UDC 657.1+004
JEL Classification: M40, M41, D24
DOI: 10.35774/visnyk2025.04.050

Promising Development of Electronic Services and Communication in the Tax and Customs Sector

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Abstract.

Introduction. *The intensification of reforms in the field of administrative services is accompanied by the digitalization of interaction among citizens, businesses, and fiscal institutions. The use of modern information and communication technologies forms an integrated fiscal space and creates a foundation for further improvement of tax and fee administration. Consideration of technological transformations and the interests of all participants in the tax and customs process necessitates research on promising directions for the development of electronic fiscal services.*

Purpose. *The article aims to identify prospective directions for enhancing electronic services and communications in the tax and customs domain and to determine their impact on the administration of taxes and fees.*

Results. *The study demonstrates the importance of further transformation of electronic services and communications in the tax and customs sphere. Three promising directions for improving electronic services in tax and fee administration are highlighted: informational integration (consolidation of diverse services on a single electronic platform, creation of an integrated informational environment, global information synchronization); technological implementation (artificial intelligence, blockchain); electronic communication (software applications for mobile platforms, chatbots, remote electronic audit). The significance of accounting information in the electronic tax and customs environment of enterprises is substantiated as a key factor for the effective functioning of all participants in the fiscal process.*

Prospects. *The further evolution of electronic services in the tax and fiscal sphere focuses on informational integration, adoption of innovative technologies for data processing, and provision of efficient communications within the national fiscal system. However, current development trends of platforms do not resolve the problems of informational and functional interrelations between tax and customs institutions within the fiscal process, which defines the subject of future research.*

Keywords: *fiscal administration, taxes and fees, tax and customs institutions, accounting, electronic services, electronic communications, electronic platforms.*

Received: 18 August 2025 | **Revised**: 21 August 2025 | **Accepted**: 16 September 2025 | **Published**: 30 November 2025

Suggested Citation

Hrytsyshyn, A. V., Liuba, O. I., Liuba, A. I. (2025). Promising development of electronic services and communication in the tax and customs sector. *Herald of Economics*, 4, 50-60. DOI: 10.35774/visnyk2025.04.050.

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Перспективний розвиток електронних сервісів та комунікації у податково-митній сфері

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Анотація.

Вступ. *Активізація реформ у сфері адміністративних послуг супроводжується цифровізацією взаємодії між громадянами, суб'єктами господарювання та фіскальними інституціями. Використання сучасних інформаційно-комунікаційних технологій формує інтегрований фіскальний простір і створює підґрунтя для подальшого вдосконалення адміністрування податків і зборів. Врахування технологічних трансформацій та інтересів усіх учасників податково-митного процесу потребує дослідження перспективних напрямів подальшого удосконалення електронних сервісів надання фіскальних послуг.*

Мета статті *полягає у виявленні перспективних напрямів подальшого удосконалення електронних сервісів та комунікацій у податково-митній сфері та визначення їх впливу на адміністрування податків і зборів.*

Результати. *Доведено важливість подальшої трансформації електронних сервісів та комунікацій в податково-митній сфері. Визначено три напрями перспективного удосконалення електронних сервісів для адміністрування податків і зборів: інформаційна інтеграція (об'єднання різних сервісів на одній електронній платформі, формування інтегрованого інформаційного середовища, глобальна інформаційна синхронізація); технологічна імплементація (штучний інтелект, блокчейн); електронна комунікація (програмні додатки для мобільних платформ; чат-боти, дистанційний електронний аудит). Доведено важливість використання облікової інформації в податково-митному електронному середовищі підприємств для ефективного функціонування усіх учасників фіскального процесу.*

Перспективи. *Подальша еволюція електронних сервісів в податково-митній сфері орієнтована на інформаційну інтеграцію, впровадження інноваційних технологій обробки інформації та забезпечення ефективних комунікацій у національній фіскальній системі. Проте, усі тренди розвитку платформ не вирішують проблем інформаційно-функціональних взаємовідносин податкових та митних інституцій у рамках фіскального процесу, що є предметом майбутнього наукового пошуку.*

