

So, different levels of automation of the control over tax liabilities differ significantly across the EU. The introduction of the digital service should minimize contacts between fiscal authorities and taxpayers, eradicate corruption in the state tax service, and create convenient conditions for tax collection from budgetary institutions. That is, transformational changes affect priorities: unpopular fiscal measures are replaced by new, progressive actions of the tax administration, which are aimed at

expanding the range of services and improving the quality of service provided to taxpayers. Comprehensive restructuring of control over tax liabilities requires budgetary institutions to digitize the components of the fiscal system digitalization, paying attention to the optimization - efficiency - evolution triad, which will ensure effective restructuring of the accounting system for digital environment (Figure 3).

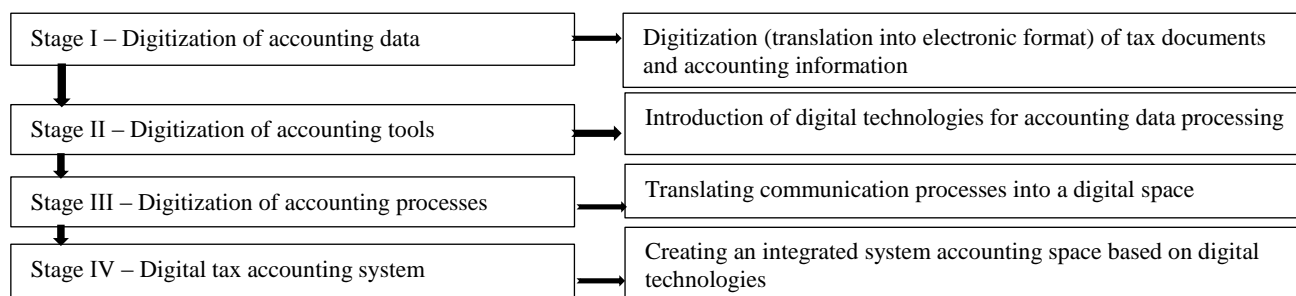


Fig. 3: Stages of digitalization implementation into the process of control over tax liabilities of budgetary institutions

It should be noted that all these stages are not separated, they are an integrated complete system of transformation of tax liability accounting in the digital space.

For example, the German tax authorities do not review taxes accrued by companies on paper, but analyse them on the basis of electronic reports. Submission of a fully standardized Balance Sheet of the tax base and Cash Flow Statement (E-Bilanz) in digital format to the German tax authorities has been mandatory for German budgetary institutions since 2013. The advantages of control over tax liabilities has become obvious at that stage: calculation errors almost disappeared, because the human factor was eliminated from the calculation of tax liabilities; unlimited information storage time; reduction of administrative costs and staff salaries, etc. Thanks to E-Bilanz, tax authorities receive fully standardized digital data sets for tax control. This data pool is constantly updated and allows the German tax authorities to conduct a detailed comparative analysis of payments, potential risks, time series by sector, industry, and to analyse trends. The analysis of tax data allows ensuring a high level of compliance, make forecasts and the ability to determine the savings, which leads to the potential for organizational restructuring of the budgetary institution. Therefore, it is a highly effective tool for managing tax liabilities of budgetary institutions at all levels (Figure 4).

The largest taxpayers are the budgetary institutions of Germany through the federal system

of the country. In the digital age, tax administrations are no longer just consumers of financial data and financial information from fiscal accounting systems: they are becoming data managers who actively process, manage and evaluate tax-sensitive data against general indicators. Besides, the transparency of the control over tax liabilities creates a high level of tax culture in the country. For example, in Switzerland, civil courts are a useful source of information in such cases as divorce, where spouses often provide evidence of higher incomes than those declared through the tax system. The experience of the Swiss Federal Tax Administration evidences that victims of financial fraud are often fiscal fraudsters themselves. In this case, the courts turn to the tax authorities to collect information on financial fraud. The Swedish Tax Agency holds an annual press conference to report on its work during the year and outlining planned measures to maintain financial discipline in the country. The media pays much attention to this event, because not only transparency of fiscal policy is important for the population, but also the entire mechanism of public administration and the involvement of each taxpayer. The high level of digitalization of the control over tax liabilities resulted in the lowest level of tax evasion, miscalculation or late payment of taxes by budgetary institutions (Figure 5) in countries with the E-accounting level and above.

