

China (People's Rep.) / India / Korea (Rep.)

The Digitalization of Tax Administration in China, India and Korea (Rep.) in the Fourth Industrial Revolution

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Issue: Bulletin for International Taxation, 2020 (Volume 74), No. 8

Published online: 29 July 2020

In this article, the authors consider the different ways in which China, India and Korea (Rep.) have digitalized their tax administrations in the Fourth Industrial Revolution, together with an appreciation of the implications of these varying approaches.

The successful application of information technology [IT] will determine the future success of revenue bodies in managing compliance risks and meeting rising service expectations. The introduction of Big Data technology, combined with advanced analytics and increased digital presence... offers the opportunity to move more towards a real-time tax system and to explore new options for managing taxes, countering fraud, dealing with the shadow or hidden economy and assessing how assets are actually being used.^[1]

1. Introduction

International organizations, such as the Organization for Economic Co-operation and Development (OECD) and the United Nations (UN),^[2] encourage authorities to adapt emerging technologies to improve and streamline their tax administrations. While these and other organizations provide timely research and resources, learning from the practical experiences of other countries is vital.

The Fourth Industrial Revolution has driven disruptive changes in the ways that citizens interact and businesses create value. At the same time, it is important how the tax administrations and the governments explore emerging technologies to simplify the compliance and at the same time provide effective tax governance. Tax administrations play an integral role in helping small businesses increase their digital literacy. These activities, in turn, boost their competitiveness and aid them in dealing with the shadow economy with new analytical and operational tools.

Digitization and globalization have penetrated every aspect of our lives, and tasks that were previously impossible to accomplish or were very time-consuming to perform have become possible. The emergence of new business models requires tax administrations to redefine the tax compliance system to take advantage of the technology and ensure efficient processes. Blockchain, Fintech, Cloud Computing, Artificial Intelligence (AI), Robotics, the Internet of Things and Industry 4.0, among other available technologies, are disrupting traditional modes of operations, processes and global value chains, and pushing the existing boundaries of taxation. Yet, at the same time, these technologies give rise to opportunities to transform the way in which tax administrators operate and interact with taxpayers.

This article analyses the disruptive potential of technologies with regard to tax administration and selected tax policy issues. It presents current state of play in the form of case studies in respect of three Asian tax administrations, i.e. Chinese, Indian and

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The authors would like to thank Prof. Jeffrey Owens for his invaluable comments. This article is the result of work conducted within the Digital Economy Taxation Network, a project focusing on the impact of digitalization on tax administrations conducted by the WU Global Tax Policy Center at the Institute for Austrian and International Tax Law.

1. OECD, *Technologies for Better Tax Administration: A Practical Guide for Revenue Bodies* (OECD 2016).

2. See, for example, the Committee of Experts on International Cooperation in Tax Matters (the "Committee"), Fifteenth Session Report, *Tax Challenges in the Digitalized Economy no E/C.18/2017/CRP.22*, Geneva, 17-20 October 2017, available at www.un.org/esa/ffd/wp-content/uploads/2017/10/15STM_CRP22_-_Digital-Economy.pdf (accessed 16 July 2020).

Korean (see sections 3.2. , 3.3. and 3.4. , respectively), how they have implemented the technology and what conclusions can be derived from their experiences. In section 2. , the different approaches of countries are outlined. Section 3. evaluates the strategies of these countries. Then, section 4. examines some best practice examples and its possible application. The article ends with some conclusions in section 5. The aim of the article is to stimulate further research on the issue of digitalization of tax administrations.

2. Method

Countries around the world are implementing digital economy strategies to reap the full benefits of the internet economy and digital solutions. There is a growing recognition among governments of the expanding role of the digital economy in stimulating both sustainable development and inclusive growth. Enhancing digital access and use permits countries and their populations to save time, money and effort, while enhancing productivity, including making tax collection more cost-efficient and compliance less burdensome. In order to be an active participant in the digital economy, it is crucial to have an enabling regulatory environment, a digitally capable government with key digital assets, laws adopted to the digital age, and strategic initiatives that span and engage a wide range of factors.

Currently, tax administrations are gathering enormous amounts of data. However, one big question remains. How do tax administrations make the best use of this treasure trove of data? The challenge is not only to introduce digital technologies into public administrations. It is also to integrate these technologies into an overarching public sector modernization plan, which then enables inter-governmental data sharing and processing. In such circumstances, sharing the case studies of countries that have implemented these plans could prove useful.

3. Digitalization of Tax Administrations in China (People’s Rep.), India and Korea (Rep.)

3.1. Introductory remarks

In this section, the digitalization of tax administration in China (see section 3.2.), India (see section 3.3.) and Korea (see section 3.4.) is compared by focussing on taxpayer compliance measures, the internal organization of tax administrations and the protection of taxpayers. Although each country has its unique political situation and stands at different levels of economic development the authors believe that, in implementing innovative solutions, the strategy of observing success stories, lessons learnt and other country experiences could be one of the most efficient ways in designing individual strategy. This descriptive analysis is followed by some policy considerations and recommendations (see section 4.).