Ключові слова: *фіскальне адміністрування, податки і збори, податкові та митні інституції, облік, електронні сервіси, електронні комунікації, електронні платформи.*

Introduction. The intensification of reforms in the field of administrative services implies the digitalization of citizen-oriented interaction tools. Information e-services have been introduced in all functional areas of the realization of citizens' rights and obligations. Particular emphasis in digital support for the public is placed on tax and customs processes. The activities of tax and customs institutions are based on comprehensive interaction with the accounting systems of business entities. Accounting becomes a communication intermediary between taxpayers (of taxes and fees) and fiscal institutions. Together, all participants in tax and customs processes form an information-based fiscal space. Through the system of electronic communications, this integrated environment is filled with accounting data and also serves as an information base in the process of tax and customs administration.

The use of modern computer-communication technologies has significantly transformed the process of stakeholder interaction with the fiscal information environment. Traditional methods of information processing in the tax and customs sphere are undergoing transformation, which necessitates the refinement of methodological and organizational provisions for the use of electronic fiscal services in mandatory connection with information and accounting processes. The use of accounting information in electronic fiscal services has become a decisive factor in the success of further reforms in the tax and customs sphere.

Analysis of research and publications. The role of accounting information in fiscal administration is actively discussed by the academic community from the tax and customs perspective. Even more research has been devoted to the interrelation between accounting and tax calculations in the context of minimizing information asymmetry and discrepancies in financial and tax reporting. However,

the digitalization of socio-economic processes changes the activities of enterprises in the tax and customs sphere. At the same time, insufficient attention is paid to the study of the interconnection between accounting and tax/customs systems under conditions of their digitalization. Only a limited number of academic works on this issue are available in the scholarly domain.

In particular, Ohiichuk M. F., Horkovenko I. V., and Skolotii I. V. defined the specifics of electronic taxation in the national system of value-added tax accounting using the personal electronic cabinet and the register of tax declarations [1, p. 377]. Lahodiienko N. V., Skliar L. B., and Stepanenko S. V. substantiated the role of accounting information in electronic tax administration for the purpose of combating tax evasion [2, p. 79]. The mediating role of electronic reporting in the interconnection of accounting and taxation was determined by Brazilij N. M., Tkachenko A. A., and Zdir V. A. [3, p. 104]. The place and role of accounting information in electronic services developed by the State Tax Service of Ukraine within the framework of the digital transformation strategy InfoTAX were analyzed by Tsiutsiak A., Tsiutsiak I., and Tsiutsiak V. [4, p. 49]. Černá Marie and Pokorný Jan systematized and identified new common patterns in the digitalization of accounting and taxation in the context of the digital economy [5]. Skrypnyk S. defined the role of modern information technologies in harmonizing accounting and taxation with international requirements and security standards [6, p. 380]. Lulaj Enkeleda positioned digitalization as a catalyst for changes in the accounting and taxation spheres, leading to the formation of symbiotic relationships in digital finance [7]. Gumenna-Derii M. and Gumennyi P. studied the impact of digitalization of accounting, taxation, and control of financial intermediaries' activities on enterprise development potential [8, p. 196]. Zadorozhnyi Z.-M. determined the criteria of confidentiality of accounting information, including that related to taxes and fees, within the framework of organizing an effective corporate cybersecurity system [9]. Görlitz Anna and Dobler Michael summarized the findings of researchers in the field of using various information technologies for tax (fee) accounting and concluded that modern technologies for processing accounting information on deferred taxes do not provide relevant information to users of financial reporting [10].

The above-mentioned research works are episodic and contain indirect studies of certain aspects of the use of accounting information in the tax and customs sphere under conditions of digitalization. The necessity of further reforms in the functioning of fiscal services presupposes their digitalization with the integration of accounting data processing, which determines the relevance of the article's objective and makes it possible to outline the main trends in the further development of electronic communications with tax and customs institutions.

