Digitalisation, digital transformation – In the practice of the National Tax and Customs Administration

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SUMMARY: Our research has shown that digital solutions have increased the efficiency of official audits carried out by the National Tax and Customs Administration (hereinafter Nemzeti Adó- és Vámhivatal, NAV), making it easier to compare tax authority and taxpayer data. A new way of thinking has been introduced at the NAV as a result of digitalisation solutions. The overall impact is positive, with synergies between NAV and taxpayers. Following the beginnings, we will look at the digital solutions of the present and map out the opportunities for development in the near future, using several research methods. What has NAV's digitisation activity given us and what can it give us? Time, efficiency, smoother administration, more queries for taxpayers and their partners. A change of mindset, a changing audit methodology, permanent change. Transforming jobs, the possibility of using artificial intelligence. The focus of audits will remain on the examination of human activities, but the role of the human factor in audits will be reduced.
KEY WORDS: National Tax and Customs Administration, digital solutions, AI, áfa tax gap, NAV 2.0.
JEL-CODES: H21, H26, H71, H83, M48
DOI: https://doi.org/10.35551/PFQ_2024_1_5

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Introduction

We focus on the digital procedures used in tax audits and the audit activity they have transformed. NAV has integrated digitalisation solutions into its workflows (Bán [2019], Bán et al. [2020]). The impact of digitalisation solutions has brought completely different competences to the forefront of audits.

The National Tax and Customs Administration has responded to the challenges of the 21st century and the changing expectations of society by gradually building digitalisation solutions. The time is ripe for NAV's digitalisation solutions, and electronic administration has become a legitimate demand from customers. NAV's initial market-oriented approach has been replaced by a kind of dictating role, with which the authority has greatly contributed to the promotion and system-wide application of digitisation processes. These processes have led to significant changes in the way the NAV administers, controls and attitudes towards its customers.

Material and method

In our study, we explore the key factors and processes contributing to the widespread adoption of digital solutions in tax administration, focusing on how these technologies have transformed auditing practices.
The objectives of the research can be summarised in four main points:

1. Mapping the processes leading to the implementation of NAV digitisation solutions.
2. Introducing digitisation tax solutions as a link to 21st century economic processes.
3. Measuring the acceptance of digital solutions by tax authorities and taxpayers.
4. The transformation of audit activity as a result of digitalisation.

Research questions were formulated in relation to the research objectives.

1. What processes have led to the introduction of digitalisation solutions?
2. Can digitalisation be seen as a lever to improve the relationship between tax administrations and their customers?
3. How well are digitalisation solutions accepted by users?
4. Will official controls really be carried out without human intervention in the future?

Based on our theoretical background and our professional knowledge of monitoring, we chose our research methods according to the research objectives and questions.

The focus of the research is on the consistent digitisation process undertaken by the NAV as the agency enters the 21st century. This process has led to a change in the attitude of the NAV and a radical transformation of its administration and control processes. In the longer term, these changes will lead to a reduction of the human factor in areas where the focus is on economic activities carried out by humans.

The various authorisations required for the research served to protect both NAV's activities and tax secrecy and purpose limitation. The theoretical basis is provided by the literature related to the research topic, substantive and procedural legislation, public information notices, information booklets available on the websites of the NAV and the Ministry of Finance, aggregated statistical data and other publicly available data.

The primary extension of our study is of particular value and significance, as we conducted a questionnaire survey among the staff of one of the directorates of the NAV to measure the awareness, use and effectiveness of digitisation solutions, and conducted expert interviews with experts invited from the staff of the NAV. Finally, the study concludes with an exploration of further development opportunities and a small international perspective.

Digitisation

Jacobi and Landherr [2013] have pointed to the ongoing transformation of society towards a post-industrial, knowledge-based, service-oriented, information society, which they call the "digital revolution". The transformation processes generated by the digital revolution have implications for value creation, business models, services and the organisation of work (Kagermann et al. [2013. p.18]). Three organisational levels of digital transformation can be distinguished (according to Uhl and Gollenia [2016]): digitisation, digitalisation, digital transformation. Digitalisation transcends mere utilization of digital tools; it signifies a profound shift in mindset, encompassing a comprehensive transformation in how operations are conceived and executed. With these new tools, we can create new processes to achieve new, revolutionary results. Csedő and Zavarkó [2019] argue that digitalisation goes beyond digital transformation, which is not a one-off technological innovation. It is about continuously evolving projects adapted to the current environment, and an important element of these is investing in new skills, methods and keeping an eye on new opportunities. In this sense, digital transformation is a complex and continuous undertaking, aimed at transforming and improving the way an organisation works. Digital transformation refers to the systemic and extensive use of digital technologies, big data, chatbots, machine learning, intelligent robotics, and AI, etc. (Verhoef et al [2021]). Currently, the 5th wave of innovation is a shift from traditional to digital business models, i.e. digital transformation, which aims to radically improve an organisation and redefine value creation for stakeholders (Gong – Ribiere [2021]). Hartvig and co-authors [2023] have studied the impact of digitalisation using complex methods, including statistical and econometric methods. Their key finding is that firms that lag behind in digitalisation and are less open to it create significantly lower value added for Hungarian firms. The Digimeter [2022] research series measures the SME sector twice a year to see how it is faring in digitalisation. The main findings of the research conducted in 2022 were. More firms have webshops, the ability to work from home has not changed, but the proportion of firms using

teleconferencing software and collaborative chat software has increased. The share of firms with a business management system increased significantly, while the share using paper summaries decreased. There has also been a significant increase in the use of online customer acquisition tools and in the proportion of firms advertising online. The proportion of businesses able to issue and receive electronic invoices has increased. And although the research results show that the overall digital development of Hungarian SMEs has not changed significantly from 2021 to 2022, a recent quantitative study shows that "...more and more companies have taken the first steps towards industrial digitalisation, which is radically changing the internal processes of firms. Many SMEs are even more prepared for the changes than larger firms." (Katona et al [2023. p. 47]).

