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ELECTRONIC TAX SERVICES (E-TAX) AND THEIR ROLE IN COMBATING TAX EVASION

ЕЛЕКТРОННІ ПОДАТКОВІ СЕРВІСИ (E-TAX) ТА ЇХ РОЛЬ У БОРОТЬБІ З УХИЛЕННЯМ ВІД СПЛАТИ ПОДАТКІВ

Electronic tax services (e-tax) play a crucial role in combating tax evasion and ensuring fiscal transparency in the context of digital economic transformation. The article examines the effectiveness of e-tax systems, their legislative framework, operational mechanisms, and impact on reducing the shadow economy. Key challenges are identified, including cybersecurity threats, technical barriers, and the need for digital literacy. Promising development directions are proposed, such as stimulating public engagement, improving state control mechanisms, and expanding investment opportunities. Special attention is paid to analyzing international experiences in tax system operations and their adaptability in Ukraine. The primary pathways for system improvement are outlined to enhance its efficiency and reliability in the long term.

Keywords: *electronic tax services, tax evasion, digitalization, fiscal transparency, tax administration, international experience.*

E-tax сервіси є основним засобом протидії ухиленню від податків і досягнення фіскальної прозорості в епоху цифрової економіки. Незважаючи на значний потенціал, їх повномасштабне впровадження стикається з численними викликами. У статті аналізується сучасний стан e-tax систем, їх технологічні механізми та вплив на зменшення тіньового сектору. Виявлено структурні слабкості сучасних систем, зокрема обмеженість міжнародної стандартизації, недостатню адаптацію до потреб малого бізнесу та ризики пов'язані з захистом конфіденційності даних. Розглядається роль технологічних інновацій, таких як блокчейн, штучний інтелект та Big Data аналітика, у трансформації податкового адміністрування. Порівняльний аналіз міжнародного досвіду (Естонія, Мексика, Південна Корея, Україна) показує, що комплексний підхід до цифровізації податкових служб сприяє підвищенню добровільної податкової дисципліни та зростанню бюджетних надходжень. Досліджено вплив макроекономічних та політичних факторів, включаючи глобалізацію податкових викликів (BEPS-ініціатива OECD), військовий стан в Україні та необхідність стабільних податкових надходжень для відбудови країни. Ці обставини суттєво впливають на пріоритети розвитку e-tax систем, вимагаючи адаптації не лише на технологічному, але й на законодавчому рівні. Запропоновано комплекс стратегічних заходів для підвищення ефективності e-tax систем, зокрема: вдосконалення правової бази для міжнародної гармонізації стандартів, стимулювання використання передових технологій (EDI, Open Banking, Real-Time Reporting). Додатково наголошено на важливості створення інклюзивних рішень, доступних для бізнесу різних рівнів цифрової зрілості. Особливу увагу приділено потенційним перевагам міжнародного співробітництва у сфері

обміну податковою інформацією та адаптації найкращих світових практик. Отримані результати підкреслюють необхідність комплексного підходу, що поєднує технологічні інновації, інституційні реформи та підвищення довіри між платниками податків і державою. Це сприятиме не лише зменшенню ухилення від податків, а й загальному розвитку цифрової економіки, створюючи умови для справедливої конкуренції та прозорого ділового середовища.

Ключові слова: електронні податкові сервіси, ухилення від податків, цифровізація, фіскальна прозорість, податкове адміністрування, міжнародний досвід.

Formulation of the problem. In the era of digital economic transformation, electronic tax services (e-tax) are becoming a fundamental mechanism for combating tax evasion and achieving fiscal transparency. The growth of the shadow sector, budget losses due to tax optimization schemes, and declining trust in public institutions necessitate the implementation of innovative tax administration mechanisms.

Global experience proves that automated systems, such as electronic cash registers, Real-Time Reporting, integration with banking data (Open Banking), and the use of artificial intelligence for risk analysis, significantly reduce opportunities for tax fraud. Ukraine, by implementing the "Diia.Podatky" system and other digital tools, is also demonstrating positive shifts, yet faces a number of challenges related to cybersecurity, technical infrastructure, and business adaptation.

