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ELECTRONIC PAYMENTS IN THE PUBLIC SECTOR: CHALLENGES OF STATE REGULATION AND INTEGRATION INTO THE ACCOUNTING SYSTEM

The article examines the development and implementation of electronic payments in the public sector, focusing on the challenges of state regulation and their integration into accounting systems. The study identifies key types of electronic payments, their institutional infrastructure, and accounting features, emphasizing differences between public and private sector practices. Based on recent research, the paper highlights the dual role of digitalization as both a driver of transparency and a source of regulatory complexity. The findings underscore the need for balanced state policies, data protection, and harmonization of payment and accounting systems to enhance public financial management efficiency.

Keywords: electronic payments; public sector; digital transformation; state regulation; accounting system; financial management; budget institutions.

Formulation of scientific problem and its significance. The rapid digital transformation of the financial sector has significantly influenced the functioning of public finance systems worldwide. Electronic payments have become an essential component of modern economic activity, ensuring efficiency, transparency, and security in financial transactions. In the public sector, the use of electronic payments plays a particularly important role, as it is directly connected with budget execution, tax collection, social transfers, procurement, and international financial relations.

The growing market of electronic payments creates new opportunities for enhancing the effectiveness of public financial management. At the same time, it generates a number of challenges related to state regulation, cybersecurity, compliance with international

standards, and integration into the accounting system of public institutions. These issues are especially relevant for Ukraine, where the digitalization of the financial sector is closely linked to reforms in public administration, the development of e-government, and the implementation of European integration commitments.

The purpose of this study is to analyze the current state and prospects of electronic payments in the public sector, to identify key regulatory challenges, and to explore the integration of electronic payment mechanisms into the accounting system of public institutions. The research aims to highlight both theoretical and practical aspects, focusing on the interaction between the electronic payments market, state regulation, and accounting practices in the public sector.

Analysis of recent publications. Recent studies emphasize the transformative impact of digitalization on public-sector accounting and electronic payment systems. Hamdy A., Diab A., Eissa A. M. investigate the effects of digital transformation on the quality of accounting information systems in Egypt and Saudi Arabia, noting that at early stages of digitalization, its impact may be negative due to immature information infrastructure [1]. Agostino D., Bracci E., Steccolini I. [2] highlight how digital transformation reshapes accounting roles and accountability in public services, emphasizing the need for adaptation by accounting professionals. Ukrainian research on electronic payments [3; 4] analyzes the functioning of payment systems, market structure, transaction volumes, and the accounting and information support necessary for effective integration into public-sector financial management.

Comprehensive literature reviews [5] demonstrate that public services produce and consume large volumes of data, significantly affecting accounting practices. Other studies (Rossi F. M., Zamboni S., Tiron-Tudor A., Deliu D., Farcane N.) focus on regulatory burdens, underexplored effects of digitalization, and the need to mitigate negative consequences for accounting and auditing processes [6; 7]. In developing countries, digitalization not only transforms accounting and auditing practices but also introduces new risks and competencies requirements, as shown by Quraishi M. I., Rahman M. M., Chowdhury S. [8]. Collectively, these studies indicate that successful integration of electronic payments in the public sector requires technological modernization, regulatory adaptation, and the development of appropriate accounting practices.

The purpose of the article is to examine the current state of the electronic payments market in the public sector, to identify key challenges in state regulation, and to explore strategies for the effective integration of electronic payment mechanisms into public sector accounting systems.

Presentation of the main material. Electronic payments represent financial transactions conducted using digital channels, without the physical transfer of cash. They include payments executed via bank cards, online banking, mobile applications, electronic wallets, and government-operated platforms. In the context of the public sector, electronic payments ensure the efficient transfer of funds between government agencies, budgetary institutions, citizens, and businesses.

From a classification perspective, electronic payments can be divided into several groups:

1. Government-to-Government (G2G) – intergovernmental transfers, subventions, and budget allocations.
2. Government-to-Citizen (G2C) – social benefits, pensions, subsidies, and grants delivered through electronic channels.
3. Citizen-to-Government (C2G) – taxes, fees, customs duties, and other obligatory payments.
4. Government-to-Business (G2B) – payments for procurement, tenders, and administrative services.