One of the most important technological trends of our century is the proliferation of digital solutions, whose dimensions have grown beyond the boundaries of companies and permeate the activities of the public authorities that control digitalised companies, including the NAV. Our study does not directly aim at presenting the scientific conceptual framework and the stages of development of digitalisation, but only at contextualising the transformation of the NAV, which is situated at the second and third (digitalisation, digital transformation) stages of the digitalisation transformation. Digitisation has also reached the public administration, where NAV is a prominent player and flagship of the digitisation process.

Mapping the processes leading to the implementation of NAV digitalisation solutions

Currently, a distinct trend underscores the necessity for public administrations to operate digitally. It is now a widely accepted practice for NAV to generate taxpayers' personal income tax returns, and that the taxpayers' approvals and possible adjustments and amendments are sufficient.

Technological advancements, the adoption of digital solutions by market players, and evolving customer expectations have collectively highlighted the imperative for tax administrations to embrace digitalisation. Furthermore, the proliferation of digitalisation has necessitated tax administrations' transition from offline to online operations.

The processes leading to the digitisation of NAV from the start

The NAV has a long history in tax, control, finance, customs and criminal matters. The image of the agency has become negative in a large part of society, as a kind of criminal authority. Over time, it became clear that the NAV is facing serious challenges in the changed economic environment and that if it does not start to take action, the gap between the NAV and its customers could widen, which could also jeopardise the provision of tax revenues. One of the first responses to the challenges of the 21st century has been to merge tax control – tax, customs and treasury and law

enforcement functions, which used to operate under separate organisations – into one organisation. The NAV was then created on 1 January 2011 [Act CXXII of 2010]. The changes in the economy have also led decision-makers to rethink the role of the NAV, its attitudes and values. In recent years, it has become clear that external and internal factors are affecting the economy and thus the control activity, which make it essential for the NAV to engage in digitisation activities.

With the help of analyses from the Central Statistical Office (ksh.hu/stadat), we have summarised the main changes that have made it necessary for the NAV to use digital solutions in its activities, among other things.

The number of people in employment increased significantly by 18% from 2009 to 2020, with leisure time typically becoming more valuable. The number of businesses in operation in 2019 was over 850,000, compared to 700,000 in 2008, an increase in volume that has led to a dynamic increase in the tasks to be performed by the tax administration. The number of internet subscriptions per 1,000 inhabitants was 1,080 in 2020, compared with 250 in 2008, which is a prerequisite for the online administration of administrative tasks. The proportion of the population aged 16-74 interacting electronically with public administrations reached 60% in 2020, compared to 28% in 2008.

NAV 2.0 Strategic Programme for Renewal

In 2017, NAV undertook a comprehensive review of its operations, through a unique fact-finding exercise. The findings informed the development of the NAV 2.0 Strategic Programme for Renewal, outlining key objectives and the necessary tasks to achieve them. The aim of the programme is to create a customer-friendly, modern, transparent, and efficient tax administration that provides services.

The programme identifies several critical steps to foster a competitive economy, including enhancing service activities and adopting a partnership approach with customers, reducing the tax gap, implementing organisational development measures, simplifying the external regulatory environment, and optimising internal processes. Additionally, these steps align with the Government's Strategy for Public Administration and Public Services Development. This includes the need to recruit staff with the right skills and ethics, to optimise internal processes and to continuously innovate effectively. These enhancements will transform NAV into an efficient, sustainable organization, prepared for the challenges of the 21st century.

The NAV 2.0 audit identified the need for a new image, social acceptance and tax awareness. The key strategic objective is to promote voluntary compliance and reduce the hidden economy. It is important for the tax administration to make its clients aware that it operates a system that conducts fair and equitable procedures. The tax authority is able to carry out more and more audits and due diligence using its digitalisation solutions, even using only its existing data assets. Making the detected abuses transparent can make the tax authority look efficient and strong. Alm et al [1995] argue that the deterrent effect of penalties is only effective if the probability of audit is high – which is facilitated by the use of digitalisation solutions. This

points to the importance of the tax administration's information policy (Kirchler et al. [2008]), so it is essential to improve customer communication and to achieve public understanding. In addition to making the tax administration's activities more visible, appropriate fines and penalties reduce the propensity of individuals to abuse (Kogler et al. [2015]).

In the context of renewing customer relations, innovative solutions are needed to facilitate administration (use of video, online tools, knowledge centre, modernisation of the NAV web interface, etc.).

In relation to the professional systems operated by the NAV, the 2017 audit found that the IT operations are ensured by almost 600 systems, which show a significant degree of duplication. In order to ensure tax revenue, it is necessary to eliminate redundancies and modernise existing systems. The aim is to develop a completely new IT system based on a completely new foundation, reflecting the rapidly changing environment.

In the field of audit, it is necessary to develop a coherent and modern audit support system, for which ELLVITA (the audit specialisation system), the development of international information exchange, the introduction of IFRS, training, the maintenance of audit support, and the renewal of audit methodology are essential. The risk management system for the NAV data assets needs to be operated within a common framework.

Based on the NAV 2.0 programme, the need for an IT directorate was formulated, which would receive its tasks directly from the head of NAV and report to him.

The expected result of the NAV 2.0 programme is to improve the willingness to pay taxes, the factors of which are listed in Takácsné and Dobos [2018]. The expected result is to improve social acceptance and competitiveness, and to ensure the revenues of the state budget.

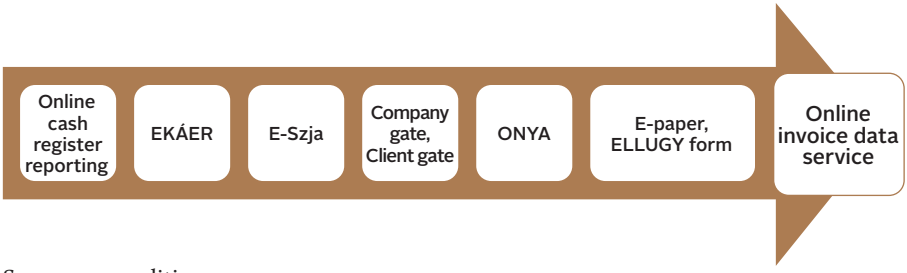
In line with NAV 2.0, a new generation of legislation regulating the activities of the tax authorities came into force in 2017 (Act CL of 2017 on the Tax Administration Order, Act CLI of 2017 on the Tax Administration Order), closely linked to the emergence of customer rating systems and increasingly complex digital solutions.