The purpose of the article is to identify promising directions for further improvement of electronic services and communications in the tax and customs sphere, as well as to determine their impact on the administration of taxes and fees.

Results. The emergence of the digital economy has led to the development of electronic services and communications in the tax and customs domain. The evolution of electronic platforms is a continuous process aligned with global standards and the requirements of post-pandemic and wartime conditions in the economy and society. Modern taxpayers and stakeholders place high demands on the convenience and informativeness of electronic services for the provision of administrative functions. From the standpoint of public management and state interests, electronic fiscal services should maximize tax and fee revenues while minimizing corruption risks. Taking into account innovative technological trends and the interests of all participants in the fiscal process, three main directions of further improvement of electronic services in the tax and customs sphere can be distinguished: information integration (consolidation of various services on a single electronic platform, formation of an integrated information environment, global information synchronization);

ISSN 2786-4537 (print). Вісник економіки № 4, 2025 р.
ISSN 2786-4545 (online). Herald of Economics № 4, 2025

technological implementation (artificial intelligence, blockchain); and electronic communication (software applications for mobile platforms, chatbots, remote electronic audit), among others (Fig. 1).

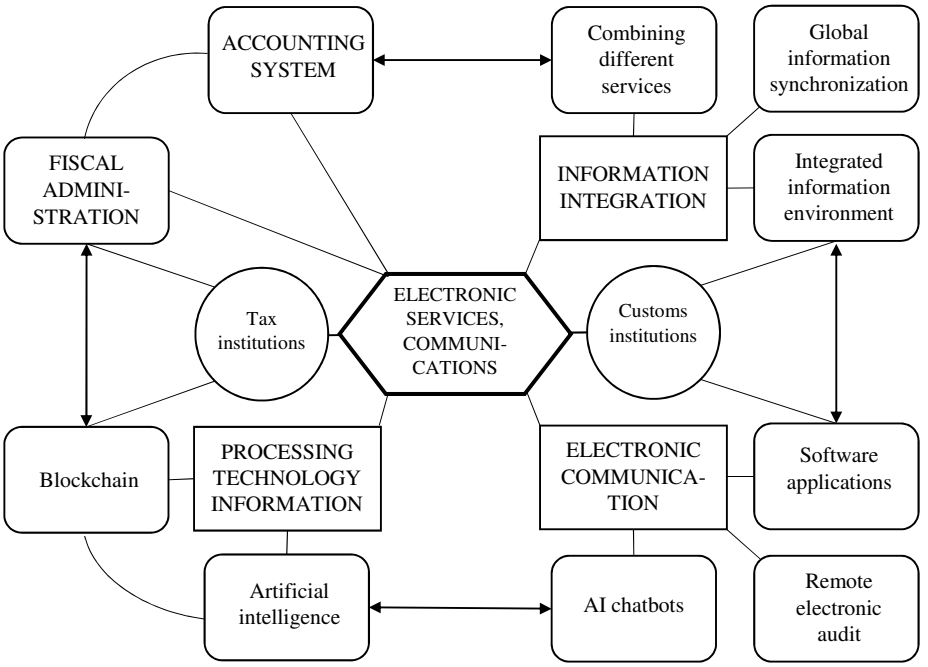

Fig. 1. Innovative trends in improving electronic services for tax and fee administration.
Source: developed by the authors.

The most significant achievement of the national tax and customs system is the introduction of the electronic taxpayer's cabinet. The personalized cabinet integrates substantial communication capabilities for submitting and receiving requests from fiscal institutions, monitoring the current status of tax and customs payments, direct communication with representatives of state controllers, and more. However, different fiscal institutions demonstrate varying attitudes toward the functional content of electronic cabinets and their ergonomic convenience for end taxpayers. A differentiated approach to the organization and functioning of state electronic services creates risks and disproportions in the provision of administrative services.