Research on the role of e-tax in combating tax evasion is particularly relevant in the context of finding a balance between the efficiency of tax control, convenience for taxpayers, and the protection of their data. Therefore, it is necessary to examine global practices, the operational mechanisms of electronic tax systems, and the prospects for their improvement to strengthen fiscal security in Ukraine. The relevance of the research is further emphasized by factors such as the globalization of tax challenges related to the OECD BEPS initiative, digital taxes, the state of war in Ukraine which requires stable tax revenues for the country's future reconstruction, and the development of blockchain, AI, and Big Data technologies, which open new opportunities for tax authorities.

Analysis of recent research and publications. International research demonstrates the significant potential of electronic tax services (e-tax) in combating tax evasion. Otekunrin et al. [1], in their study of the Nigerian e-tax system, found a direct link between the implementation of digital services and a reduction in the level of tax fraud, achieved through increased process transparency and a change in taxpayer attitudes. Commey J. [2] emphasizes the transformative impact of cutting-edge technologies, particularly blockchain and artificial intelligence, which are fundamentally changing approaches to tax administration. The global aspect was explored by Ramgulam D. & Bourton A. [3], who proved the effectiveness of international technological initiatives in combating offshore tax evasion. The research of Khafizah N. et al. [4] highlights the importance of the quality of digital services for fostering tax discipline, while Meiryani M. et al. [5] studied mechanisms to counter corporate tax evasion, finding that e-tax systems complicate the manipulation of financial data.

Ukrainian researchers Tkachyk L.V. and Senkiv D.O. [6] analyze the specifics of digitalizing tax control in Ukraine, pointing out the objective advantages of electronic methods but also the existing technological barriers. Lahodiienko N.O. and Yakushko I.M. [7], through a bibliometric analysis of taxation digitalization, including e-tax, identified a global trend towards intensifying research in the automation of online services and increasing the transparency of tax processes. The practical aspect of e-tax implementation in Ukraine regarding tax reporting is considered by Romashko O. and Shapovalova A. [8], who emphasize the positive impact of digital tools on data reliability, while also noting the need for further system improvement. A comparative study by Poberezhets O.V. and Filatova M.O. [9] reveals a significant gap between the Ukrainian and Finnish systems of electronic tax administration for improving tax payment culture amidst low public trust in authorities in Ukraine, linking the effectiveness of e-tax to the overall level of the state's

digital maturity. A comprehensive analysis by Pidlypna I.M., Havrylko I.O., Indus H.M., and Rybakova Yu.A. [10] within the framework of macroeconomic regulation proves that digital tools of fiscal policy are a key factor in countering the shadow economy and improving the efficiency of tax administration.

Thus, international research demonstrates the universal advantages of e-tax systems due to transparency, automated audits, and simplified interaction between the state and taxpayers, while the works of Ukrainian researchers focus on specific challenges related to the country's stage of digital transformation. Overall, the scholarly discourse confirms that digital tax services are an effective mechanism for combating tax evasion; however, their effectiveness depends on a comprehensive approach that considers technological, organizational, and social factors.

Formulation of the purpose of the article is to evaluate the effectiveness of electronic tax services (e-tax) in combating tax evasion, taking into account the specific context of Ukraine, to identify key mechanisms of their operation, and to develop recommendations for their improvement.

Presentation of the main material. Electronic tax services (e-tax) play a crucial role in the modern fight against tax evasion, creating a fundamentally new level of transparency and efficiency in tax administration. Their role is manifested through several key mechanisms: the automation of data collection and processing, which minimizes the human factor and opportunities for manipulation; the creation of a unified information space for interaction between taxpayers and government agencies; the implementation of preventive control based on the analysis of large datasets; and the increase in voluntary tax compliance due to the convenience and accessibility of the services. Digital platforms significantly complicate the concealment of income, manipulation of reporting, and the creation of optimization schemes, as they enable the instant exchange of information between various participants in the financial system – tax authorities, banks, customs offices, and other government institutions.

Global experience demonstrates a diversity of electronic tax service models that have developed in different countries, taking into account their national specificities (table 1).

One of the most advanced systems operates in Estonia, where the concept of an "e-government" has been implemented with full integration of tax services into the digital space [12]. The Estonian system allows for the submission of declarations, tax payments, and receiving consultations online, with most operations occurring automatically without taxpayer involvement. South Korea has implemented a Real-Time Reporting system [17], where all transactions from electronic cash registers are instantly transmitted to tax authorities, virtually eliminating the possibility of concealing turnover. Brazil introduced the Public Digital Bookkeeping System (SPED) [19], which requires companies to maintain accounting records in a special digital format with minute-by-minute synchronization with tax authorities.