3.2. China (People’s Rep.)

3.2.1. In general

China has recently been at the forefront of the world in terms of digitization. The efforts in respect of the digitalization of tax administration started in the 1990s. With the development of the state-of-the-art technologies in the last ten years, China has gradually applied the most advanced technologies into its tax administration system. In 2015, the *Guojia shuiwu zongju* (then, the State Administration of Taxation (SAT), from 2019, the State Taxation Administration (STA), hereinafter always the STA) introduced its Action plan for “Internet + tax”, with the following five main objectives: (1) enhancing the cooperation with other stakeholders in the society; (2) improving taxpayer services; (3) achieving digitized invoicing; (4) increasing transparency; and (5) using smart applications, including Big Data and AI for both tax administration and taxpayers.^[3] Over the years, these goals have gradually become a reality. In this context, section 3.2.2. provides an overview of the significant achievements of China in its digitized tax administration.

3.2.2. Internal organization of tax administration – The “Golden Tax System”

The creation of the digital tax administration system in China took place gradually. In 1994, the STA initiated the Golden Tax System, which was designed to register and pay VAT and, in its first phase, lasted until 1998. The second phase of the Golden Tax System ran from 1998 to 2003. In 2015, the plan for the “Golden Tax System Phase III” (GTS III) optimization system was released in China. It came into force in September 2008. The GTS III carries out the important mission of modern tax administration system reform. It aims for one platform, two-level processing, three coverage, and four systems.

One platform refers to a unified technical platform that includes both hardware and basic software. Two-level processing refers to the processing of data at both the state and provincial level of the tax administration. Three coverage means that the application

3. CN: STA, Action Plan for Internet + tax, *Shuizongfa* [2015] No. 113, (28 Sept. 2015). The Chinese version can be found on the STA's official website at www.chinatax.gov.cn/n810341/n810755/c1843071/content.html (accessed 2 June 2020).

of the GTS III will gradually cover all taxes, all working stages of the tax administration and encompass both the State and Local Taxation Bureaus and links to other government departments, such as industry and commerce and customs. Four systems refer to: (1) the tax collection system; (2) the external data management and exchange system; (3) the internal administrative management system; and (4) the risk management and supervision system.

The GTS III was initiated by the STA, but several provinces started pilot programmes to test the system before it was rolled out nationwide. Tax administrations at the provincial and city level later adapted their local system to the STA's system, achieving unification of the system nationally. At a city level, it involves the use of data, implementing some local software and linking it with the information technology (IT) systems of local governments. At the provincial level, it involves linking with the taxpayer and links with third parties, e.g. other governmental institutions. At the national level, the GTS III digitalizes reporting and examination led by the STA. At the taxpayer end, the aim is to improve taxpayer service and integrate the tax administrative system with other governmental IT systems. In 2019, the system was rolled out nationwide with regard to collection and collation of individual income tax and information. At the provincial level, there is a system created to facilitate taxpayer and tax bureau interaction including self-electronic (e)-reporting. There is also cooperation with the other IT systems of government departments, including sharing of information that can be used for collective collection and management of taxes.

The STA has constantly worked on the improvement of the system. Under the old Chinese tax system, tax administrations had been divided into local tax bureaus (LTB) and state tax bureaus (STB), and the Golden Tax System in its previous phases had two separate systems for the LTB and STB. Since the merger of the LTBs and STBs in 2018, the GTS III has gone through major mergers as well. In April 2019, the merger was completed and, currently, the GTS III applies consistently to all the tax offices throughout the country.

At present, the GTS III covers five levels of the tax administration offices with over 36,800 users.^[4] It also includes information on all types of taxation and it is adapted to the changes of legislation.

The GTS III established an information system that is closely connected with other governmental sectors, such as the social insurance department, the Ministry of Land and Resources and the Ministry of Commerce have access to the data. It applies advanced technologies, such as Big Data and AI for data analysis and risk assessment, thereby resolving old problems, such as disparate tax systems and difficulties with data collection.^[5]

3.2.3. Tax compliance measures

3.2.3.1. Blockchain invoicing

As with the GTS III, the application of Blockchain invoicing also started from pilot programmes. Since August 2018, the Guangdong (especially Shenzhen) and Yunnan offices have been the pilots for the application of Blockchain to invoicing via a private-public partnership collaboration model.

In May 2018, the Shenzhen Tax Bureau and Tencent, one of the leading Chinese technology giants based in Shenzhen co-established the "intelligent tax lab", which was intended to apply the most advanced technologies, such as AI, Big Data, Blockchain and cloud computing to tax administration. Later in the same year, the first fruitful results of this cooperation were presented in the form of Blockchain e-invoices for VAT.

This new technology combines e-payment, for example, WeChat pay or Alipay with e-invoicing. Consumers can simply scan the payment Quick Response (QR) code to pay for certain goods or services, download the invoice from the WeChat system simultaneously and apply for online reimbursement through the corporate WeChat reimbursement system. Reimbursement information is synchronized and written onto the Blockchain cloud computing node of the Shenzhen Taxation Bureau in real time, thereby completing a closed loop.^[6]

The biggest advantage between Blockchain e-invoicing and the traditional VAT ordinary invoice lies in its security. Instead of traditional 84-digit tax control passwords, Blockchain e-invoicing employs a unique hash number, which is open to authentication, traceable and non-changeable.^[7] Accordingly, Blockchain e-invoices have distinctive advantages and can help to curb carousel fraud.