This classification provides a systematic understanding of the types of transactions that constitute the public sector's electronic payment ecosystem and serves as a basis for both regulatory oversight and accounting integration.

The electronic payments market in Ukraine has experienced significant growth over the past decade, driven by digitalization initiatives, financial reforms, and the increasing adoption of cashless technologies among government institutions and citizens [3; 4]. According to the National Bank of Ukraine (2023), the volume of non-cash transactions in the public sector has been steadily increasing, reflecting the expansion of electronic tax collection, social benefits transfers, and government procurement payments.

Recent trends indicate:

- The increasing adoption of mobile banking and electronic wallets for citizen-to-government transactions (C2G), including payment of taxes and fees [1].
- Growth of government-to-citizen payments (G2C), particularly for social benefits and pension transfers [2].

- Implementation of real-time payment systems that allow instant processing of intergovernmental transfers (G2G), improving the efficiency of budget execution [4].

- Integration of electronic payment platforms with government accounting and reporting systems, ensuring compliance and transparency [5].

The National Bank of Ukraine (NBU) plays a central role in regulating the electronic payments market. It oversees the System of Electronic Payments (SEP), establishes operational standards for commercial banks and payment service providers, and ensures the security and reliability of cashless transactions [1; 4].

The State Treasury coordinates budget execution and ensures that payments from the State Budget are executed efficiently and transparently. Integration between the SEP, treasury systems, and accounting software enables real-time monitoring of public funds, reducing errors, delays, and opportunities for misappropriation [2; 3; 5].

Ukraine's electronic payment development can be compared with international practices to identify best practices and potential improvements:

- European Union. Many EU countries have implemented fully automated G2G and G2C payment systems, integrated with national accounting standards, emphasizing transparency, cybersecurity, and interoperability [7].

- United States. The Federal Reserve's FedNow and other real-time payment infrastructures allow immediate settlement of public funds and facilitate integration with federal accounting systems [6].

- Asia (Singapore, South Korea). Advanced e-government platforms enable digital collection of taxes, fees, and social transfers while providing robust analytics and reporting tools for public-sector accountants [8].

These international experiences highlight the importance of regulatory frameworks, technological infrastructure, and the adaptation of accounting practices to ensure that electronic payments support both efficiency and accountability in the public sector [1; 5].

The regulation of electronic payments in Ukraine is primarily determined by the Law of Ukraine «On Payment Systems and Funds Transfer in Ukraine» and related regulatory acts of the National Bank of Ukraine (NBU). These legal frameworks define the rights and obligations

of participants in the electronic payment market, establish licensing requirements for payment service providers, and ensure compliance with anti-money laundering (AML) and counter-terrorism financing (CTF) standards [4].

In addition, the integration of electronic payments into public finance management is governed by the Budget Code of Ukraine and Treasury regulations, which mandate transparent accounting, reporting, and control over budgetary transactions [3]. The combination of monetary regulation by the NBU and fiscal regulation by the State Treasury provides a dual mechanism for ensuring both financial stability and accountability in the public sector.

Despite significant progress in establishing a regulatory framework, several challenges remain:

1. **Regulatory Complexity and Bureaucratic Burden.** Excessive formal requirements, known as “red tape,” often slow down the adoption of innovative payment technologies in government institutions.

2. **Cybersecurity Risks.** The growing volume of electronic transactions increases the vulnerability of government systems to cyber threats. Effective regulation must therefore balance digital innovation with robust security standards.

3. **Lack of Harmonization with International Standards.** Ukraine’s regulatory framework, while aligned with EU directives in some aspects, still requires further harmonization to ensure interoperability with global payment infrastructures.

4. **Institutional Capacity.** Effective enforcement of regulations depends on the technological and human resource capacity of both regulatory authorities and public-sector institutions, which in developing economies may lag behind the pace of digitalization.

To enhance the regulation of electronic payments in the public sector, several measures are recommended:

- **Regulatory Simplification.** Streamlining compliance requirements could reduce administrative burdens while maintaining transparency and accountability.

- **Cybersecurity and Data Protection.** Introducing advanced monitoring systems, multi-factor authentication, and compliance with international cybersecurity standards would strengthen resilience against fraud and attacks.