In the European Union, the VAT Information Exchange System (VIES) operates for the automatic exchange of value-added tax information between member states, significantly complicating tax fraud in cross-border transactions [14]. The United Kingdom implemented the Making Tax Digital program [20], which requires businesses to maintain digital records and submit data regularly through special software solutions. In India, the Goods and Services Tax Network (GSTN) [15] unites the tax authorities of all states, ensuring transparency in tax assessment and payment at all levels. China created the "Golden Tax System" Phase III [21], which uses artificial intelligence to analyze big data and detect anomalous taxation schemes.

Each of these models has its own characteristics, but they are all oriented towards achieving common goals: maximum process automation, removing humans from the decision-making chain, creating barriers to fraud, and facilitating compliance with tax legislation for conscientious taxpayers. The experience of these countries indicates that the most effective systems are those that combine instant data collection, automated consistency checks, and the application of advanced analytical tools for risk detection. An important

Table 1

Main Models of Electronic Tax Services Worldwide

Country/ Region	Model / Tool	Model Characteristics	Impact on Tax Evasion
Estonia	e-Tax/e-Customs Platform, e-Residency, Automated Reporting	Fully integrated electronic tax system, 24/7 access to the tax cabinet, automatic VAT calculation, integration with banks	Minimization of evasion, shift in focus to service rather than enforcement, reduction of the shadow economy share, high trust in the tax system
Ukraine	Electronic Taxpayer's Office, E-Check, E-Excise, e-POS (Electronic Cash Register)	Modular access to declarations, audit reports, correspondence with the State Tax Service. Developed via the STS portal	Partial risk reduction, but the infrastructure is still being formed
EU (Spain, Hungary)	Real-Time Reporting (RTR)	Online VAT accounting (SII, SAF-T): real-time transmission of invoices and transactions to the tax authority	Significant reduction of the VAT gap, increase in voluntary compliance
India	Goods and Services Tax (GST) Portal	Unified digital portal for registration, reporting, invoicing, and transaction verification	Reduction in evasion due to automated cross-checking of transactions
Poland	JPK (Jednolity Plik Kontrolny – Standard Audit File)	A standardized file structure for exchanging accounting information electronically with the tax authority	Improved tax discipline through deep data analytics
South Korea	Hometax & Cash Receipt System	Digital consolidation of all payments, control of cash circulation, interface for online accounting	Significant reduction of the shadow economy
Chile / Brazil	Electronic Invoicing (e-Factura)	Mandatory online approval of every invoice by a fiscal server	Minimization of VAT evasion.

Source: grouped by the author [11–19]

aspect is also the integration of national systems into international information exchange networks, which is particularly relevant for combating cross-border tax evasion and profit shifting to offshore jurisdictions.

An important step in the development of electronic tax services was the implementation of Electronic Data Interchange (EDI) technologies, which revolutionized the process of submitting and processing tax reports. EDI enables the automated exchange of structured electronic documents (invoices, declarations, acts) between the computer systems of taxpayers and tax authorities, eliminating the need for manual data entry and significantly reducing the number of errors. This technology ensures secure data transmission in a standardized format, allowing for the integration of various accounting software solutions with state information systems [22]. The implementation of EDI is particularly effective for large enterprises with a high volume of transactions, as the system automatically generates reports, checks their compliance with legal requirements, and transmits them to the tax authorities without human intervention. This not only simplifies the administrative burden on businesses but also ensures high data accuracy, eliminating opportunities for intentional or accidental data distortion. Examples of the implementation of these technologies in France

and Germany include SAF-T as a universal EDI format for fiscal analysis; in Ukraine, partial EDI implementation is linked with M.E.Doc, SOTA, FREDO, but it is mostly limited to declarations. Their key advantages should be noted: reduction of reporting errors; automatic encoding and invoice verification; acceleration of tax audits.

