eISSN: 2229-3213 pISSN: 2229-3205
The Journal of Applied Science and Social Science
Volume 16,Issue 04 April, 2026

MODERNIZATION OF THE TREASURY SYSTEM IN THE DIGITAL ECONOMY

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Annotation: This article examines the theoretical and practical aspects of modernizing the treasury system through the introduction of innovative digital technologies. It argues that treasury reform today goes beyond simple process automation and represents a fundamental transformation aimed at ensuring transparency, efficiency, and real-time financial control in public finance management. The study analyzes key technological directions, including blockchain, artificial intelligence, Big Data analytics, cloud computing, robotic process automation, biometric authentication, and real-time monitoring systems. Special attention is given to their role in enhancing the security of financial transactions, improving budget forecasting accuracy, minimizing corruption risks, and optimizing public expenditures. The findings demonstrate that the integration of advanced digital solutions enables the treasury system to evolve from a traditional operational structure into a strategic financial management instrument, thereby increasing the overall efficiency of public resource utilization.

Keywords: treasury system, digital transformation, blockchain, artificial intelligence, Big Data, cloud computing, RPA, cybersecurity, public finance, transparency, financial monitoring, budget efficiency

Introduction

In the context of rapid digital transformation, the modernization of public finance management systems has become a priority for many countries. The treasury system, as a central element of fiscal governance, plays a crucial role in ensuring the effective allocation and control of public funds. In recent years, the growing complexity of financial flows and the need for greater transparency have driven the adoption of innovative technologies in treasury operations. These changes are not limited to automation but involve a comprehensive restructuring of processes, tools, and institutional approaches.

One of the most promising directions in treasury modernization is the application of blockchain technology. Blockchain provides a decentralized and immutable ledger that significantly enhances the transparency and security of financial transactions. By ensuring that transaction records cannot be altered, it reduces the risk of corruption and fraud. Furthermore, the use of smart contracts enables the automatic execution of financial obligations once predefined conditions are met, thereby eliminating the need for manual intervention and increasing operational efficiency in areas such as public procurement.

Another important component of modernization is the use of artificial intelligence and Big Data analytics. These technologies enable the processing and analysis of large volumes of financial data, leading to more informed decision-making. Advanced analytical tools improve budget forecasting by identifying patterns in historical data and predicting future trends. At the same time, real-time fraud detection systems allow for the identification and prevention of suspicious transactions, thereby strengthening financial discipline. In addition, data-driven insights support the optimization of public expenditures by identifying inefficiencies and areas of unnecessary spending.

Cloud computing technologies play a key role in creating an integrated digital ecosystem for treasury operations. By centralizing data storage and processing, cloud platforms facilitate faster information exchange among budgetary institutions and ensure seamless coordination. The transition to cloud-based systems also enables the provision of remote services, allowing

stakeholders to access treasury functions through web and mobile platforms. This significantly reduces paperwork and enhances the accessibility and efficiency of public financial services.

Robotic process automation contributes to the modernization process by replacing repetitive and routine tasks with automated solutions. Tasks such as data entry, document verification, and report generation can be performed with high accuracy and speed, reducing the risk of human error and freeing up human resources for more strategic functions. As a result, operational efficiency is significantly improved.

The integration of biometric authentication and advanced cybersecurity systems represents another critical aspect of treasury modernization. Multi-factor authentication methods, including facial recognition and fingerprint identification, enhance the security of financial transactions and prevent unauthorized access. At the same time, the implementation of automated cyber defense systems ensures the protection of sensitive financial data against increasingly sophisticated cyber threats.

Real-time treasury monitoring systems provide an additional layer of efficiency by enabling continuous tracking of financial flows. Interactive dashboards allow decision-makers to visualize budget execution in real time, facilitating timely and informed decision-making. Moreover, real-time data supports effective liquidity management by identifying idle funds and enabling their optimal allocation to short-term financial instruments.

The analysis shows that the modernization of the treasury system through innovative technologies leads to a qualitative transformation of public finance management. The integration of blockchain, artificial intelligence, cloud computing, and other digital solutions enhances transparency, strengthens financial control, and improves the efficiency of budget execution. As a result, the treasury system evolves from a traditional transactional mechanism into a strategic financial management tool. This transformation not only reduces operational risks and inefficiencies but also contributes to more effective use of public resources, potentially increasing overall financial efficiency by a significant margin.

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