- **Integration with Public Accounting Systems.** Regulations should support seamless interaction between payment platforms and

government accounting systems to improve efficiency and reporting accuracy.

- International Cooperation. Closer collaboration with the EU and international financial institutions would accelerate the harmonization of Ukraine's regulatory framework with best global practices.

Integration of electronic payments into public-sector accounting requires the alignment of payment processes with the Unified Chart of Accounts for Budgetary Institutions and the methodological guidelines established by the Ministry of Finance of Ukraine. According to Nazarova I. [3], the accounting treatment of electronic payments must ensure transparency, timeliness, and traceability of transactions, while fully complying with international accounting standards for the public sector (IPSAS).

From a methodological perspective, electronic payments in the public sector can be classified into:

- Revenue transactions (e.g., tax and fee collection, customs duties);
- Expenditure transactions (e.g., salaries, procurement payments, subsidies);
- Transfer transactions (e.g., intergovernmental transfers, international donor funds).

Each category requires specific accounting procedures, control mechanisms, and reporting obligations, which must be integrated into digital systems to ensure accurate financial management [1].

In Ukraine, the integration of electronic payments into public-sector accounting is supported by a combination of:

- The State Treasury System, which manages budget execution and provides real-time oversight of fund allocation;
- The System of Electronic Payments (SEP) of the National Bank of Ukraine, which facilitates interbank settlements for government institutions;
- Accounting and ERP platforms, such as BAS and KBS, used in budgetary institutions to record and monitor financial operations.

Table summarizes the main types of electronic payments in the public sector, their practical examples, instruments, and accounting features.

Table

The main types of electronic payments in the public sector, their practical examples, instruments, and accounting features

Type of Electronic Payment	Examples	Tools/Services	Features of Accounting Recognition
Budget Payments	Transfer of subsidies, grants, interbudgetary transfers	NBU SEP, State Treasury of Ukraine	Recognized as interbudgetary transfers in budgetary accounting (accounts of class 7, 8 of the Chart of Accounts for budgetary institutions)
Tax and Mandatory Payments	Payment of personal income tax, VAT, unified social contribution, customs duties	Taxpayer's Electronic Cabinet, internet banking	Recognized as tax liabilities and their payment in accounting (acc. 64 «Settlements on taxes and payments»)
Social Benefits	Pensions, scholarships, subsidies, unemployment assistance	Treasury accounts, bank cards, «E-Pay» payment system, «Diia»	Recognized as budget expenditures, recorded on liability and payment accounts (acc. 66, 67, 81)
Payment for Public Services and Procurement	Payment for administrative services, tender payments in ProZorro	«Diia» system, ProZorro, online banking	Expenditures are recorded by ECE (Economic Classification of Expenditures codes); payments to suppliers – acc. 63 «Settlements with suppliers»
International Public Sector Payments	Public debt servicing, receipt of grants, project funds	NBU SEP, SWIFT, international banks	Accounting: foreign currency operations (acc. 31 «Bank accounts», acc. 62 «Settlements with international organizations»), exchange rate differences
Internal Settlements of Public Institutions	Payment for utilities, business trips, operating expenses	Internet banking, accountable persons' card accounts	Recognized on acc. 22 «Budget expenditures», acc. 36 «Settlements with accountable persons»

International practice demonstrates the benefits of using integrated information systems where accounting modules are directly connected to payment gateways. For example, in EU countries, digital platforms enable the automatic recording of tax payments and social transfers, reducing manual intervention and enhancing the accuracy of financial reporting [2].

Despite notable progress, several challenges hinder the effective integration of electronic payments into public-sector accounting systems:

1. **Data Standardization Issues.** Lack of unified standards for transaction coding and reporting complicates interoperability between treasury, banks, and accounting systems.

2. **Cybersecurity and Data Integrity.** The transition to fully digital accounting systems increases risks of data breaches and fraud, requiring advanced protection mechanisms.

3. **Institutional Readiness.** Many public institutions face technological and human resource constraints, limiting their ability to adapt to digital payment and accounting systems.

4. **Regulatory Gaps.** Existing regulations often lag behind technological innovations, creating uncertainty in the treatment of new forms of electronic transactions.

To strengthen the integration of electronic payments into public-sector accounting, several strategic directions should be pursued:

- **Automation of Accounting Entries.** Ensuring that all electronic transactions are automatically reflected in accounting systems, reducing manual errors and delays.