Currently, the Blockchain e-invoicing system is still at the first stage, where the invoice does not apply to special purpose VAT invoices for the deduction of input VAT. The objective for the next stage is to implement e-invoicing to different types of invoices so

4. Based on the meeting between the Vienna University of Economics and Business (WU) Global Tax Policy Centre (GTPC) and the Tax Collection and IT Administration Department of the STA, in the STA's office in Beijing in May 2019. The representatives of the WU and the GTPC were Professor Jeffrey Owens and Shimeng Lan.

5. See the STA official website at www.chinatax.gov.cn/n810341/n2340339/c2947511/content.html (accessed 9 Feb. 2020).

6. See the STA official website at www.chinatax.gov.cn/n810219/n810739/c3482784/content.html (accessed 2 June 2020).

7. Id.

that the information of transactions can flow directly to tax administrations and generate invoices and pre-populated tax returns automatically.

The popularization of e-payment among Chinese customers,⁸ the convenience of the invoicing process and the advantages of Blockchain invoices all make it easy to be accepted by consumers, businesses and tax administrations. It is reasonable to expect that the invoicing system will become widespread in the near future.

3.2.3.2. “Thousand Group Project”

Another example of the application of Big Data technology in risk analysis and audit targeting is the Thousand Group Project, which was rolled out by the STA in 2016. It marks the adoption of a more “data-driven, risk-based approach” to tax administration.⁹

Large enterprises are an important pillar of China’s national economy and a major source of state taxation revenues, as about 80% of the total national tax revenue comes from businesses. Doing a good job in tax-related services and management of large enterprises is an indispensable part of the process of tax collection and management modernization. The STA has determined that, at present, the number of large enterprises that it has identified is 2,050 (commonly referred to as “thousands of households”), and the total number of taxpaying member entities is 224,000, thereby accounting for 44% of tax revenue.

The Thousand Group Project requires tax, financial and accounting data from a thousand large enterprise groups, including state-owned groups, multinational enterprises (MNEs), etc. The STA then performs an analysis to identify tax risks of certain industries or certain groups, and potential non-compliance.

The tax analysis of large enterprises focuses on the key points such as overall and strategic issues, thereby combining the specific characteristics of economic and social development, taxation operations in the regions, and selecting local party committees, government hotspots and difficult areas. With regard to listed companies included in the annual risk analysis plan, based on the tax risk indicator model system, systematic scanning is carried out to establish a tax risk identification report for relevant enterprise groups and their member companies. The result of the tax analysis is sent to the LTBs in charge of the specific group for further action.¹⁰ The STA has also planned to set up a communication mechanism to discuss and mutually agree on certain tax issues before being sent to local tax administrations for resolution.¹¹

The Thousand Group Project adheres to the tax risk management-oriented, relies on IT, optimizes services and strengthens responsibilities so as to promote tax-related compliance and improves service management capabilities and to achieve integration and professionalism. The advantages of such approaches include improving work efficiency, thereby creating new type of employment mechanism and a new type of relationship between service and law enforcement, with individualized services for large taxpayers. This situation includes improved communication between tax administration and enterprises and strengthened information exchange.

3.2.3.3. Personal Income Tax App

At the end of 2018, the Personal Income Tax App was launched by the STA directly on a national scale to adapt to the individual income tax reform. It is a high-standard app tailor-made for individual income tax. It has 28 functions, including identity authentication, information collection, facial recognition and special purpose deduction application. Personal identity information has been connected with the information of the public security department at the level of the general administration. The validity of the identity of the information can be directly verified during the tax administration process.

As of May 2019, there are over 70 million users of the app. Fifty million users claim their income tax deductions (under the deduction rules of special expenses) through the app, which represents 70% of the taxpayer user base.

Traditional ways of claiming the deduction and submitting information continues to be offered. For instance, taxpayers can go to the offices of the tax administrations to do the paperwork. With the popularization of the internet, however, more and more people prefer to use the app because of its convenience.

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8. According to the 2018 annual financial report released by Tencent, WeChat has 1.08 billion monthly active users worldwide. The report can be accessed at <https://cdc.tencent-com-1258344706.image.myqcloud.com/storage/uploads/2019/11/09/9d13ada334b4c13cf86262ef6493172c.pdf> (accessed 2 June 2020). According to the statistics of the China Internet Network Information Centre, at the end of 2018, 72.5% of mobile Internet users use mobile payment services including WeChat payment. Mobile payment has become the largest payment for residents’ daily consumption tool. The report can be accessed at www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewiu-JPb_-PpAhVljqQKHXZcCgYQFjADegQIAxAB&url=http%3A%2F%2Fwww.cac.gov.cn%2Fwxb_pdf%2F0228043.pdf&usq=AOvVaw3S75aOh5EKPiAum5dpOPcc (accessed 2 June 2020).
 9. International Tax Review in association with KPMG China, *China Looking Ahead* 8th edn., p.34 (2018), available at <https://assets.kpmg/content/dam/kpmg/cn/pdf/en/2018/12/china-looking-ahead-edition-8.pdf> (accessed 2 June 2020).
 10. Id.
 11. Id.