A further direction for optimizing state electronic services is their information integration. Access to different private personal cabinets should be synchronized within a single electronic portal. Through one-time verification in a personalized cabinet, users could be provided with a full range of services for calculating and paying taxes and fees. To this end, a high level of standardization in the provision of administrative services should be ensured, similar to the already successfully functioning Ukrainian portal Diia. The State Tax Service of Ukraine (STSU UK) has an electronic account that operates 24/7 and allows over 5.4 million users to submit reports, pay taxes, and leave feedback on their interactions with regulatory authorities [11].

The scope of administrative service provision has significantly expanded to mobile communication platforms. Currently, several smartphone applications for administrative services are successfully operating in Ukraine. The Ukrainian portal «Diia» allows citizens to receive government services on their smartphone, including access to tax data via a mobile application [12]. However, the tax and customs domain implemented via smartphones has not yet received due attention from fiscal

institutions. The mass distribution of applications related to the administration of taxes and fees will bring the interests of the state and taxpayers closer together. The use of smartphones to obtain direct access to fiscal services is justified under the conditions of digital state transformation. Mobile applications should include the ability to monitor tax settlements and make instant payments. Such products may also provide push notifications regarding deadlines for accrual, payment, and reporting, as well as enable remote tax consultations in real time. Moreover, electronic communication via a mobile application could be recognized as a compulsory method of informing all participants in the tax and fiscal process.

Unlike existing aggregators of state administrative services, it is advisable to move toward a higher level of integration between electronic services and accounting systems. Through electronic communication channels of service portals, a certain scope of accounting information that does not constitute commercial secrecy should be incorporated. У In the UK, it is planned to create a «Single Customer Account» to consolidate all of a taxpayer's tax records in one place, simplifying the management of tax liabilities [13]. In particular, it would be appropriate to provide for the uploading of primary documents, reconciliation acts, inventory statements, tax and customs declarations, registry extracts, and so on. Synchronization with accounting databases will minimize information asymmetry between fiscal institutions and enterprise accounting departments. A report by the Organisation for Economic Co-operation and Development (OECD) states that about 80% of tax administrations receive data directly from taxpayers' accounting systems [14]. The convergence of tax-fiscal and accounting systems will significantly reduce errors and deliberate manipulations. A unified approach to recognizing the tax base and levying fees will ensure the complete and timely payment of tax obligations. Additionally, the inclusion of accounting information in state tax and customs services will minimize discrepancies between accounting and tax reporting, positively influencing company management. Unified approaches to reporting also enhance trust in corporate accounting systems.

Accounting information should also be used to monitor potential violations in the tax and customs sphere. Through electronic communication systems, information on financial and economic events can be promptly transmitted to fiscal institutions. Based on the use of artificial intelligence technologies in accounting data streams, anomalies – whether accidental or intentional – can be detected. If suspicious markers are identified, information arrays may be referred for additional examination by officials of tax and customs authorities. Before forwarding accounting information for extended inspection, further execution of financial and economic operations should be suspended. Only after approval by controlling institutions should the blocked event be allowed in enterprise operations.

Special attention should be given to accounting information received from fiscally and administratively unreliable enterprises. For this purpose, businesses should be ranked based on retrospective accounting data and prior tax compliance history. In OECD member countries, many administrations use artificial intelligence algorithms to rank taxpayers by risk based on accounting data [14]. Triggers for categorizing taxpayers as unreliable include unsatisfactory analytical indicators of financial statements, frequent changes in organizational and legal conditions, detected cases of tax or customs fraud in the past, penalties for late or incomplete tax payments, invoice blocking, etc. Information on such enterprises requires the application of stricter criteria for automatic violation checks in the tax and customs domain.

Automatic monitoring of accounting information is beneficial for both businesses and fiscal institutions. For enterprises, automated checks prevent unjustified blocking of tax invoices and declarations, while only suspicious cases of financial and economic activity are referred for additional manual verification with possible blocking. Meanwhile, initiation of information flow suspension from fiscal service officials becomes impossible, minimizing corruption and artificial barriers to business development. At the same time, tax and customs authorities obtain an effective mechanism

ISSN 2786-4537 (print). Вісник економіки № 4, 2025 р.
ISSN 2786-4545 (online). Herald of Economics № 4, 2025

of comprehensive control over all financial and economic processes of enterprises. Automated algorithms based on artificial intelligence principles are capable of detecting both accidental and deliberate distortions of accounting information.