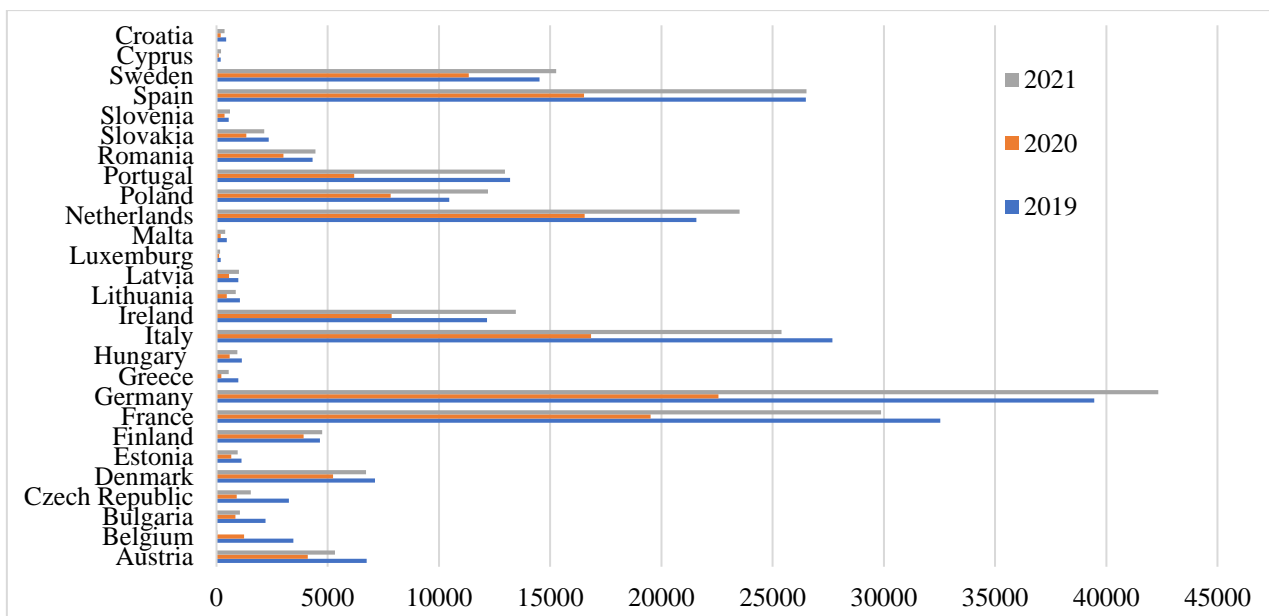


Fig. 4: Tax payments by budgetary institutions in the EU countries, € million

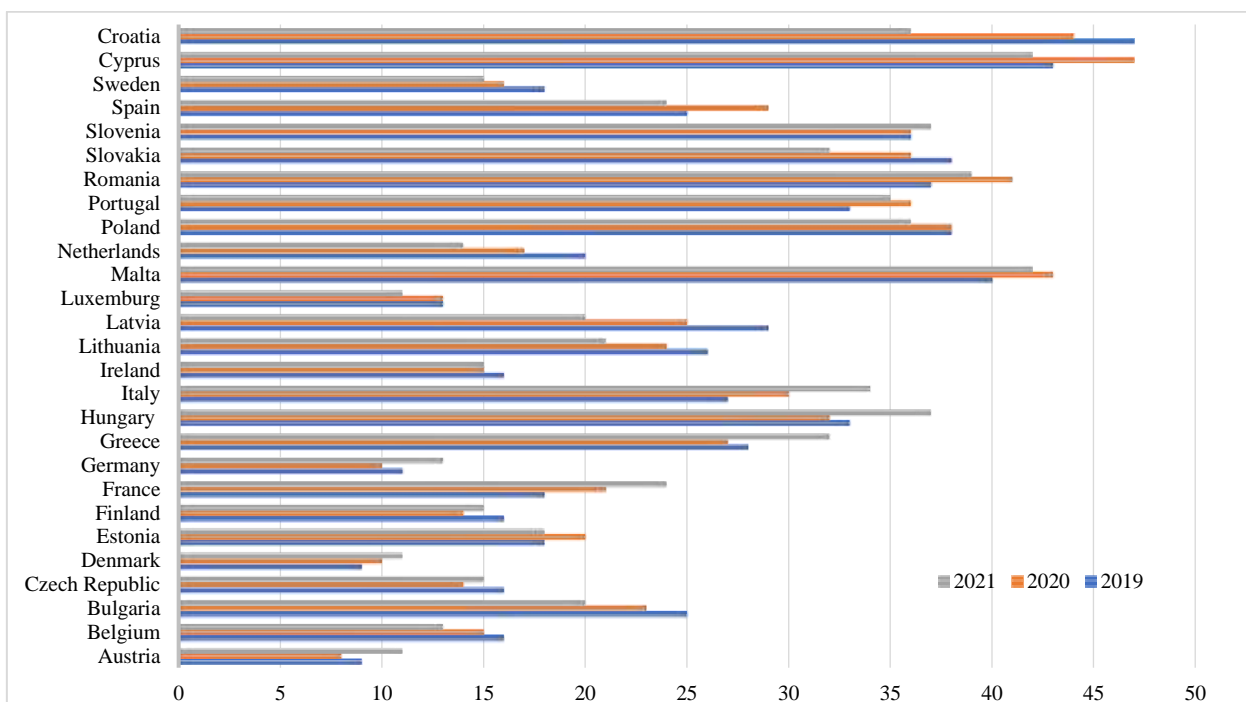


Fig. 5: Violation of fiscal discipline in the payment of taxes by budgetary institutions in EU member states as a share of the total tax collection, %

The leading countries are Germany, Sweden, Denmark, Austria (Luxembourg is an exception: the country is in the E-balance group, but tax control is not difficult due to the small number of budget institutions compared to other countries). That is, there is a direct correlation between the degree of application of digital technologies in the control of tax liabilities and the level of fiscal discipline in the country ($r=0.828710$). Based on the data of Figures 4 and 5, the EU-27 countries were clustered according to the method of average group value by