- **Implementation of IPSAS Standards.** Aligning Ukrainian practices with international standards to improve transparency and comparability of financial reporting.

- **Enhanced Digital Infrastructure.** Expanding secure payment platforms and upgrading IT systems in budgetary institutions.

- **Capacity Building.** Training public-sector accountants in digital competencies to effectively manage electronic transactions and related risks.

Thus, the successful integration of electronic payments into public-sector accounting systems depends on a combination of regulatory adaptation, technological modernization, and institutional capacity-building. The literature highlights that such integration not only increases

efficiency and transparency but also strengthens public trust in government financial management.

Conclusions. The conducted research confirms that electronic payments in the public sector are a crucial component of modern financial management and an indispensable element of digital transformation in public administration. Their implementation contributes to improving the efficiency, transparency, and accountability of budgetary processes, facilitating better control over public resources, and strengthening public trust in government institutions.

The theoretical and methodological analysis has shown that electronic payments differ significantly from private-sector practices due to their focus on regulatory compliance, fiscal discipline, and the safeguarding of public interests. The classification of electronic payments and the identification of their institutional infrastructure have allowed for a more comprehensive understanding of how these systems function within the framework of public governance.

The review of recent scientific publications demonstrated that both domestic and foreign researchers emphasize the opportunities and risks of digitalization, including cybersecurity threats, regulatory challenges, and the need for integration with accounting and information systems. It is evident that the success of electronic payments in the public sector largely depends on a balanced combination of innovation and effective state regulation.

The practical significance of the study lies in highlighting the necessity of developing unified standards, ensuring data protection, and promoting interoperability between payment systems and public sector accounting platforms. International experience shows that digital transformation can initially lead to certain difficulties due to infrastructural immaturity, but in the long term it significantly enhances the quality of financial information and decision-making.

In conclusion, the integration of electronic payments into the public sector should be viewed not only as a technological modernization but also as a systemic reform of financial governance. Further research should focus on the development of regulatory frameworks, the use of artificial intelligence and big data in public finance, and the adaptation of best global practices to the domestic context.

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ЕЛЕКТРОННІ ПЛАТЕЖІ В ДЕРЖАВНОМУ СЕКТОРІ: ВИКЛИКИ ДЕРЖАВНОГО РЕГУЛЮВАННЯ ТА ІНТЕГРАЦІЯ В СИСТЕМУ БУХГАЛТЕРСЬКОГО ОБЛІКУ

У статті досліджено сучасний стан, тенденції та проблеми впровадження електронних платежів у державному секторі економіки. Розкрито теоретико-методологічні засади функціонування систем електронних платежів, їх класифікацію, інфраструктуру та основні інструменти, що використовуються у сфері публічних фінансів. Особливу увагу приділено порівнянню практик використання електронних платежів у державному та приватному секторах, що дало змогу визначити специфіку бухгалтерського відображення таких операцій у межах бюджетного обліку. На основі аналізу наукових публікацій зарубіжних і вітчизняних учених встановлено, що цифрова трансформація державних фінансів супроводжується як зростанням прозорості та підзвітності, так і появою нових викликів, пов'язаних із кібербезпекою, нормативним навантаженням, інтеграцією облікових систем та якістю інформаційного забезпечення. Визначено роль державного регулювання у формуванні безпечного та ефективного середовища функціонування електронних платіжних систем, зокрема через розроблення стандартів, механізмів контролю та гармонізацію облікових процедур. Обґрунтовано необхідність збалансування між інноваційними підходами та дотриманням принципів бюджетної дисципліни й фінансової відповідальності. У результаті дослідження сформульовано висновок, що інтеграція електронних платежів у систему бухгалтерського обліку державного сектору є не лише технічним процесом модернізації, а й стратегічним напрямом реформування публічних фінансів. Отримані результати мають практичне значення для розроблення рекомендацій щодо вдосконалення облікової політики, забезпечення прозорості фінансових операцій і підвищення

ефективності управління державними ресурсами.

Ключові слова: електронні платежі; державний сектор; цифрова трансформація; державне регулювання; система бухгалтерського обліку; фінансовий менеджмент; бюджетні установи.

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