Taking stock of the different digitisation solutions

The introduction of digital solutions resulted from a blend of diverse processes, leading to significant evolution beyond the initial offerings (VAT reporting on an itemised basis, online cash register reporting), with the introduction of online invoice data services being a significant but not definitive step. Owing to the annual expansion of these solutions, the traditional audit methods employed by tax authorities have seen substantial transformations. Below, we detail several digitalization solutions that NAV has successfully integrated into its control and management practices.

The rapid advancement in digitalisation products has significantly contributed to the efficacy of NAV's digitalisation initiatives, thereby reducing administrative burdens and streamlining administration processes.

Figure 1. NAV's major digitisation solutions



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Online cash register reporting

The online cash register data service can be seen as the first step in the NAV's digitisation activities. It was introduced in 2013. This system has greatly contributed to a more realistic picture of the activities of retail outlets. The tax administration had a significant latency in relation to cash register sales due to the more "creative" tax return practices of taxpayers.

According to a study published by the European Commission on 11 September 2018, the tax gap of 22% at the time of the introduction of online cash register data was reduced to 13% in 2016, which is a significant improvement in a very short period of time (Izer [2019]).

The NAV can use the real-time flow of information from the online cash register more effectively as a means of counting turnover, and thus more successfully combat revenue concealment. Another use of online cash register reporting is the use of the data received in the context of a risk analysis procedure.

Electronic Road Freight Control System (Elektronikus Közúti Áruforgalom Ellenőrző Rendszer, EKÁER)

The EKÁER system was a major novelty in 2015 (PM Decree 13/2020 (23.XII.20)), which in many respects meant a change in the domestic freight transport activity. General sales tax (VAT) revenues represent a significant weight in Hungary's GDP, and their payment and collection contribute significantly to Hungary's economic stability. The general rate of 27%, which applies to most goods and services, is the highest in the European Union (VAT rules and rates [2022]). In a globalised world, where consumption follows a globalised pattern, even a few percent 'saving' (from VAT) can be a significant competitive advantage for businesses. Sales made without paying tax are an illegal form of such 'savings'. Most of this type of fraud is carried out by companies established in several EU countries by means of paper fraud (e.g. circular invoicing) and the transport of goods.

In his study, Ádám Balog [2014] cites a 2008 study by Judit Krekó and Gábor P. Kiss, which shows that consumption-related tax evasion involves a tax base of 13-14% of GDP not being declared, which means a tax loss of 2% of GDP.

The EKÁER was used as a model for the Polish SENT system and the Slovak road freight control rules (2015-2019.kormany.hu).

The introduction of the EKÁER system has contributed to reducing VAT fraud and thus to protecting taxpayers' compliance and increasing revenues, but it has also necessarily increased the administrative burden on taxpayers.

The e-Justice system

Since its launch, the e-Swiss system has been very popular. The tax authorities prepare draft tax returns for private individuals (2017), small farmers (2018) and VAT payers (2018), which in many cases become tax returns with little or no intervention, thus relieving the tax authorities of a significant administrative burden (Mérey [2019]).

Under the new tax year 2019, the tax authority will generate a draft tax return for all individuals, including self-employed individuals. In the e-Szja interface, it is also possible to pay the tax due by credit card (VPOS).

Company gate, Client gate, ONYA (Online Nyomtatványkitöltő Alkalmazás)

Little is said about them, even though electronic communication is unthinkable without them. Taxpayers submit their returns through the company gateway, while individuals can check, approve, correct and amend their draft returns through the client gateway. Services enabling two-way closed communication and data transmission in the context of electronic communication are essential for efficient administration in line with information requirements.

2019 saw the launch of NAV's new development, the Online Form Filling Application (ONYA), which provides both secure and simple administration. ONYA is available on the NAV website and allows for the electronic completion and submission of certain forms, as well as for data and change reporting obligations.

The ONYA interface also performs error checks on the notifications, thus facilitating the administration on both sides and any payment obligations can be fulfilled immediately and electronically (Ács and Kovács [2021]).

Forms for electronic communication

For the mandatory two-way electronic communication, it was necessary to create forms that allow the electronic transmission of information and supporting documents, taking full account of the necessary security measures. In this context, the General Purpose Request Form (E-paper) and the Data Form for Electronic Administration during the Control Procedure (ELLUGY), which can be used specifically for NAV control activities, were developed to allow the electronic submission of supporting documents to the tax authority within certain size limits. It should be stressed, however, that these services do not exclude the possibility of personal contact, if justified by the procedural act in question.

E-paper allows taxpayers to make freely worded submissions, which can be accompanied by annexes. E-Paper is a certified form that can be submitted by both individuals and companies.

The ELLUGY form is a form for electronic submission of documents for audits, which can only be used by the taxpayer subject to the audit during the audit (Nemes-Somogyi [2018]).

Online invoice data service

The online invoice data service can be seen as a precursor to the requirement for taxpayers to provide ex-post data on invoices with a VAT content of HUF 2 million (domestic VAT aggregator) from 1 January 2013. The online invoice data service has provided the tax authority with a significant amount of data of sufficient quality to refine risk analyses and strengthen current controls. The online provision of data has improved the accuracy of audit selection, the efficiency of audits and the work of the enforcement department.

In order to make data reporting easier, the NAV has created a free invoicing program (Online Invoice) for businesses, which is also available on a mobile app.

The amendment to Annex 10 of the VAT Act entered into force on 4 January 2021, which extended the scope of the persons covered by the invoice data service. The obligation to provide information extends to all invoices and documents treated as invoices issued by a domestic VAT payer, irrespective of the receiving party and the amount of tax passed on. The scope of information to be submitted has been extended with the change (Funtek [2021]).

The online invoice data service has enabled the tax authorities to apply desk audits with increasing efficiency, by detecting existing anomalies before the audit starts and analysing the activities of partners. A desk audit is a preliminary risk assessment of taxpayers based on data available from the tax authorities' specialised systems.