3.2.4. Data privacy and the protection of taxpayer's rights

Currently, China has designed a high-level framework for data governance but is still in the process of law-making. In 2018, the Standing Committee of the National People's Congress of the 13th National People's Congress officially included the Personal Information Protection Law into the legislative plan.^[12] This law is expected to be drafted in 2020.^[13] During these years, the protection of personal data was reflected in several laws, regulations and regulatory documents, such as the "Cyber Security Law",^[14] "The Decision of the Standing Committee of the National People's Congress on Strengthening the Protection of Network Information",^[15] the "Consumer Protection Law"^[16] and the "Criminal Law".^[17]

Currently, personal information is mainly protected under the "Cybersecurity Law", which sets out general principles.^[18] In March 2020, the State Administration for Market Regulation (SAMR) and Standardization Administration of China (SAC) jointly published the Information Security Technology – Personal Information Security Specification.^[19] This specification will be effective from 1 October 2020. It is complementary to Chapter four of the Cyber Security Law. It has been referred to the most updated and advanced international rules and standards as well as to the legislation of other countries and organizations, such as the General Data Protection Regulation (GDPR)^[20] in the European Union.^[21] Although the specification is merely a recommended standard that does not entail mandatory enforcement, it is the most fundamental of the specifications relating to personal data protection and is regarded as "soft law" that guides the behaviour of enterprises and governments.^[22] It is expected to play an important role prior to enactment of the Personal Information Protection Law.^[23]

In relation to taxation data, the STA has issued *Shuizongfa* 2013 No. 15 with regard to the protection of the rights and interests of taxpayers.^[24] It requires the local tax administrations to elevate the awareness of, and attach great importance to, the protection of the rights and interests of taxpayers, strengthening measures to solidify the foundation for protecting such rights and interests, firming up the protection and improving the efficiency of the rights and interests of taxpayers. Under the current legal framework, taxpayers can seek administrative and judicial remedy in the case of unjust treatment and the violation of lawful rights.

3.2.5. Exchange of information

China exchanges taxpayer information with other countries both on request, and automatically. Exchange of information on request (EOIR) takes place based on the equivalent in comprehensive tax treaties of article 26 of the OECD Model^[25] and the UN Model,^[26]^[27] tax information exchange agreements (TIEAs)^[28] and the OECD Multilateral Convention on Mutual Administrative Assistance in Tax Matters as amended by the 2020 Protocol (MAC).^[29]

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12. CN: 13th NPC Standing Committee, 13th NPC Standing Committee Legislative Plan (2018-2023) (8 Sept. 2018). The Chinese text can be found on the government's official website at www.gov.cn/xinwen/2018-09/08/content_5320252.htm (accessed 2 June 2020).
 13. npc.people.com.cn, available at <http://npc.people.com.cn/n1/2020/05/15/c14576-31710894.html> (accessed 2 June 2020).
 14. CN: 中华人民共和国网络安全法 [Cyber Security Law of People's Republic of China], 2016, Chapter 4. The Chinese text of the law can be found on the government's website at www.cac.gov.cn/2016-11/07/c_1119867116.htm (accessed 6 June 2020). Chapter 4 of the law concerns the protection of personal information security.
 15. CN: 全国人民代表大会常务委员会关于加强网络信息保护的決定 [Decision of the Standing Committee of the National People's Congress on Strengthening Network Information Protection] 2012. The Chinese text can be found on the government's official website at www.scio.gov.cn/zxbd/nd/2012/Document/1263682/1263682.htm (accessed 2 June 2020). The English translation can be found on the database of the Peking University at <http://en.pkulaw.cn/display.aspx?cgid=191975&lib=law> (accessed 2 June 2020).
 16. CN: 中华人民共和国消费者权益保护法 [Consumer Protection Law of the People's Republic of China], 1993 (amended in 2009 and 2013). Article 14 of the Consumer Protection Law provides consumers with the right to protect their personal information when consuming goods or services. The Chinese text can be found on the government's official website at www.npc.gov.cn/wxzl/gongbao/2014-01/02/content_1823351.htm (accessed 2 June 2020).
 17. CN: 中华人民共和国刑法修正案七 [Amendment (VII) to the Criminal Law of the People's Republic of China], 2009. The English version can be found on the database of Peking University at <http://en.pkulaw.cn/display.aspx?cgid=e9381f0afa80a487bdfb&lib=law> (accessed on 2 June 2020). The Amendment added sub paragraphs to articles 253 and 285 regarding crimes in relation to obtaining personal information by illegal means. Articles 177 and 286 also contain provisions regarding personal information protection.
 18. Chapter 4 of the Cyber security law of China sets out basic principles of information security. It also sets out general principles for personal information protection, the individual's rights and safeguards.
 19. CN: Information Security Technology – Personal Information Security Specification (GB/T 35273-2020).
 20. General Data Protection Regulation (EU) 2016/679 (GDPR), OJ L119 (2016).
 21. Yanqing Hong & Xin Ge, 国家标准《信息安全技术 个人信息安全规范》修订解读 (*Interpretation of the amendments of the National Standard "Information Security Technology and Personal Information Security Standards*), Secrecy Science and Technology, p. 26 (Aug. 2019).
 22. Ke Xu, 《个人信息安全规范》的效力与功能 (*The Effectiveness and Function of the Personal Information Security Specification*), China Information Security, Mar. 2019, pp. 44 and 46 (Mar. 2019).
 23. Id.
 24. CN: STA, Several Opinions of the State Administration of Taxation on Strengthening the Protection of Taxpayers' Rights and Interests, *Shuizongfa* 2013 No. 15 (8 Feb. 2013).
 25. *OECD Model Tax Convention on Income and on Capital* (21 Nov. 2017), Treaties & Models IBFD.
 26. *UN Model Double Taxation Convention between Developed and Developing Countries* (1. Jan. 2017), Treaties & Models IBFD.
 27. At the time of writing this article, China has signed 107 comprehensive tax treaties, of which 102 were effective. China has also signed the *Arrangement between the Mainland of China and the Hong Kong Special Administrative Region for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with Respect to Taxes on Income* (21 August 2006), Treaties & Models IBFD (in force), *Arrangement between the Mainland of China and the Macao Special Administrative Region for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with Respect to Taxes on Income* (27 Dec. 2003) Treaties