The impact of EDI automation on tax processes is comprehensive and transformative. Specifically, EDI automation creates a systemic transparency effect, where data between taxpayers, banks, customs, and tax authorities is synchronized in real-time without human intervention. This eliminates the possibility of intentional or accidental data distortion at the stage of initial data entry or during report transmission. The validation mechanism is built directly into the exchange process, so errors or discrepancies are detected instantly, even before the report is submitted to the tax authority. For example, the system can automatically compare the value-added tax amount on an invoice with the amount in the customs declaration or banking transaction, preventing even technical discrepancies.

A critically important manifestation of this impact is the removal of humans as a link in data processing. This not only reduces operational costs but also drastically cuts corruption risks and opportunities for pressure on tax inspectors. Information flows directly from the source (the company's accounting software) to the tax processing system without the possibility of being edited in transit. Thus, EDI de facto becomes a technological guarantor of data integrity.

For businesses, this impact is reflected in reduced administrative burden. Reporting is automatically generated based on primary documents, verified, and submitted without the involvement of an accountant. This also minimizes the risks of penalties due to technical errors or missed deadlines. Simultaneously, the system creates an environment of "enforced integrity" – even if a company attempts to conceal a transaction, EDI integration with banks or counterparties can automatically detect and record discrepancies.

From the state's perspective, EDI enables a qualitative shift from selective post-factum control to comprehensive preventive monitoring. Tax authorities receive not reports requiring verification but pre-verified and standardized data sets ready for analysis. This allows for the reallocation of resources from routine document checks to analytical work aimed at uncovering complex tax evasion schemes.

The most critical impact is the creation of a unified digital environment of trust. Data transmitted via EDI holds legal status, eliminating the need for further paper-based document confirmation. This establishes a new level of "business-state" interaction based on machine trust in data rather than administrative pressure.

However, this transparency has a flip side – data quality requirements increase dramatically. Any error in a primary document is instantly propagated throughout the entire chain, necessitating advanced mechanisms for automatic correction and feedback. Thus, EDI not only automates processes but also compels participants to elevate data quality standards at all levels of economic activity.

The further development of digital tax services is linked to the application of Big Data and artificial intelligence technologies for tax risk analysis (Fig. 1).

Modern systems can process vast volumes of structured and unstructured data from various sources, including financial operations, banking transactions, customs declarations, social media data, and other digital traces of taxpayer activities. Artificial intelligence analyzes this data in real time, detecting anomalies, unusual patterns, and potential risks of tax evasion. Machine learning enables the system to continuously refine its algorithms for identifying violations based on accumulated experience and new data. For example, AI systems can identify typical tax optimization schemes, detect discrepancies between declared income and actual expenses, and predict risks of tax offenses based on historical data and behavioral models. Such systems are already successfully operational in many countries, where they form the foundation of tax authorities' risk assessment systems, allowing auditors to focus on the most problematic areas and taxpayers.
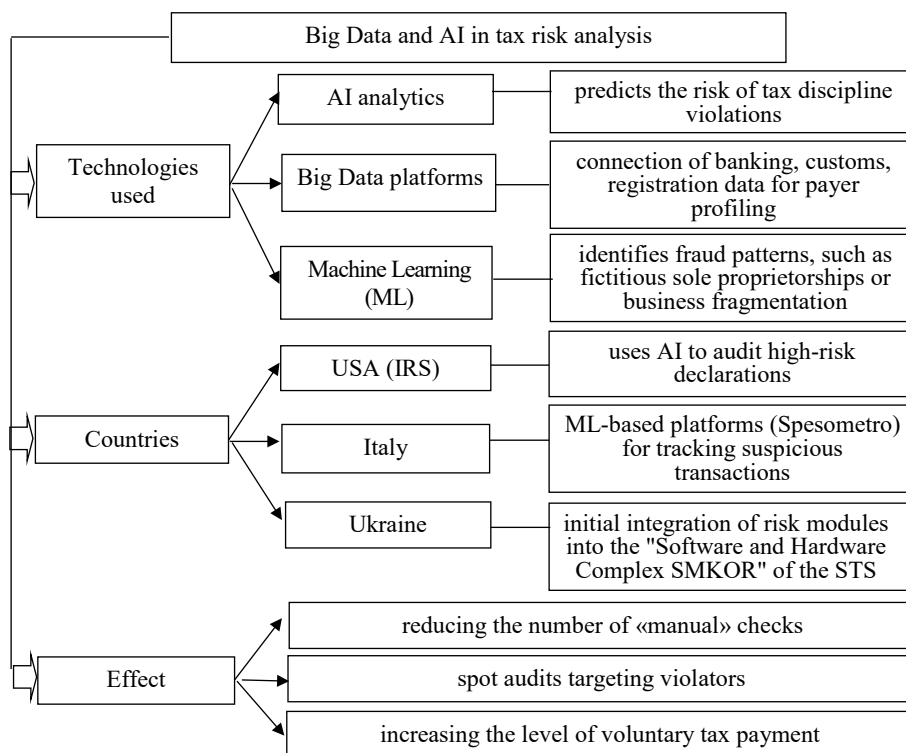
Figure 1. Using Big Data and AI for Tax Risk Analysis
Source: grouped by the author [23–25]