The Online Invoice System and Tracking allows you to establish the chain invoicing of a product. Another important area of exploitation of the data that can be extracted from the online invoicing service is employment fraud. In several cases, the analysis of invoice data revealed that the company issuing the invoices did not have the necessary staff to perform the services indicated on the invoices, and therefore subcontractors were registered who did not actually perform the services.

To summarise this chapter, it is worth getting acquainted with the thoughts of the current head of the NAV, Ferenc Vágujhelyi [2021], on the NAV and digitalisation. According to the head of the NAV, the tax authority can be considered the apex body of the public administration, where hierarchy is important, but creativity is also a significant characteristic. Ferenc Vágujhelyi, formerly Deputy Head of IT at the NAV, highlighted the developments (unified current account and data warehouse, unified risk analysis, "batch VAT", introduction of online cash registers, EKÁER) that have helped to whiten the economy and have attracted attention in many countries.

The head of the NAV said that the tax authority has a key role to play in the digitisation of the economy. The digitisation activities of the NAV are in line with the long-term strategy of Digital Wellbeing. In his opinion, the mission of the NAV is to ensure the common costs of society as and to the extent defined by law. The most important of its tools is to support taxpayers by creating appropriate online user interfaces. The second is to better exploit the potential of the data assets available to the NAV. The digitally available data will enable deep learning methods to be used to infer a taxpayer's liabilities and claims in the tax area. However, uncooperative taxpayers should be penalised.

Primary measurement of the uptake of digital solutions

The future of public administration is linked to digitalisation, which is why Act CCXXII of 2015 on the General Rules of Electronic Administration and Trust Services was drafted, making electronic administration mandatory for both business taxpayers (with some exceptions) and the tax authority. However, this obligation does not imply a willingness to do so.

A study published by Zsolt Funtek [2020], Deputy Head of Department of Central Management, Customer Relations and Information of the NAV, focused on the tax awareness of society. The NAV Tax Awareness Strategy 2020-2025 aims to promote tax morale and voluntary compliance. The exemplary behaviour of the tax administration's staff is essential to boost confidence. Digital solutions also make taxpayers' compliance or non-compliance visible in real time.

On the taxpayer side, there have also been studies and articles that take account of the changes from the taxpayers' perspective. Gábor Fajcsák [2021], Director of RSM Hungary (Head of the Tax Business Unit) of RSM Hungary Tax Consultancy and Tax Consultancy, takes stock of the NAV's change of approach, the system of taxpayer classification (in the categories of reliable, general and risky taxpayers), online solutions and future digital opportunities, as well as the attitude he has experienced in relation to tax authority audits. There has been a shift towards compliance audits that do not result in a closed audit period and support procedures, and a reduction in traditional tax audits. With the introduction of the online invoice version 3.0, the NAV now has detailed information on taxpayers' management, and the amount of data available has increased exponentially. In addition, the NAV is developing the XML file structures designed for the Hungarian implementation of the OECD's SAF-T (Standard Audit File of Tax). This should enable the tax authorities to have insight into many areas of taxpayers' economic activity.

In the context of this change of approach, the tax authority has chosen the right direction by actively supporting taxpayers, digitalisation solutions, targeted controls and strong action to promote voluntary compliance.

Empirical research in the audit field of a directorate of NAV: digitalisation and its impact on the audit field

Significantly, NAV has shifted from merely following digital trends to setting the pace in digitalisation, making a proactive stance in adopting digital solutions. The result of this accelerated pace has been a significant expansion of the tax authority's digital toolbox, but taxpayers have been critical of the accelerated pace of implementation.

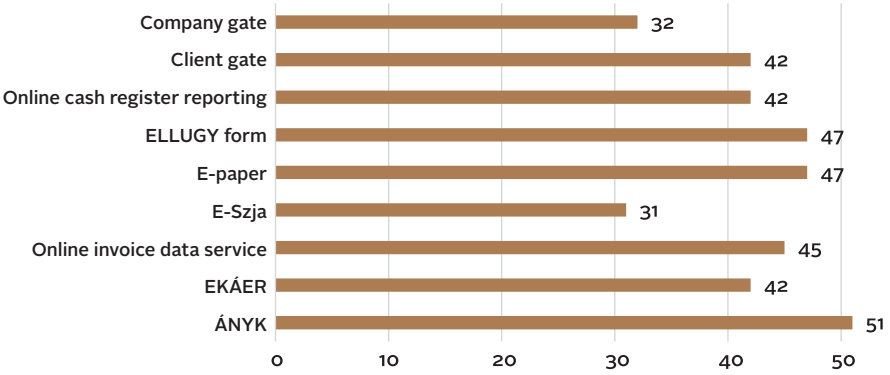
To evaluate how digital solutions are received within the tax authority, we conducted a questionnaire survey within a specific NAV directorate on the awareness, acceptance and usability of digital solutions and on solutions that could help the tax authority in the future. The directorate's head approved conducting a paper-based questionnaire focused on the audit sector. The survey primarily aimed to investigate the endorsement, applicability, and future development potential of digital solutions within the Directorate's audit domain.

The questionnaire survey was carried out in November 2021. At the time of the survey, the total number of staff in the control area of the directorate covered by the survey was 299, with 36 long-term absences and 263 employees. Managers accounted for 11,79 % of the total number of employees. Non-managerial employees can be divided into two groups, administrators (tax inspectors) and case handlers (preparers of investigations). The relevant population for the study is 70, of which the respondents to the questionnaire, i.e. 52. It can be concluded that a significant proportion of the colleagues contacted completed the questionnaire and supported the survey. Responses were collected anonymously in the control areas of the NAV directorate surveyed and all eight departments were included in the survey. Respondents included managers, tax auditors (Administrator I, Administrator II) and audit preparers (case managers). 85% of the respondents were auditors. Managers represented 11% and case handlers 4%.

On the basis of the statements received, we only present those significant findings and test results that are relevant to our study.

Very high scores were found for the knowledge of the systems for each digital solution, which shows that the systems and the information they provide are integrated into the daily work of the audit field, as illustrated in Figure 2. It is particularly noteworthy that the online invoice data service, which is the latest digital solution, is known by more than 80% of respondents.