In recent years, there have been developments in the Automatic Exchange of Information (AEOI). The OECD developed the Common Reporting Standard (CRS) in 2014. In December 2015, China signed the Multilateral Competent Authority Agreement on Automatic Exchange of Financial Account Information (MCAA), which is a multilateral instrument providing legal basis for the Automatic Exchange of Financial Account Information (AEOFAI). In May 2017, the “Measures for the Administration of Due Diligence of Tax Information on Non-resident Financial Accounts” (Announcement No.14)^[30] was officially released. Announcement No.14 provides the legal basis and operational guidelines for Chinese financial institutions to implement due diligence on non-resident financial account tax-related information and to collect and report such information.^[31]

In September 2018, China successfully exchanged information with the tax administrations of other countries for the first time. In that year, China exchanged information with 52 partners relating to financial accounts and assets in 2017. In 2019, China exchanged information relating to 2018 with 64 partners.^[32]

In response to Action 13 of the OECD/G20 Base Erosion and Profit Shifting (BEPS) initiative,^[33] the STA published Announcement No. 42 in 2016,^[34] requiring MNEs meeting certain requirements to file Country-by-Country Reports (CbCR). From 2018, China started to exchange CbCRs with other countries.

The information exchanged with China from abroad including from the EOIR, the AEOI and CbCRs, together with the information gathered through domestic channels, such as that from local tax administrations and other governmental departments, is saved in a centralized “big database” for risk management analysis. The risk management system applies advanced technologies, such as Big Data and machine learning to process the data dynamically, thereby determining the potential levels for different taxpayers and flagging potential non-compliance or evasion to the STA.^[35] The IT department at the central STA manages the data comprehensively. When a particular risk in relation to a taxpayer is identified, the local STA office where the taxpayer is resident becomes responsible for the further investigations.^[36]

3.3. India

3.3.1. In general

India has envisioned “Trillion Dollar Digital Opportunity” to attain USD 1 trillion in economic value in respect of the digital economy by 2025.^[37] The country has also been gradually embracing technology in every possible field with the focus on achieving greater transparency. India is the second-fastest digital adopter among 17 major digital economies.^[38] The aim of the Indian government is to turn the Indian economy into a cashless economy, to introduce e-governance and to enable ease of doing business through digitalization. India is implementing technology in various social programmes so that welfare benefits reach most people where

& Models IBFD (in force) and *Cross-Strait Agreement between the Government of the People’s Republic of China and Taiwan for the Avoidance of Double Taxation and Enhancement of Tax Cooperation* (25 Aug. 2015), Treaties & Models IBFD (not in force at the time of writing this article).

28. At the time of writing this article, China had concluded TIEAs with Argentina, the Bahamas, Bermuda, the British Virgin Islands, the Cayman Islands, Guernsey, the Isle of Man, Jersey, Liechtenstein and San Marino.

29. *OECD Multilateral Convention on Mutual Administrative Assistance in Tax Matters* as amended by the 2020 Protocol (MAC). The MAC was approved by the 15th meeting of the 12th National People’s Congress Standing Committee. For China, it came into effect in February 2016.

30. CN: STA, Ministry of Finance, People’s Bank of China, China Banking Regulatory Commission, China Securities Regulatory Commission and China Insurance Regulatory Commission, Announcement on Issuing the Administrative Measures for the Due Diligence of Tax-Related Information of Financial Accounts Owned by Non-Residents. Announcement No. 14 [2017], 05-09-2017, Chinese version can be found on the official website of the STA at www.chinatax.gov.cn/n810341/n810755/c2623078/content.html (accessed 7 June 2020). An English translation is available at <http://en.pkulaw.cn/display.aspx?cgid=295094&lib=law> (accessed 7 June 2020).

31. KPMG China, *China Looking Ahead 2018: New Era of International Tax Transparency - Automatic Exchange of Information* (2017), in Chinese, available at www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwj1cOvnPDpAhVODowKHTKwDNwQFjABegQIAhAB&url=https%3A%2F%2Fhome.kpmg.com%2Fcontent%2Fdam%2Fkpmg%2Fcn%2Fpdf%2Fzh%2F2017%2F12%2Fnew-era-of-the-global-tax-transparency-message-automatic-exchange.pdf&usq=AOvVaw2rbykiUBCavFUen7SZ9C-S (accessed 7 June 2020).

32. The OECD Global Forum on Transparency and Exchange of Information for Tax Purposes, *The 2019 AEOI Implementation Report* (OECD 2019).

33. See, for example, OECD, *Action 13 Final Report 2015 – Transfer Pricing Documentation and Country-by-Country Reporting* (OECD 2015), Primary Sources IBFD.