The combination of EDI, Big Data, and artificial intelligence technologies creates a powerful symbiosis that transforms traditional tax administration from reactive to proactive. Instead of responding to violations that have already occurred, modern systems can prevent them by providing early warnings and creating an environment where tax evasion becomes technologically complex and economically unviable. These technologies also enable a personalized approach to taxpayers, offering them relevant services and alerts that promote voluntary compliance with tax legislation. The implementation of these innovative solutions is particularly relevant in the context of economic globalization, where traditional tax control methods prove insufficient to counter modern tax evasion schemes, especially in the digital economy and international trade.

The introduction of electronic tax services has created a comprehensive arsenal of tools to combat shadow operations, among which online cash registers and electronic receipts (fiscal transaction recorders – RRO) demonstrate particular effectiveness. These technologies operate on the principle of instant fiscalization of each transaction, where sales data is automatically transmitted to tax authorities in real time. This completely eliminates the possibility of concealing income, as every business transaction is recorded even before the customer receives the receipt. Electronic receipts not only document the sale but also create a digital footprint – generating a unique QR code that is verified in the electronic system, recording the purchase in a way that cannot be deleted or altered, which is crucial for preventing fraud. Electronic receipts are accessible to customers via smartphone, messenger, or email (without paper copies). Moreover, these systems are integrated with banks, enabling automatic reconciliation of transaction amounts with the company's cash flows, detecting any discrepancies between declared income and actual account deposits. This approach reduces tax evasion by: preventing non-fiscalized sales (goods

cannot go "unnoticed" by tax authorities); reducing the use of double bookkeeping (separate records "for internal use" and "for tax purposes"); and creating a digital verification chain between the seller, buyer, and the State Tax Service. Examples of successful implementation in Ukraine include software-based RRO (e-RRO), the "pRROsto" application, electronic receipts, and integration with the e-cabinet [13]; in Poland, the Czech Republic, and Italy – mandatory use of online cash registers in all cash circulation sectors [16; 22; 24]; and in South Korea – the Cash Receipt System [17], which is linked to the customer's ID.

Real-Time Reporting (RTR) systems elevate the fight against tax evasion to a qualitatively new level. They ensure the automatic transmission of data on every transaction, invoice, or consignment note to the tax service, either before or at the moment of its execution. This creates a "digital eye" effect, constantly monitoring business activities and making it impossible to conceal transactions or mass-alter data after the fact. Consequently, businesses are deprived of the ability to modify or fail to submit reports retrospectively, enabling instant cross-referencing of inputs and outputs along the supply chain (e.g., detecting fictitious VAT). The tax authority immediately identifies risky operations, such as significant sums without corresponding tax liabilities. In case of technical issues or internet outages, the system blocks the cash register's operation, eliminating the possibility of conducting "under-the-table" transactions. A distinctive feature of these systems is their automatic analysis of data flows, detecting suspicious patterns such as sharp declines in sales volumes during specific periods, discrepancies between purchase and sales volumes, or the simultaneous use of multiple cash registers to distribute turnover. Real-Time Reporting systems have been successfully implemented and are operational in Poland – the JPK (Jednolity Plik Kontrolny) system as a mandatory SAF-T reporting format with control files; in Spain – the SII (Immediate Supply of Information), which transmits VAT invoices within 4 days; and in South Korea – the Hometax Platform as an integrated digital system with RTR mechanisms.