For the successful functioning of an enterprise rating system based on accounting information regarding tax and customs activities, it is necessary to ensure free information exchange in electronic form. It is advisable to connect banks, financial and investment institutions, fiscal authorities, customs, notarial and legal associations, judicial registers, and others to the integrated information system of counterparties. Similar platforms in the format of information aggregators from public sources are already successfully operating. However, information portals providing access to open data about individuals and legal entities have limited capabilities for a multidimensional assessment of their activities. The accounting system should serve as the informational basis of such portals. Part of the confidential information concerning business and export-import activities should be implemented into integrated information platforms. Access to accounting data from the integrated information environment that contains commercial secrets should reasonably be provided to a limited circle of users. Generalized indicators based on both public and confidential data should be used by fiscal institutions for assessing enterprises' activities in terms of tax accrual and payment.

Accounting information from the integrated platform should be synchronized with the information systems of other stakeholders. As soon as data arrays appear in one stakeholder's system, they should instantly become accessible to other organizations and institutions. For example, deterioration of payment discipline, an increase in tax arrears, or declining financial performance becomes an informational indicator for banks, financial, and fiscal institutions regarding the prudence of cooperation with a problematic enterprise.

With the use of fiscal operation recorders, accounting data on income, expenses, tax, and customs payments automatically enter the integrated information environment, from which fiscal institutions retrieve information. Direct notification of tax and customs operations prevents managers from manipulating data to unlawfully minimize or avoid tax and fee payments. All financial and business transactions are simultaneously recorded in the information systems of enterprises and fiscal institutions, which complicates data distortion by any party involved in the fiscal process.

The organization of an integrated information environment for interaction with tax and customs institutions relies on blockchain technology. Internationally, research shows that distributed ledger technology (DLT) can be used to record transactions in real time and ensure data immutability [15]. While its use for accounting purposes has been sufficiently studied, the digitalization of fiscal processes requires the development of effective mechanisms for block-chain data structuring. The main advantage of blockchain technology is the immutability of information records. All fiscal actions and their outcomes should be reflected in distributed databases. The irreversibility of information prevents its modification by tax and customs institutions. Retrospective changes to accounting data without the knowledge of all participants in the fiscal process become impossible. The chronological order of records serves as a foundation for monitoring the legality and compliance of fiscal authorities' actions with established protocols.

At the same time, the functioning of decentralized blockchain-based databases ensures effective cybersecurity of accounting data during its exchange with stakeholders. The use of blockchain minimizes cyber risks in the operation of fiscal institutions. Lost, damaged, or distorted data can be automatically restored from backup storage locations, ensuring the stability of the fiscal information system.

Since all enterprise accounting information is maintained electronically, audits can be conducted without the physical presence of controllers at the inspection site. Accounting data transmitted via electronic communication are subject to automatic, continuous verification. This enables ongoing

monitoring of timely tax assessment and payment. Access to electronic copies of primary documents, journals, reports, tax and customs declarations ensures remote auditing of enterprises' financial and business activities. All control procedures of fiscal institutions can thus be carried out remotely.

The need for selective control measures diminishes, as all financial and business processes become subject to verification. Similarly, the need for cross-checks is minimized. Control procedures are applied once, with a guarantee of the reliability of processed accounting information obtained from various sources in the unified information space. Due to the minimization of fiscal experts' subjectivity, the results of control procedures are automatically disseminated and must be taken into account by all participants in fiscal relations. Verified data sets can often be recognized as fully reliable for enterprises. This means that enterprises' accounting units can use feedback accounting data from the integrated information environment to calculate taxes and fees. To minimize inaccuracies or errors in calculating tax and customs burdens on businesses, calculations performed by fiscal institutions can be applied. Thus, the focus shifts from using primary accounting data for fiscal purposes to relying on verified data returned by fiscal authorities. Such innovations ensure complete synchronization and integration of accounting systems with the integrated information environment of fiscal administration.