their compliance with the fiscal discipline (Figure 6). As a result, the cophenetic correlation was confirmed — the highest level of correlation between the defined criteria (% of violations of fiscal discipline and the total amount of taxes paid by budgetary institutions on the average for 2019-2021). According to the applied clustering methodology, Germany and Cyprus were identified as the “farthest neighbours”, which directly correlates ($r=0.867331$) with the results presented in Figures 2 and 3 of this study.

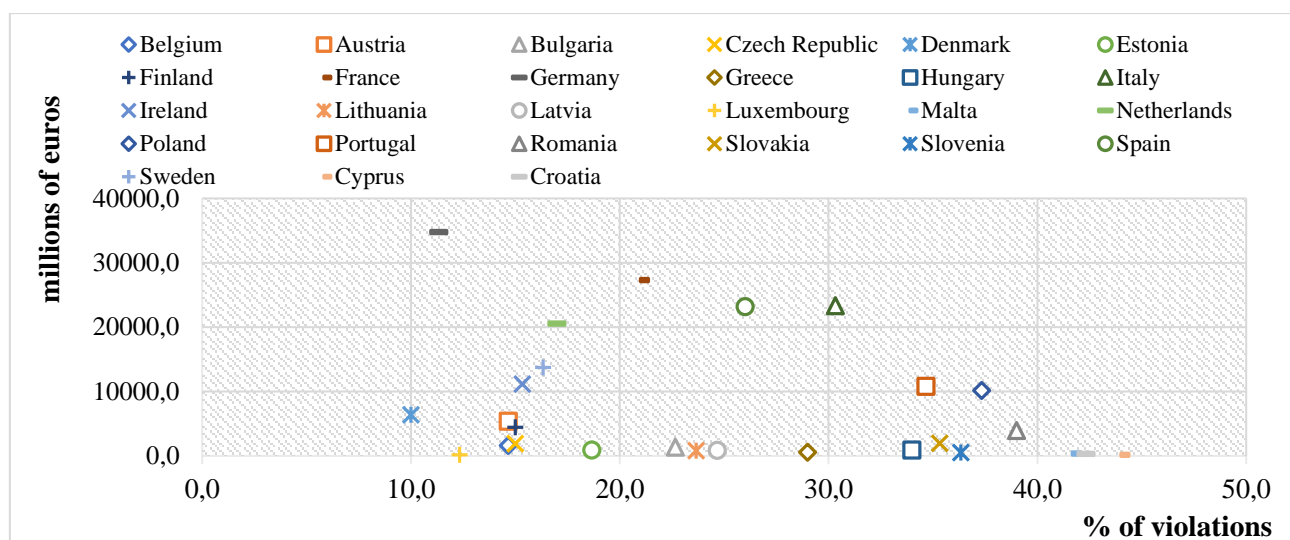


Fig. 6: Clustering of EU-27 countries by the method of average group value by their compliance with fiscal discipline