Figure 2. Digital solutions known by survey respondents (n=52)



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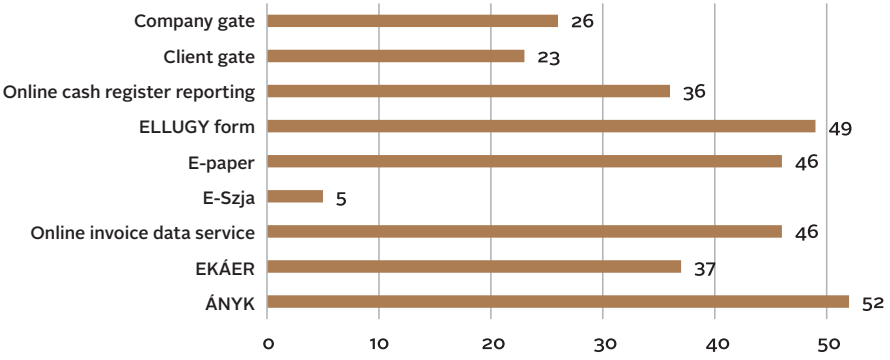
A more relevant issue is the prevalence of specific digital solutions in the workflows of the audit area, which can give an idea of the use of the data that can be extracted (Figure 3).

Figure 3. The digital challenges faced by respondents to the questionnaire in the course of their work prevalence of solutions (n=52)



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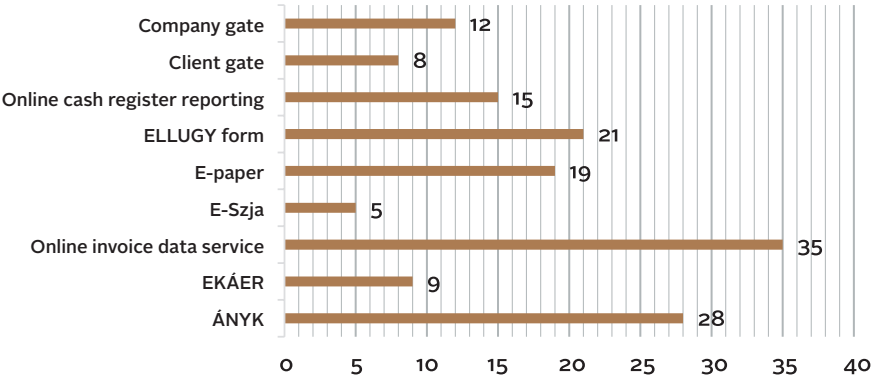
The questionnaire survey found that digital solutions are used in the workflow and that the data from them are used (Figure 3). Digital solutions are embedded in the control processes and the information from them is extracted and used in the control activities. It can be shown that digital solutions have significantly improved the administrative processes, electronic communication and electronic submission of forms, with all respondents using the SACS. 94% and 88% of the respondents use electronic forms (ELLUGY form, e-Paper) in their control workflows. 88% of the respondents also use the online invoice service for control activities.

Even more importantly, the utility of each digital solution was rated, with online invoice data service winning hands down (67.3%), supporting the view that this solution represents the biggest step forward in the digital solutions implemented by NAV so far (Figure 4). It is important to note that electronic contact (40.38%, 36.54%) and electronic return filing solutions (53.85%) also scored very well in this case, one explanation for which may be that these solutions allow the replacement of face-to-face contact, which is not very time and human resource intensive.

Figure 4. How respondents to the questionnaire perceived the usefulness of each digital solution (n=52)



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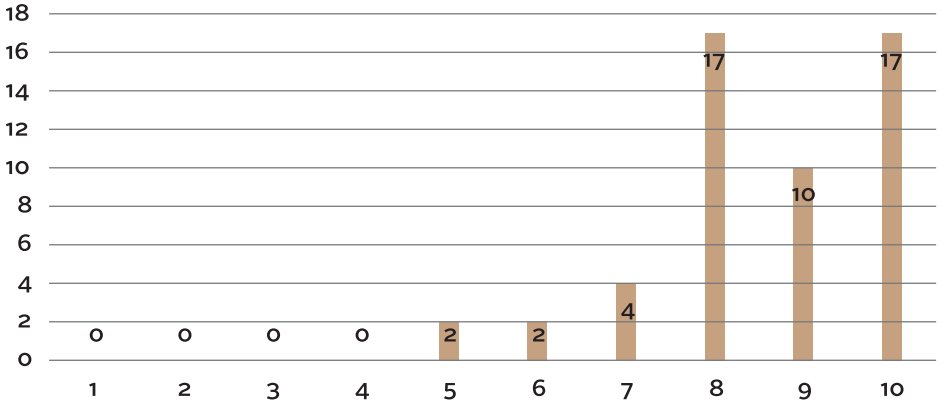
Respondents rated the effectiveness of the digital solutions used by the NAV on a scale of one to ten. Our own assessment is that a score of 9-10 means that these solutions are almost perfect, with no fine-tuning needed. We disagree. The direction of digital solutions is good, they have evolved over time, they are becoming more and more diverse and they provide significant benefits and services to the taxpayer side. Nevertheless, we believe that the tools for digital communication (e-Paper, ELLUGY form) are not yet sufficiently mature and that the existing capacity constraints hamper quality administration on both the taxpayer and the tax administration side. In addition, further improvements and extension of the limits of the existing ones may be necessary. An unexpected result of our research is that respondents rated the effectiveness of NAV's digital solutions as shown in Figure 5.