Electronic communications are widely integrated into the tax and customs sphere. In addition to traditional communication channels such as email, interactive data entry forms, web portals, social networks, and messengers, fiscal institutions are increasingly implementing AI-based chatbot technology. According to an OECD report, over 70 % of tax administrations use artificial intelligence, including as part of virtual assistants, for taxpayer services and evasion detection [14]. Chatbots act as intermediaries between enterprise accounting systems and fiscal authorities. With their help, accountants and other taxpayers can obtain reference information. Chatbots can independently detect legislative changes and notify responsible persons, thereby minimizing informational and economic risks.

Beyond informational functions, AI-powered chatbots are also useful for consulting purposes. For example, via messengers, AI can advise stakeholders on tax payment deadlines and amounts, lawful tax minimization strategies, deferrals, and holidays. Chatbots can also provide information on outstanding tax debts, customs clearance status, reasons for invoice blocking, as well as fine and penalty calculations. Acting as a two-way communication tool, chatbots enable stakeholders to appeal fiscal decisions, request extracts from state registers, and submit accounting updates. As a result, this technology can substitute fiscal staff in stakeholder consulting.

Chatbots can also be used to assess the level of tax and customs knowledge among accounting professionals. Upon detecting gaps in competencies, chatbots can recommend appropriate training courses and programs. Thus, AI-powered chatbots serve as an electronic communication platform between stakeholders and fiscal institutions, reducing corruption risks by limiting direct contact with tax officials, lowering accounting data processing costs, and decreasing financial losses from calculation and payment errors.

In the further international integration of the national fiscal system into the global information environment, electronic communications play a decisive role. Accounting information should be synchronized with foreign tax and customs platforms. Within Ukraine's integration into the European economic space, it is crucial to exchange information quickly through modern electronic communications. In particular, data on taxpayers, their incomes, and paid taxes should be transmitted to foreign fiscal databases. International data exchange is particularly valuable for avoiding double taxation of citizens earning income or residing across multiple EU countries. Receiving information about tax payments by an individual in one country eliminates the need to tax the same activity in another jurisdiction.

ISSN 2786-4537 (print). Вісник економіки № 4, 2025 р.
ISSN 2786-4545 (online). Herald of Economics № 4, 2025

A similar approach can be applied to combating tax evasion. Ukraine is preparing legislation that will introduce automatic data exchange on income from digital platforms in accordance with international standards, which will allow for better control of individuals' income [16]. Fiscal agents can request information from the global fiscal environment about the incomes of controlled entities to identify untaxed sources of enrichment. If income has not been taxed in the country of origin, fiscal mechanisms can be applied to hold the taxpayer accountable. All financial transactions require fiscal monitoring to identify unlawful profits and their subsequent legalization. Any illicit use of financial resources acquired through crime and untaxed can be automatically detected within the national tax and customs system. Information on tax evasion should be entered into a unified fiscal platform, from which national tax and customs agencies of the taxpayer's country of residence can later obtain data to impose sanctions. Tax and customs violators should be held accountable and required to pay taxes and fees.

International electronic communications both protect taxpayers' interests by preventing double taxation and simultaneously eliminate opportunities for global-scale tax evasion. Such a fiscal communication system is two-sided, involving both the receipt and transfer of data within international accounting databases (Table 1).