Clustering data show that digital technologies applied in the control over tax liabilities of many countries allow more organized and effective counteraction to misuse, as well as improve the quality of tax reporting. On the other hand, many EU-27 countries with significant economic development indicators are at the beginning of a digital transformation of the organization of control over tax liabilities of budgetary institutions. For example, in 2021 Slovenia showed 7% GDP growth and got into the lower right cluster with the highest rates of violations of fiscal discipline by budgetary institutions, where underdeveloped control system of budget obligations was one of the reasons (Group II “E-balance sheet” according to classification presented in Figure 2).

5 Discussion

The literature review and the analysis of theoretical approaches to the study of the impact of digital technologies on the organization of control over tax liabilities by budgetary institutions showed that almost all researchers [2, 3, 11, 13, 25, 27] are unanimous about the need and inevitability of the transition of fiscal processes to the digital space using artificial intelligence [2, 25] and cloud services [28]. Therefore, we agree that the use of such services allows the management system to make the calculation of tax liabilities of budgetary institutions transparent and efficient.

There is also no objection to the opinion of scientists [13] that the use of automation can completely solve the problem of accuracy of preparation and efficiency of providing accounting information by budgetary institutions to civil servants for sound adoption and implementation of

effective management decisions. This was confirmed by the clustering of EU-27 countries in terms of the quality of fiscal discipline, which is influenced by the level of implementation of digital technologies in the organization of control over tax liabilities. Therefore, we confirmed the opinion of scientists [11] that digitalization creates an opportunity for active data management in the organization of control over tax liabilities by budgetary institutions in particular and public finances in general.

Authors [18] established causal links between the introduction of digital technologies in the system of accounting and control of tax liability settlements by budgetary institutions. We have grouped national digital tax control systems in the EU-27 in order to confirm this. Besides, the example of Germany in the EU-27 proved the need for digital transformation of tax control, which was caused by internal and external factors. We agree that the most important internal factor has been the need to adapt tax administration to the general evolution, as digital technologies have become the flagship of development in various aspects of life in the last two decades, including the transformation of tax control [16]. Instead, external factors are related to the difficulties of public finances, pressure from global financial institutions or the adaptation of the national economy to the common standards of the European Union [14].

In turn, the imperfection of the organization of accounting and control of tax liability settlement, the inefficiency of tax administration leads to significant losses of the state due to tax evasion, which negatively affects the budget. Globalization processes not only in the EU but also in the world

indicate the inevitability of changes in the fiscal system [21] despite the suspicion of most taxpayers around the world that tax administrations are too conservative and unable to modernize and actively participate in the digitalization process [20]. The experience of Sweden was provided as a contrast, where every taxpayer tries to be involved in the process of public finance management.

This study had a number of limitations. First — the large number of budgetary institutions in the EU-27. Second, the difference in the territorial organization of the EU-27. This is why federal Germany and unitary Bulgaria have different levels of subordination of budgetary institutions. This creates a wide field for further research.

6 Conclusions

The study proved the need for implementing digital technologies in the organization of control of tax liabilities by budgetary institutions. The grouping of European experience in the use of digital tools in fiscal control identified five levels — from the simplest “E-file” to a fully automated control system “E-access”.

It was demonstrated that the countries with the level of E-accounting and above (from the third to the fifth level according to the grouping) have the lowest level of tax evasion, miscalculation or late payment by budgetary institutions as a result of the high level of digitalization of the tax control. The leading countries are Germany, Sweden, Denmark, Austria (Luxembourg is an exception: the country is in the E-balance group, but tax control is not difficult due to the small number of budget institutions compared to other countries). That is, there is a direct correlation between the degree of application of digital technologies in the control over tax liabilities and the fiscal discipline level in the country ($r=0.828710$).

Besides, the EU-27 countries were clustered by the method of average group value for fiscal discipline. It confirmed the cophenetic correlation - the highest level of correlation between the defined criteria (% of violations of fiscal discipline and total amounts of taxes paid by budgetary institutions on average for 2019-2021). The applied clustering methodology revealed that Germany and Cyprus were the “farthest neighbours”, which directly confirms ($r=0.867331$) the hypothesis of the study: a condition for improving fiscal discipline in the implementation of state tax policy is the integration of the information society into the control system of tax liabilities of budgetary institutions through digital technology.

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