34. CN: STA, Announcement of the State Administration of Taxation on Matters concerning Improving the Administration of Affiliation Reporting and Contemporaneous Documentation, Announcement No. 42 [2016], 06-29-2016. The Chinese version can be found on the official website of the STA at www.chinatax.gov.cn/n810341/n810755/c2208516/content.html (accessed 7 June 2020). An English translation is available at <http://en.pkulaw.cn/display.aspx?cgid=574f370a8a861281bdfb&lib=law> (accessed 7 June 2020).

35. International Tax Review in association with KPMG China, *China Looking Ahead* 7th edn., p. 26 (2017), available at www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiHnBLXmfDpAhX0JMUkHWntAiUQFjABegQIARAB&url=https%3A%2F%2Fassets.kpmg.com%2Fcontent%2Fdam%2Fkpmg%2Fcn%2Fpdf%2Fen%2F2017%2F12%2Fchina-looking-ahead-edition-7.pdf&usq=AOvVaw1OkmC1m3pCYOUxToWkWP1 (accessed 2 June 2020). The same information was also gathered in the meeting between the WU GTPC and the Tax Collection and IT Administration Department of the STA, in the STA’s office in Beijing in May 2019. The representatives of the WU and the GTPC were Professor Jeffrey Owens and Shimeng Lan.

36. Based on the meeting between the WU GTPC and the Tax Collection and IT Administration Department of the STA, in the STA’s office in Beijing in May 2019. The representatives of the WU GTPC were Professor Jeffrey Owens and Shimeng Lan.

37. IN: Government of India, India’s Trillion Dollar Digital Opportunity, Ministry of Electronics and Information Technology, available at https://meity.gov.in/writereaddata/files/india_trillion-dollar_digital_opportunity.pdf (accessed 20 July 2020).

38. Id. India’s overall score in 2017 was 32 on a scale of 0 to 100.

required to simplify the governance and increase voluntary compliance in taxes. At the same time, an attempt is being made to counter effectively tax evasion by profiling taxpayers. The country has set out 30 specific digital themes to realize the USD 1 trillion digital economy.^[39] It has joined the league of countries who have successfully implemented technology by learning from their experiences by adopting technologies, like AI and Big Data. Some of the technology-oriented projects being implemented and/or proposed by the Indian government that are intended to foster e-governance are considered in sections 3.3.2. to 3.3.4.

3.3.2. Internal organization of the tax administration

3.3.2.1. Computer Aided Scrutiny Selection

The Central Board of Direct Taxes (CBDT) has devised a system-based method in a centralized manner through Computer Assisted Scrutiny Selection (CASS), whereby a selection is made on the basis of 360-degree data profiling of taxpayers with risk parameters, for example, substantial tax refunds, foreign tax credits, mismatches in reported information, high-value transactions, undisclosed income and property sales, etc. This approach reduces randomized and manual intervention in selecting scrutiny cases, though some cases are selected manually on the basis of pre-determined revenue-potential-based parameters. The CBDT has also indicated the use of data analytics for making tax assessments.^[40]

3.3.2.2. “Project Insight”

In 2016, the Income Tax Department (ITD) initiated Project Insight^[41] with the objective of promoting voluntary compliance, deterring non-compliance, imparting confidence and realizing a fair and judicious tax administration. The project was scheduled to be rolled out in three phases, with the first phase being launched in 2017 and the last in 2019. It aims at using contemporary technology for data mining, research and analytics to counter black money and tax evasion. The project would also undertake the 360-degree profiling of taxpayers. It is valued at USD 100 million and is being developed by Larsen & Tubro Infotech Ltd. on the basis of a public-private partnership.

The project will also foster implementation of the India-United States Foreign Account Tax Compliance Act Inter-Governmental Agreement (FATCA Model 1A Agreement) (2015)^[42] and the CRS. The implementation of a reporting compliance management system should ensure the timely and accurate reporting by the reporting entities. The project involves:^[43]

- a state-of-the-art data warehouse implemented with end-of-day integration of key projects and/or data sources of the ITD;
- the new platform is being used to identify high-risk non-filers, select cases for scrutiny and process information received under the AEOI, FATCA, etc.;
- a dedicated reporting portal^[44] has been rolled out to provide a comprehensive interface between reporting entities and the ITD; and
- a dedicated compliance portal^[45] has also been rolled out to capture response on compliance issues in a structured manner for effective compliance monitoring and evaluation.

The project has been operationalized in two new centres:^[46]

- (1) The Income Tax Transaction Analysis Centre (INTRAC) to leverage data analytics in tax administration and undertake tasks relating to data integration, data processing, data quality monitoring, data warehousing, master data management, data analytics, web and/or text mining, alert generation, compliance management, enterprise reporting and research support.
- (2) The Compliance Management Centralized Processing Centre (CMCPC), which will use the campaign management approach, consisting of e-mails, SMS, reminders, outbound calls, and letters, to support voluntary compliance and the resolution of compliance issues.

39. Id.

40. *CBDT Chairman opens up on post-demonetisation game plan, data analytics & e-assessments*, Taxsutra (31 Aug. 2017), available at <https://www.taxsutra.com/news/18452/CBDT-Chairman-opens-up-on-post-demonetisation-game-plan-data-analytics-e-assessments-> (accessed 20 July 2020).