Table 1

Directions for further development of electronic services and communications in the tax and customs sector

№	Development direction	Place of accounting information	Impact on the tax and customs sector	Risks
1.	Integration in a single electronic portal	Bilateral transfer of information for accounting purposes. Reconciliation between accounting data and tax calculations.	- Unification of all services on one portal. - Integration with the accounting system of enterprises. - Direct communication with fiscal institutions.	- Information chaos. - Information competition. - Resistance to changes in fiscal institutions.
2.	Use of software applications	Operational accounting and control of tax and fee calculations.	- Permanent access to services. - Prompt notification of fiscal events. - Integration with payment services.	- Software failures and errors. - Fraudulent actions of third parties. - Theft of funds.
3.	Automatic data processing based on AI principles	Use of accounting information to assess financial condition and possible errors (fraud) in the fiscal sphere.	- Automatic detection of errors and fraud. - Rating of taxpayers and fees. - Avoidance of illegal actions of fiscal agents.	- Incorrect interpretation of AI information. - Excessive formality of AI in rating.
4.	Formation of an integrated information environment	Transfer of open and part of confidential accounting information to an integrated information environment.	- Information integration of all participants in business relationships. - Assessment of business activity of enterprises by stakeholders. - Mutual verification of data between different institutions.	- Unauthorized access to confidential data. - Cyberattacks.
5.	Use of a chatbot system	Advisory and consultative tool for accounting specialists in communication with fiscal institutions.	- Consulting on taxation and tax payment. - Identifying the need to update staff competencies. - Convenient format for communication with tax institutions.	- Incapacity for work in the absence of access to the Internet. - Loss of jobs for accounting specialists.

continuation of Table 1

6.	Blockchain data structuring	Prevention of unauthorized generation, alteration, distortion, theft and destruction of accounting information.	- Ensuring the smooth functioning of the tax and customs system. - Impossibility of unauthorized entry and modification of information. - Organization of cyber defense.	- Incapacity for work in the absence of access to the Internet. - Significant costs for the design and operation of the system.
7.	Remote electronic verification and audit	Accounting data and verification results are provided exclusively in electronic format.	- Remote control inspections. - Reduction of corruption risks in the absence of physical communications. - Reduction of audit time and costs.	- Incapacity for work in the absence of access to the Internet. - Resistance to changes by controlled entities.
8.	International information synchronization	Exchange of accounting data at the global level to protect the interests of taxpayers (fees) and the state.	- Avoidance of double taxation. - Data exchange with international institutions. - Prevention of tax evasion abroad.	- Unauthorized access to confidential data. - Loss of information and economic freedom.

Source: generated by the authors.

Based on the generalization of information regarding promising directions for the further development of electronic services, the importance of accounting information for the new stage of transformation of the tax and fiscal environment can be determined. Effective fiscal administration is possible only under the condition of information synchronization with accounting databases. The practical implementation of all eight innovative trends in the development of electronic portals in the tax and customs sphere presupposes interconnection with enterprise accounting systems, which ensures: automation of accounting information processing, effective communication between accounting professionals and stakeholders, remote access and ergonomic convenience in obtaining access to accounting databases, information synchronization at the national and global levels, and integration of accounting with other economic systems, which is crucial for effective fiscal administration.

Conclusions and prospects. Reforms in the field of administrative service provision involve the development of a network of electronic services, with tax and customs instruments occupying a leading position. Further transformation of the electronic fiscal environment envisages the development of a system of electronic communications for the transfer of accounting information from taxpayers and fee payers. The implementation of the latest information technologies in the tax and customs sphere, combined with the digitalization of accounting information processing, is carried out in the following directions: integration of all fiscal services within a single electronic portal, use of software applications for mobile platforms, automatic data processing based on artificial intelligence principles, formation of an integrated information environment, application of chatbot systems as advisory tools, blockchain-based structuring of data to ensure cybersecurity, remote electronic inspections and audits, and international information synchronization for data exchange at the global level. The practical implementation of these digitalization trends in fiscal services ensures the maximum consideration of the interests of all participants in the fiscal process, minimizes corruption risks in the activities of fiscal institutions, brings the tax-fiscal and accounting systems closer by eliminating information asymmetry, contributes to the full and timely inflow of taxes and fees into the budget, and optimizes the management of business entities. Optimization changes require the development of effective mechanisms for the automated accrual of taxes and customs duties based on accounting information, which will become the subject of future scientific research.

ISSN 2786-4537 (print). Вісник економіки № 4, 2025 р.
ISSN 2786-4545 (online). Herald of Economics № 4, 2025

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