Figure 5. Survey respondents' perception of the effectiveness of NAV's digital solutions (n=52)



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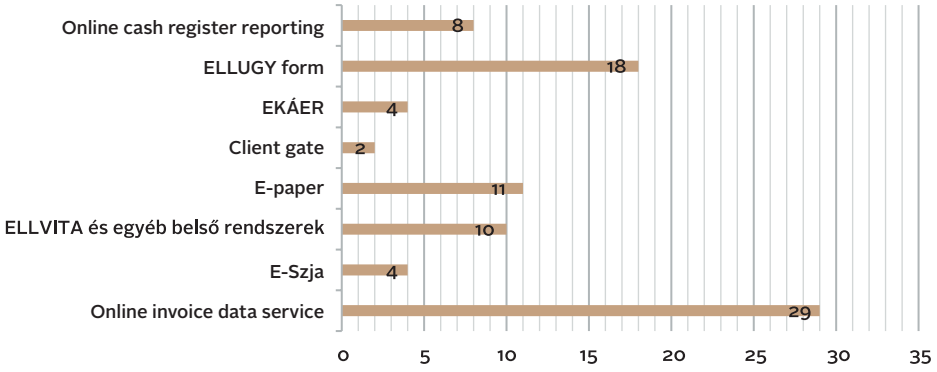
The results show that the vast majority of respondents consider the efficiency of NAV's digital solutions to be good (average: 8.58), but 48% of respondents consider the efficiency of digital solutions to be below this average. This may be due to the fact that the digital solutions currently in use have not yet reached the point where they can use the available digital solutions in a convenient, user-friendly way and with the full range of available functions. The average score for the 26-35 age group was 9.29, 0.71 points higher than the sample as a whole. Further research could be carried out to identify the reasons for this score. Among managers, the average score for the effectiveness of digital solutions was 8.5, which is in line with the average for the whole sample.

Based on the results on the effectiveness of digital solutions, it is worth taking stock of which digital solutions respondents think need further improvement (Figure 6).

Figure 6. Solutions identified by respondents to the questionnaire as needing further improvement in relation to NAV's digital solutions (n=52)



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The online invoice data service, which is the latest development of the NAV, also won in this case, with 55.76% of respondents saying that the system needs further development. This shows that the online invoice service has not yet been fully operational long enough to be able to fully meet the framework set for it by the legislator.

In general, less mention is made of *the digitisation process of the NAV internal systems*, which is essential for the digital switchover to be fully completed, but as can be seen from the responses (Figure 6), the need for further improvements was also raised in relation to the digitisation of the NAV internal systems (19.23%). As well as the significant results for the forms related to electronic communication (34.62% and 21.15%), which are essential for the electronic administration of the administration.

In the open questions of the questionnaire, we asked about the feedback from NAV's customers, the areas of application of digital solutions, further developments in the field of digitalisation, future aspects of the digitalisation process in relation to the control work, and the positive impact of digital solutions.

In terms of feedback from taxpayers, negative feedback was somewhat surprisingly predominant, but as one respondent aptly noted, when a system works well, it is natural, but when a system does not work well, the complaint is immediate. 22 respondents reported positive feedback.

The negative experiences were related to the following themes: ELLUGY form, use of e-paper, size capacity, use of certain digital solutions not clear to all, slowness of certain systems, difficulty in manually correcting errors in online invoice data service, lack of digital skills on the user side, interfaces not user-friendly enough, slow, complicated and time-consuming submission of documents electronically, lack of prior digitalisation of materials, unclear instructions for filling in, too fast digital switchover and lack of better preparation for implementation.

Colleagues made suggestions (increasing the size limit of digital contact forms, synchronising databases, eliminating duplicates, making error messages more

understandable, etc.) that are not only viable but could be implemented with minimal improvement and could contribute to the efficiency of administration.

In addition to the online invoice data service, the development of digital contact forms (ELLUGY form, e-Paper) and the internal systems of the NAV were also strongly considered as solutions requiring further development.

Overall, digital solutions have contributed to faster and smoother administration, allowing for more timely examinations and advance preparation for examinations. In addition, it has become clear that digital solutions are transforming the way inspections are carried out.

Expert interviews on digitisation with selected NAV staff

We conducted anonymous interviews with two practising tax auditors and a senior staff member of the Central Administration dealing with digital solutions, on the current level and future possibilities of digital solutions. An important criterion for the selection of the interviewees was that they should be involved in digitisation solutions on a daily basis, have significant knowledge of digitisation solutions and be in contact with external users who can also look at NAV's digitisation solutions from a different perspective.

The interviewees all have in common that the process started by the NAV in relation to digitisation solutions is a good one, but they stressed the importance of education within the organisation, so that internal NAV users can also pick up the pace of digitisation and not get lost in the details.

The results of the auditor interviews can be summarised as follows:
NAV's digitisation activities were prompted by the need to keep pace with technological developments. The auditors interviewed most often use the following digital solutions in their work: online invoice data service, EKÁER, MAJA system, PANORAMA system, TANGO system. It was stressed that almost all digital solutions are used for efficient administration. The aim is to go completely paperless, but many colleagues prefer traditional paper-based administration. The pandemic and the introduction of the home office have brought some progress in this respect.

Employee acceptance of digital solutions was rated at 90% by interviewees. Among taxpayers, it was also felt to be overwhelmingly accepted. In their opinion, those who have not done their best to be prepared for digital are more reluctant/unwilling to send their documents electronically. In their opinion, those who are compliant are happy with the measures.

As regards the further development of digital solutions, the development of forms for the submission of documents and the creation of a single form where the size limit could be increased to reduce the number of forms that can be submitted were mentioned in the interviews with the auditors.

According to the interviewees, the conduct of controls has been significantly simplified by the introduction of semi-total digitalisation. The administrative part of the daily work has been simplified.

During the interviews, the issue of digital illiteracy was raised as a barrier to digital development, and the reason for this was seen to be a lack of preparation on the part of both the tax authorities and taxpayers. There was a lack of education, promotion or resistance to stick to the old ways, afraid of the new.

The effectiveness of digital solutions is generally considered to be good, but there are areas for improvement. The auditor's work should make the most efficient use of the vast amount of data. Basically, the taxpayer file available from the PANORAMA system provides a good overview of a taxpayer's activities, risks can be well identified, from which an experienced auditor can already draw good conclusions and can retrieve more detailed data from further systems.

An *interview with* a *senior member of staff in* Central Management who is *in charge of digitisation solutions* brought out different aspects, as he is not involved in digital solutions from the user side. Regarding NAV's digitisation solutions, he said that there has been a steep evolution, a real change of approach. The process has been twofold, on the one hand the digitisation of internal systems and on the other the development of external digital solutions. There has also been great progress in the digitisation of internal systems and all colleagues have now come to terms with the fact that these processes cannot be reversed. There are expectations regarding external digitisation solutions and the interviewee believes that NAV is good at external digitisation solutions. The tax gap has decreased significantly, currently 6%, which is in line with Germany. In terms of tax gap, our competitors in the region are all behind us. The NAV has managed to find good external developers for digitisation and the central will is there. Internal systems still leave a lot to be desired, but colleagues can improve a lot through personal development.