Automated reporting verification based on anomaly detection algorithms forms the core of modern tax control systems. These algorithms analyze vast datasets to identify deviations from normal behavioral patterns using machine learning and artificial intelligence methods. For example, the system can detect that a particular taxpayer consistently submits reports with indicators significantly different from industry averages or that their expenses do not correlate with declared income. The algorithms are capable of uncovering complex evasion schemes, such as business fragmentation across multiple legal entities to reduce tax burden or the use of fictitious counterparties to create artificial expenses. They analyze not only financial indicators but also thousands of indirect signals, such as transaction geolocation, operation timing, connections between counterparties, and even social media activity (Fig. 2).

Examples of automated reporting verification include the Scoring algorithms used by the US IRS [23], which assess the probability of violations; Italy's "Spesometro" + AI system [24], where the database cross-references VAT across supply chains; and Ukraine's risk-oriented monitoring system (SMKOR) [25], which analyzes declarations and the ratio of income to tax liabilities.

All these mechanisms work in tandem, creating a "digital labyrinth" from which it is impossible to escape without paying taxes. Each level of protection reinforces the others: online cash registers record transactions, Real-Time Reporting transmits them to the tax authority, and algorithms analyze them for anomalies. This creates an environment where tax evasion becomes technologically complex, economically unviable, and legally perilous. The experience of countries that have implemented such systems shows that they lead to a 15–25% increase in tax revenues solely through the legalization of shadow operations, while voluntary tax compliance significantly improves, as taxpayers realize that concealing income has become virtually impossible. Global practice demonstrates: the deeper the integration of e-tax into transactional processes, the lower the level of tax evasion.

International experience in implementing electronic tax services provides compelling examples of the effectiveness of these systems in combating the shadow economy (Table 2).
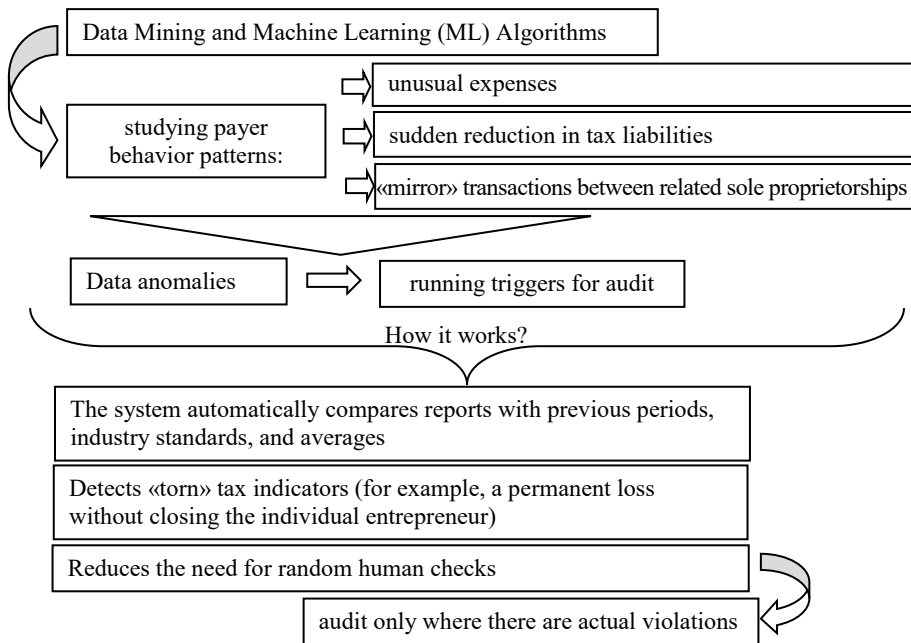
Figure 2. Detection of complex tax evasion schemes using Data Mining and Machine Learning (ML) algorithms
Source: developed by the author

Table 2

Comparison of the Effectiveness of Electronic Tax Services in Countries with Different Approaches

Country	Main Tool	Digitalization Level	Evasion Impact	Features
Estonia	e-Tax + e-Residency	Full	Very High	Service model, minimal human factor
Ukraine	"Diia.Podatky", e-RRO	Medium	Partial	Mobility, simplification, but non-mandatory
Mexico	CFDI + Automated Declaration	High	High	Strict fiscalization with AI verification

Source: grouped by the author [12, 26, 27]

Estonia, recognized as a leader in the digitalization of public services, has created a unique e-residency model that allows foreign entrepreneurs to register businesses and pay taxes in Estonia entirely online [12]. This system is built on the "tax upon payout" principle – profit tax is levied only when funds are withdrawn from the company, which incentivizes reinvestment and simplifies administration. The Estonian tax system is fully integrated with other state registries, enabling automatic verification of submitted information and detection of discrepancies. As a result, the time required to fulfill tax obligations in Estonia is among the lowest in the world, while the level of voluntary tax compliance is one of the highest.

