decision-making processes, reducing errors, and minimizing risks[1].

Information analytics systems enable in-depth analysis of financial, economic, production, and organizational processes within an enterprise. Decision support systems help managers compare alternative options, forecast outcomes, select optimal decisions, and improve management efficiency. These systems are based on modern technologies such as artificial intelligence, big data, statistical analysis, economic modeling, visualization, and expert systems[2].

This paper examines in detail the essence, functions, application areas, role in decision-making, advantages, and practical examples of information analytics systems. It also discusses the implementation of these systems in enterprises in Uzbekistan, existing challenges, and future development directions.

Literature Review

The initial scientific views in this field trace back to Herbert Simon's decision-making theory. According to this theory, the decision-making process consists of three stages: problem identification, development of alternatives, and selection of the most optimal solution. This model was later integrated with information systems and evolved into Decision Support Systems (DSS)[3].

In the book *Decision Support Systems and Intelligent Systems*, the main architecture of DSS is described in detail, where database, model base, and user interface are identified as key components. The author evaluates DSS as an important tool for improving managerial efficiency[4].

Similarly, the book *Business Intelligence and Analytics: Systems for Decision Support* discusses the integration of business intelligence and analytics technologies with DSS. It highlights the possibilities of real-time decision-making through the analysis of large volumes of data[5].

In *Data Mining for Business Analytics*, the application of data mining methods in DSS is explained in detail. The author emphasizes the role of statistical models and machine learning algorithms in the decision-making process.

Research Methodology

This study used both theoretical and empirical approaches to examine the field of Information Analytics and Decision Support Systems (DSS). First, a literature review was conducted to explore the development stages and main conceptual models of DSS. Herbert Simon's decision-making theory was adopted as a methodological foundation. A comparative analysis method was applied to examine the differences between classical and modern DSS systems. Modern approaches based on Big Data and artificial intelligence were also analyzed. In addition, a systems approach was used to study DSS components such as the database, model base, and user interface. The results of the analysis were summarized using qualitative interpretation and conclusion drawing methods.

Analysis and Consequences

Information analytics systems are a technological complex designed to collect, store, process, analyze, and present data in a visual form. These systems help identify key performance indicators, monitor processes, and provide a basis for management decisions[6].

Their main functions include:

1. fast processing of large volumes of data;
2. statistical analysis of economic processes;
3. modeling of income and expenses;
4. forecasting demand and supply;
5. identification and assessment of risks;
6. creation of visual reports.

DSS are information technology tools that provide recommendations to managers and specialists in decision-making. They help compare alternative costs, resources, situations, risks, and outcomes.

DSS consists of the following main components:

1. Database -a collection of statistical, economic, and financial data;
2. Model base -mathematical, economic, and simulation models;
3. Analytical module -performs analysis, calculations, and forecasting;
4. Interface -interaction between the user and the system.

Types of DSS:

1) data-driven systems;
2) model-driven systems;
3) expert systems;
4) artificial intelligence-based systems;
5) business intelligence (BI) platforms.

3. Practical Application of Information Analytics and DSS

These systems are widely used in the following areas:

1) enterprise management and planning;
2) budgeting and financial analysis;
3) marketing and consumer behavior forecasting;
4) logistics and supply chain management;
5) risk analysis in banks and insurance companies;
6) public administration and e-government systems.

Examples of existing systems:

1) Microsoft Power BI
2) SAP Business Objects
3) Oracle Analytics
4) Qlik Sense
5) Tableau
6) IBM Cognos Analytics

These systems help organizations generate real-time analytical reports, identify problem areas, evaluate performance, and make strategic decisions[7].

Development of Information Analytics Systems in Uzbekistan

Digital technologies are rapidly developing in Uzbekistan’s economy. Government initiatives such as “Electronic Government,” “Digital Uzbekistan – 2030,” and “Big Data Centers” are being implemented.

Many enterprises are adopting systems such as ERP, CRM, BI, and DSS. However, there are still some challenges:

1) shortage of qualified IT specialists;
2) lack of data quality and unified standards;
3) insufficient technical infrastructure in some enterprises.

Despite these challenges, the future prospects of the field are strong, and the use of analytical

systems significantly increases organizational efficiency.

Conclusion

Information analytics systems and decision support systems have become an integral part of modern management. They enable in-depth analysis of business operations, process optimization, risk reduction, improved planning, and increased competitiveness. Effective use of big data and artificial intelligence allows for fast and accurate strategic and operational decision-making. The widespread implementation of these systems in enterprises in Uzbekistan is an important factor in modernizing management culture, increasing economic efficiency, and adapting to the requirements of the digital economy. In the future, the integration of analytical platforms, business intelligence technologies, model-based analysis systems, and artificial intelligence will further strengthen and elevate the quality of management to a new level.

References

[1] H. A. Simon, *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization*. New York, NY, USA: Free Press, 1947.
[2] G. M. Marakas, *Decision Support Systems and Intelligent Systems*. Upper Saddle River, NJ, USA: Prentice Hall, 2003.
[3] R. Sharda, D. Delen, and E. Turban, *Business Intelligence and Analytics: Systems for Decision Support*. Boston, MA, USA: Pearson, 2014.
[4] G. S. Linoff and M. J. A. Berry, *Data Mining for Business Analytics: Concepts, Techniques, and Applications in R*. Hoboken, NJ, USA: Wiley, 2011.
[5] S. J. Delaviz, *Big Data Analytics for Decision Making*. Cham, Switzerland: Springer, 2019.
[6] N. Kasabov, *Artificial Intelligence in Decision Making*. Berlin, Germany: Springer, 2018.
[7] J. Power, *Decision Support Systems: Concepts and Resources for Managers*. Westport, CT, USA: Greenwood Publishing, 2002.