41. IN: Ministry of Finance, ITD, Press Release of 19 July 2016.

42. *Agreement between the Government of the Republic of India and the Government of the United States of America to Improve International Tax Compliance and to Implement FATCA* (9 July 2015), Treaties & Models IBFD.

43. IN: Ministry of Finance, ITD, Press Release of 8 July 2019.

44. “Reporting Portal is one of the critical components of Insight Platform to collect information from Reporting Entity”, available at <https://report.insight.gov.in/reporting-webapp/portal/recentArticle> (accessed 20 July 2020).

45. Available at <https://compliance.insight.gov.in> (accessed 20 July 2020).

46. *What is Project Insight initiated by the Income-tax Dept.?*, TAXMANN, available at www.taxmann.com/blogpost/2000001803/what-is-project-insight-initiated-by-the-income-tax-dept.aspx (accessed 20 July 2020).

Under Project Insight, the ITD is planning to use the data available to it as well as other government organizations, such as the Registrar of Companies, the goods and services tax (GST) database, Reserve Bank of India (RBI) records, social networking sites, etc.

It is believed that the ITD may scan profiles of taxpayers on social networking sites to assess if taxpayers' lifestyle does not match with the income disclosed in the income tax returns.^[47] However, the information collated from social networking sites may not constitute sufficient evidence for the ITD. The project also tracks the Permanent Account Numbers (PAN) being quoted in transactions and tally these with tax filings. In addition, the system profiles all of the transactions by an individual, such as purchases of immovable property, jewellery and vehicles, in a systematic and easily identifiable manner for the ITD. This approach should help to identify spending patterns and rank evaders so that the tax evaders can be easily caught. News reports state that such information should help to classify taxpayers on the basis of parameters, like income, profits and capital, so as to be able to carry out a detailed probe.^[48]

3.3.2.3. Interface within the ITD

Communications and record-keeping within the ITD have been digitized with the launch of a comprehensive system, the Income Tax Business Application (ITBA). The application contains dedicated modules for various aspects and functions. There are modules for common functions to aid the officers in daily functions, for example, calling up information from other officers and staff within the ITD, generating letters, intimations and notices, etc. In order to be able to carry out the more advanced, specialized functions, like scrutiny assessments, withholding tax compliances, appeal management, etc., separate modules are available.^[49] Also, recently, the mutual agreement procedure (MAP) module has been introduced, which enables recording the details of the applications filed under the MAP, the references received from the foreign tax administrations, exchanges between the competent authorities and adjusting the taxpayers income based on the MAP outcome. This has resulted in a "paperless administration".

3.3.2.4. Faceless e-assessments

India has transformed the way in which the tax assessments are being carried out given the very large size of the population and the prolonged litigation in India. From paperless assessment to faceless e-assessment is a laudable achievement of the current government. Initially, India adopted paperless assessment by sending e-mails for questions and notices to taxpayers for tax scrutiny. Taxpayers are also permitted to respond by e-mails. Furthermore, a scanned copy of the assessment order is sent by e-mail. All of these communications and orders are reflected in a taxpayer's account on the income tax website.^[50]

In the Union Budget 2019, the Finance Minister announced an e-assessment scheme.^[51] The government has been trying to introduce an e-assessment procedure in a phased manner so as to bring greater transparency and reduce corruption by reducing the interface between the taxpayer and the tax administrations. Under the e-assessment scheme, all communication between the taxpayer and the tax department will be through electronic means, and the taxpayer may request a hearing by way of video conferencing.

The National e-assessment Centre (NC) will be responsible for the facilitation of conduct of e-assessment proceedings in a centralized manner. It will send the electronic notice to the taxpayer and obtain the information from the taxpayer for making the assessment. Upon receiving the response, the case will be assigned to the assessment units under the regional centre through an automated allocation system based on AI, which would then make a draft assessment and forward the same to the NC along with details of penalty proceedings to be initiated. The NC will examine the draft order using automated examination tools based on AI and machine learning and, if satisfied, will send the demand/refund order to the assessee along with notice for initiation of penalty proceedings if any. The NC can also assign the order to the review units for reviewing the draft orders and can also seek advice from the technical unit regarding valuation, legal issues, transfer pricing, etc. The taxpayer can then respond to the NC, which will then forward it to assessment unit for making a revised draft order considering the taxpayer's comments, and then the NC will pass the final assessment order.^[52] The taxpayer can seek to make oral hearings through video conferences if modification to the total income offered by the taxpayer is proposed in the draft order.

47. Sanjeev Sinha, *Black money fight: Tax evaders beware, Income Tax Dept scanning your social media posts*, FIN. EXPRESS (12 Sept. 2017), available at www.financialexpress.com/money/black-money-in-india-tax-evaders-beware-income-tax-dept-scanning-your-social-media-posts/851305 (accessed 20 July 2020).

48. *No country for evaders: This April 1, India enters uncharted tax territory*. ECON. TIMES (26 Mar. 2019), available at <https://economictimes.indiatimes.com/news/economy/policy/no-country-for-evaders-this-april-1-india-enters-uncharted-tax-territory/articleshow/68574891.cms> (accessed 20 July 2020).

49. Aditi Singh (Deputy Commissioner of Income Tax, Mumbai), *IT Department's rendezvous with technology – A brief insight*, taxsutra (16 Aug. 2017), available at HYPERLINK www.taxsutra.com/experts/column?sid=831 (accessed 20 July 2020).