In Ukraine, the "Diia.Podatky" system [26] has become a key tool for decentralizing tax services and combating the shadow economy. Since its launch, a significant increase in tax revenues has been observed, particularly from small and medium-sized businesses. The system has automated the tax administration process, eliminating personal contact between

taxpayers and tax officials, which has significantly reduced opportunities for corruption. Electronic cash registers integrated with the tax service record every transaction in real time, making it impossible to conceal income. The system has proven particularly effective in combating shadow employment, as automatic comparison of data on accrued salaries and actual tax payments allows for instant detection of discrepancies. According to expert estimates, the implementation of "Diia.Podatky" has contributed to the legalization of a significant portion of shadow turnover, especially in the retail and service sectors.

Mexico's tax authority SAT (Servicio de Administración Tributaria) [27] demonstrates impressive results in using electronic tools to combat tax evasion. The implementation of an electronic invoicing system, featuring digital signatures and instant transmission to tax authorities, has enabled comprehensive monitoring of all economic operations. SAT employs sophisticated data analysis algorithms to detect anomalies and inconsistencies in tax declarations. The system automatically cross-references data from various sources – banking transactions, customs declarations, and electronic invoices – allowing it to uncover even the most complex evasion schemes. This system has proven particularly effective in combating capital flight to offshore jurisdictions and the use of fictitious counterparties. Thanks to these measures, Mexico has managed to increase tax revenues by 25–30% solely by reducing shadow economic activities.

Thus, regardless of a country's level of economic development, electronic tax services (e-tax) can be an effective tool in combating tax evasion, particularly where e-tax is not merely a convenient interface but transforms into a centralized instrument of mandatory digital control that excludes or complicates tax avoidance. Electronic tax services not only increase budget revenues but also create fairer conditions for doing business by reducing the competitive advantages of non-compliant taxpayers who operated in the shadows. This fosters a healthier economic ecosystem and enhances trust in public institutions.

The implementation of electronic tax services brings significant benefits to both businesses and the state, creating a synergy of efficiency and transparency. For companies, the most noticeable advantage is the radical reduction of administrative costs associated with tax administration. Automating the processes of reporting, tax refunds, and consultations significantly reduces the time and resources spent on accounting services. Many routine operations that previously required qualified accountants are now performed automatically, which is particularly important for small and medium-sized businesses that can reallocate resources from administrative tasks to core business development. Electronic services also eliminate the need for physical visits to tax authorities, reducing not only time but also transportation costs.

For the state, a key benefit is the increased transparency of tax operations and reduced corruption risks. Electronic systems create a "digital footprint" for every transaction, making informal agreements between taxpayers and officials impossible. Automated processing of requests and decisions eliminates the subjective factor in administrative decision-making, as every action is recorded and traceable within the system. This not only reduces corruption risks but also increases trust in public institutions, as all procedures become predictable and uniform for all taxpayers. The state also gains access to real-time accumulated data, enabling more effective planning of budget revenues and resource allocation.

An important advantage for both parties is the increased level of voluntary tax compliance due to the convenience and accessibility of services. Modern e-tax systems offer an intuitive interface, the ability to submit reports at any time, automatic filling of repetitive data, and instant confirmation of document acceptance. This creates a positive experience of interaction with tax authorities, reduces stress, and encourages taxpayers to fulfill their obligations in a timely manner. Many systems also provide preventive notifications about approaching reporting deadlines, the possibility to correct errors before audits, and other services that make the tax payment process less bureaucratic and more user-friendly.

Furthermore, e-tax systems ensure higher-quality information exchange between businesses and the state. Taxpayers gain instant access to up-to-date information about

their tax obligations, accrued payments, and possible benefits, allowing them to make more informed financial decisions. The state, in turn, gains the ability to communicate more effectively with taxpayers, promptly inform them about legislative changes, and provide targeted consultations. This two-way flow of information lays the foundation for a partnership between business and the state, where both parties are interested in jointly ensuring the stability of the tax system.