The tax authority is making great strides forward, but the accounting and administration profession has been much worse at digitalisation than the current NAV. The shortage of staff and the impact of the pandemic have led accountants to embrace digitalisation.

Regarding the attitude of NAV staff towards digitalisation solutions, our interviewee stated that it could have been done much more smoothly, especially in the area of education, training and information sharing, so there is room for improvement, but the direction of change is good. As far as taxpayers are concerned, she said the picture is mixed in terms of acceptance. Some even think that digitalisation solutions are not enough. But there is a broad group of people who think that even what has been done so far is too much. In many cases, accountants perceive digitisation as pressure.

On the further development of digitisation solutions, the following were presented. The existing ones should be made more efficient in the interaction with taxpayers. But this is not the case for data services, because digital data services could be moved forward, preferably immediately. Services should be built on online data services. For example, the feature that the online data service can be queried on the customer side is very popular and is seen as a service provider by NAV. The aim could be to simplify the digital solutions already available. And data services should be extended. In this context, it is important that the tax authorities provide clear information.

In the context of the digital transformation of auditing, a good auditor is defined as "A good auditor must be, as it were, computer literate."

External stakeholders' views on NAV digitisation

According to Rezső Rózsai [2020], CEO of KPMG, the pandemic situation will act as a catalyst for digitalisation and automation, which will significantly reshape organisational development strategies. He stated that the extremely rapid digitalisation of auditing will continue.

A survey on the acceptance of digital solutions was conducted with 160 accountants by the Association of Certified Accountants [2020]. The results of the evaluation of the responses show that there is a growing openness to digital solutions among accountants. However, there is still a significant number of accountants who do not use or are not familiar with digital solutions.

The survey found that many clients have switched to online invoicing as a result of online data provision, but accountants still receive invoices on paper. István Harkai, President of the Association of Certified Accountants, said that the accounting profession and the NAV need to ensure that the principles of e-invoice record keeping are simple. 93% of the respondents recognised the need to introduce solutions to support bookkeeping and would take part in training in this area. 85% of respondents consider their invoicing software to be good, 35% use free invoicing software. 54% of respondents recommend an online invoicing software for their clients. The issue of reducing administration was raised in relation to inventory control.

It is important to highlight that 66% are currently using the NAV system to retrieve supplier invoice data. 70% of the respondents would like to have the invoices of customers and suppliers automatically included in the clients' in-house cash register and to have online access to them. The survey shows that the participating accountants are not closed to digitalisation solutions and are open to further digitalisation solutions in their accounting work. This is also good news for NAV in terms of the introduction of further digitisation solutions.

Lukovszki and colleagues [2023], in their recent research on the external perception of NAV digitalisation, found that despite the tax authority's endless efforts to fight tax evasion and increase taxpayer confidence, it has still not succeeded in significantly reducing the propensity to commit tax evasion in Budapest and Central Hungary. The sense of control is lower in and around the capital, and tax compliance has not been sufficiently encouraged, even with a significant increase in the trust factor. Further research would be interesting to investigate the extent to which the tax administration would be able to implement the division of tasks between regions.

Further digital opportunities in auditing

We underscore that expanding online invoicing represents merely the initial significant milestone in digital innovation, not the culmination of digitalisation efforts. The digital developments initiated by NAV have made up for many years of lagging behind and have contributed to NAV being in a position of dictator rather than trend follower in this field. Undoubtedly in recent years, we've seen an accelerated

deployment of digital solutions, requiring swift adaptation by both tax authorities and stakeholders. Digital solutions prove beneficial not just for tax administration but also for businesses adhering to compliance standards. As with all developments, there could be further improvements that could make the systems better and easier for users to use.

We believe NAV faces two critical paths in the development of digital solutions, and it must pursue both avenues. The first is the development and expansion of existing systems. A good example of this is the forms that allow electronic communication and submission of documents for audits, which both taxpayers and tax authorities would like to see developed. The other route, already communicated to taxpayers, is the introduction of further digital solutions. These are the already mentioned development options, such as the distribution of draft VAT returns and the digital solution Standard Audit File of Tax (hereafter SAF-T), based on the OECD recommendation.

Distribution of draft VAT returns

The distribution of the draft VAT returns was intended to facilitate the tax authorities' compliance with the tax return obligation for another group of customers, along the lines of the e-VAT draft returns, which are also popular with customers. It was planned to be introduced in 2021, but no such offerings have been made so far, but developments are continuing. The system is scheduled to go live in 2024. In our view, the scheme is complicated because, for an individual, the information on which the return is based is much smaller and much of this information is already received by the tax authorities from the payers. The solution has not been an unqualified success with accountants either, as it does not replace any of the stages of bookkeeping, reconciliation and reporting.

The following opinions were expressed during the interviews. In their opinion, the draft VAT return is similar to the E-SZJA if there is full online invoicing of domestic transactions, accountants have nothing to do, but they should have their own analytical records of the transactions.

Initially, there was poor communication on the draft VAT returns. Many accountants may have felt that the draft VAT returns were a declaration that their work had become redundant because NAV would prepare the returns. VAT can only be considered as a return with the active involvement of the taxpayers concerned. The draft eVAT is based on the NAV online invoicing system, the online cash register system, the tax flow account and the electronic customs declaration containing import data.

SAF-T

According to the OECD Recommendation [2019], SAF-T is a new concept in taxation, which is considered the next big leap in digitalisation. It includes general ledger data, counterparty data, accounting transactions, VAT analytics, inventory movements. SAF-T is a single, structured way of describing the data typically requested for audits. It could be implemented in the foreseeable future (5-10 years).

Using SAF-T has advantages for both tax authorities and taxpayers. Tax advantages include the ability to require a standardised format from the different accounting systems used by taxpayers. This format can be automatically processed and analysed after appropriate development at the tax administration. This possibility can significantly improve the efficiency of controls, as irregularities or suspicious patterns indicating irregularities (e.g. unrealistically low asset holdings in relation to turnover) in the records of the taxpayer under examination can be identified by machine.