The future development of electronic tax services is linked to the integration of advanced technologies that open new opportunities for combating tax evasion. One of the most promising innovations is the use of blockchain technologies to create immutable tax registries. Decentralized blockchain-based registries enable the creation of a transparent and unchangeable history of all financial transactions, making it impossible to distort tax data after registration [28]. Each transaction is recorded in the chain of blocks with a timestamp and cryptographic confirmation, ensuring its authenticity and preventing subsequent editing. This is particularly valuable for preventing manipulation of tax reports and creating a single source of truth for all participants in the tax process. Blockchain also allows for the creation of smart contracts for automatic deduction of tax payments when certain conditions are met, significantly reducing opportunities for evasion.

An important prospect is the development of Open Banking for the automatic taxation of financial flows [29]. This concept involves the secure exchange of financial data between banks and tax authorities with the client's consent. Open API technologies allow tax services to access up-to-date information about taxpayers' bank accounts in real time, enabling automatic reconciliation of declared income with actual fund receipts. This creates a system of continuous monitoring of financial flows and allows for the detection of discrepancies between officially declared income and actual banking operations. This approach is particularly effective in combating the concealment of income by small and medium-sized businesses, as well as in identifying illegal financial flows. In the future, this could lead to the creation of a fully automated taxation system where taxes are calculated and paid automatically based on the analysis of financial flows.

Another promising idea is the establishment of global e-tax standards under the auspices of international organizations such as the OECD or the European Union [14]. Such standards could ensure unified approaches to electronic document management, data protection, and information exchange between countries. This is particularly important for combating cross-border tax evasion and profit shifting to offshore jurisdictions. The harmonization of standards would enable the creation of integrated international systems for exchanging tax information, making it impossible to conceal assets abroad. The OECD is already developing standards for the automatic exchange of financial information (CRS), but future development may include the creation of unified protocols for electronic tax document management and the mutual recognition of electronic digital signatures.

The development of artificial intelligence and machine learning opens additional prospects for creating predictive tax control systems. Future e-tax systems will be able not only to detect existing violations but also to predict evasion risks based on the analysis of historical data and behavioral models. This will allow tax authorities to transition from reactive to proactive control, preventing violations before they occur.

The integration of all these technologies will lead to the creation of comprehensive tax administration ecosystems where most processes occur automatically without human involvement. This will not only enhance the effectiveness of the fight against tax evasion but also fundamentally change the relationship between taxpayers and the state, making it more transparent, trustworthy, and efficient. However, the realization of these prospects will require overcoming significant technical, legal, and political challenges, as well as ensuring an adequate level of protection for taxpayers' data privacy.

Conclusions. Electronic tax services (e-tax) have become a powerful tool for combating tax evasion on a global scale, transforming traditional approaches to tax administration.

The experience of digitalization leaders such as Estonia, Mexico, and Ukraine, which have implemented systems like e-residency, SAT, and "Diia.Podatky", proves that the automation of tax processes leads to a significant reduction in the shadow economy and an increase in voluntary tax compliance. Key mechanisms in this regard include online cash registers with instant fiscalization, Real-Time Reporting systems, automated reporting verification using artificial intelligence algorithms, and integration with banking systems through Open Banking.

The implementation of e-tax significantly enhances the transparency of tax operations, eliminates the human factor, and reduces corruption risks, creating a level playing field for all taxpayers. For businesses, this means reduced administrative burden, while for the state, it translates to more stable budget revenues without increasing the tax burden. However, the large-scale implementation of e-tax faces challenges related to cybersecurity, the need to improve digital literacy among the population, and technical barriers in countries with low levels of internet penetration.

The future development of e-tax is linked to the integration of blockchain for creating immutable tax registries, the further advancement of Open Banking for the automatic taxation of financial flows, and the establishment of global standards under the auspices of the OECD or the EU. These innovations will enable a shift to proactive tax control, where most processes will occur automatically, and evasion risks will be detected before they materialize.

Overall, e-tax systems have proven their effectiveness in combating tax evasion, creating an environment of "enforced integrity" where concealing income becomes technologically difficult and economically unviable. Their development should be a priority for governments seeking to build a fair and efficient tax system capable of meeting the challenges of the digital era.

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