SAF-T allows routine audits of taxpayers' accounts or even desk audits to be carried out by machines, which can make this activity extremely cost-effective. The single audit file allows conclusions to be drawn about the taxpayer's business.

One of the advantages of SAF-T for taxpayers is the standardisation and the opportunities it offers. Taxpayers and accountants can anticipate what documentation will be requested from them during an audit, in what format and structure. Another advantage is that the cost of producing reports will be reduced, and requests for data from the tax authorities will require less human resources. The Hungarian Chamber of Auditors developed an audit xml schema in 2010 to increase the efficiency of audit work, which is currently used by 80 business management software. The introduction of SAF-T would essentially replace this with a more extensive mandatory data structure.

The SAF-T file can also play an important role in the context of company acquisitions, as the uniform data structure makes it easier to keep track of companies.

In Hungary, the use of complex ERP systems is typical for large enterprises, but the SME sector is more fragmented in terms of IT solutions. The possibility of exporting SAF-T data and analysing the data in a uniform way must be created for non-integrated systems.

According to our interviewee, SAF-T will significantly help controls. Routine automated checks (e.g. comparing products purchased and sold) will be continuously improved. Whether just by training indicators, for example whether the cash stock is not too high, whether the stock level is unduly high in relation to the activity, comparing stock movements and invoicing data.

In our opinion, the introduction of SAF-T could represent another major step in the digitisation activities of NAV, it could enable the implementation of automated controls in certain areas and allow NAV to develop services for its customers that would strengthen its service provider character.

The transformation of audit activity in the wake of digitalisation

One might ask whether deep learning could enable an AI to perform an audit at least as efficiently as a trained tax auditor. NAV's auditing process, fundamentally unchanged for a century, continues to scrutinize the legal compliance of economic and various other human activities. The focus of the audit remains on human activity.

We believe that while NAV's ongoing digital transformation may incorporate artificial intelligence, a total replacement of human involvement remains unlikely

in the foreseeable future. Presently, AI lacks the reliability to accurately model the complexities of tax control tasks. Highly skilled professionals who are and will be able to confidently apply digital solutions in their work and to extract from the available data the 3-4 figures needed to conduct a successful audit are needed.

We also asked our senior interviewee from Central Management about the view that the NAV will need more IT staff and fewer tax inspectors in the future. His answers were very firm. "Tax auditing should not be done by programming, but by using software. Using software is not an IT task, it is a tax inspector's task. Complex solutions are needed. Auditors must use software during the audit. When designing the interface of a software, you need to involve people who will use it." In his opinion, legislation and tax returns should be prepared in advance in such a way that they are suitable for computer processing. He believes that human intervention will continue to be necessary during audits.

International outlook

NAV leads the way in numerous aspects of digitalisation within the European Union. However, it's crucial to acknowledge that various countries and global economic entities are actively exploring the benefits of digital transformation.

In 2017, the European Union launched a pilot study involving ten EU regions and two member states, focusing on the shift towards an industrialized and globalized economy. In line with the OECD recommendations [2019], the report identified digitalisation as one of the development opportunities for EU countries and regions to foster industrial transformation in their cohesion policy programmes for 2021-2027. Digitalisation has emerged not merely as an option but as a crucial tool that enables businesses, governmental agencies, and administrations to enhance efficiency and streamline their operations.

The NAV is engaged in discussions on Big Data and the digitalisation of taxation not only with the member states of the European Union, but also with the major economic powers of Asia (China, South Korea, Singapore). One of the major issues in this context for Hungary is BRITACOM [2021], which is better known as the One Belt, One Road (New Silk Road) economic initiative. China wants to make significant progress in the unification of tax law, convenient access to tax and duty services, and accuracy of tax administration. In principle, China aims to build a robust, intelligent tax system by 2025. To this end, the guidelines propose digitizing tax collection, promoting the reform of electronic invoices, and strengthening the sharing of Big Data in tax collection.

Internationally, it is clear that digitisation is a factor that needs to be addressed for competitiveness and efficiency. China, often cited as a model, is leveraging digital transformation to bolster the efficiency of its taxation system. For Hungary, as a member state of the European Union, an important question is what examples it will follow in extending its digitisation solutions, what it will consider as benchmarks in the future, and what expectations it will have from government and customers.

Conclusion

NAV stands as a leader in digitalisation, within Hungarian public administration, significantly outpacing numerous EU member states. It was an essential recognition that the image of the NAV could be improved for successful social integration.

In line with NAV 2.0, NAV has started to develop and implement increasingly complex digital solutions. NAV has started to have a data warehouse that allows it to carry out real-time checks.

Our survey indicates that digital solutions significantly enhance administrative efficiency and control activities. In terms of usefulness of digital solutions, the online invoice service came out on top, followed by the forms filling application and electronic contact forms. In particular, the best applications of digital solutions are in the areas of audit, risk management, taxpayer registration, tax return processing, selection, customer relationship management and tax.

The main responses on further digital developments were also telling. There is a need to synchronise the databases available to NAV. The development of a common integrated system for control matters. Automatic analysis of data received online.

The impact of digital solutions on control activities has been highlighted by the availability and comparability of important control data prior to the start of the audit. Administration has been significantly accelerated and simplified, and work has become more efficient.

The future impact of digital solutions will be dominated by desk audits. With the expansion of digitalisation, tax avoidance and tax minimisation will decrease.

Important statements made during the interviews on digitisation were that digitisation is beneficial for both the tax administration and taxpayers. The acceptance of digital solutions among both NAV employees and customers is high. Improvements to e-Paper and the ELLUGY form are essential to make electronic administration user-friendly.

The European Union and the global leaders recognize digitalisation's efficiency gains as competitive edge.

Artificial intelligence is poised to significantly enhance control effectiveness. The tax administration needs highly skilled, autonomous auditors who use complex solutions and for whom digitalisation is not a hindrance but an opportunity to work more efficiently. Both secondary and primary research methods have provided a commendable picture of the NAV's innovation and digital transformation. We are determined to look at the results of this development from a few years' perspective as we continue our research.

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