50. IN: Ministry of Finance, ITD, Press Release of 3 Feb. 2016.

51. IN: Finance Minister's Speech, Union Budget 2019, para. 124. Notified vide Notification No. 61 & 62/2019/F. No. 370149/154/2019-TPL on 12 September 2019.

52. IN: Ministry of Finance, ITD, Notification of 12 Sept. 2019.

According to a news report, the government may use AI to detect tax evaders and identify bogus firms.^[53] AI could conceivably scan great quantities of data, spot patterns and even join the dots, so to speak, to highlight suspicious cases. At present, data in income tax returns, the statement of financial transactions and from other sources will be analysed under the pre-defined risk criteria.

3.3.2.5. Digital notices and documentation

A Document Identification Number (DIN) had been introduced^[54] to curb the practice of issuing the notice or summons or any other letter of correspondence manually without maintaining a proper audit trail of such communications. No communication will be issued by the income tax administrations relating to assessments, appeals, orders, penalties, prosecutions, approvals, etc. to the assessee or any other person, unless a computer-generated DIN has been allotted and is duly quoted in the communication.

3.3.2.6. E-penalties

In Union Budget 2020, the Finance Minister announced e-penalties in line with the e-assessment scheme to reduce the interface between the tax officer and taxpayers.^[55]

3.3.2.7. Faceless e-appeals

In Union Budget 2020, the Finance Minister announced e-appeals at the first appellate level (Commissioner of Income Tax (Appeals), CIT(A)). The filing of appeals was already possible electronically at first and second appellate level. However, in order to reduce interface between the Commissioner (Appeals) and the appellant and/or the taxpayer, the faceless e-appeals have been introduced.^[56]

3.3.2.8. E-courts

The E-court - the National Judicial Reference System (NJRS)^[57] is a system that digitizes income tax litigation management. It contains a repository of all of the pending cases before various courts, including their scanned appeal documents, as well as orders and judgements in decided cases, including unreported decisions. It enables the tax officers to take timely action in appeal matters through alerts. It has two repositories: one for pending appeals and the other for decided cases, statutes and circulars. This system operates on the basis of the Permanent Account Number of the taxpayer. The NJRS is also accessible partially to taxpayers, who can login and view their cases online. It discloses the statistics of pending cases and ensures that the cases are taken up timely. This is a laudable move and would change the face of Indian judiciary, which is believed to be slower in taking up cases.

Due to the COVID-19 pandemic, judicial functioning has been halted. The Indian Supreme Court (SC), the High Courts (HCs) and the Income Tax Appellate Tribunals (ITATs) have switched to web-based hearings by way of video conferencing calls such as Skype or WhatsApp video group calls, etc. In line with the e-governance policy of the government, the ITAT will be launching the e-filing of appeals to provide efficient taxpayer services. With this facility, the appellants before the ITAT can electronically file their appeals and obtain acknowledgement for the same. Later, they may submit the physical documents with the ITAT Office, within the permitted times.

All the communication relating to their appeals, such as the filing of an appeal, the fixing of hearings, adjournments, pronouncements and disposals will be sent to the appellant's and/or respondent's mobile telephone as well as an e-mail ID. ITAT Orders will also be sent to the e-mail ID. In the next phase, the ITAT will designate specific benches as Paperless Benches. Touch screens will be provided for use in these Paperless Benches so that the Members can access their e-appeals.^[58]

3.3.3. Tax compliance measures

3.3.3.1. Digital identity

India has provided digital identity through Aadhaar,^[59] which enables citizens to obtain the benefits from the government directly into their bank accounts. The Aadhaar identity platform with its inherent features of Uniqueness, Authentication, Financial Address and e-Know Your Customer (KYC), enables the government to reach directly residents of the country in delivering subsidies, benefits and services by using the resident's Aadhaar number. The ITD provides an instant e-Permanent Account Number (e-PAN) allotment in near to real time, i.e. in less than ten minutes, free of cost with a valid Aadhaar number. This identity number is to be quoted at the time of opening bank accounts, obtaining insurance policies, trading on stock markets, purchasing real estate,

53. *Opinion: The AI-enabled taxman*, livemint, (2 Dec. 2019), available at www.livemint.com/opinion/quick-edit/opinion-the-ai-enabled-taxman-11575286241268.html (accessed 20 July 2020).

54. IN: Circular No. 19/2019 dt (14 Aug. 2019).

55. IN: Income Tax Act (ITA), 1961, sec. 274(2A).

56. Id., at sec. 250.

57. IN: Ministry of Finance, ITD, Notification dated 29 Apr. 2014.

58. ITAT, available at <https://www.itat.gov.in/page/content/appeal-efiling> (accessed 20 July 2020).

59. Aadhaar is a unique one-time, government-issued identity card for Indian residents and citizens. It is a biometric based ID system.

filing income tax returns, etc. Also, the Aadhaar is required to be linked with the PAN for filing income tax returns. Accordingly, this unique identification number brings transparency and financial inclusion. This position enables the ITD to identify and trace transactions and counter tax evasion. The ITD is able to trace and report the transactions where no taxes have been paid by taxpayers, such as regarding the purchase of immovable property, the deposit of cash in bank accounts. Such a situation enables the countering money laundering and black money transactions.

3.3.3.2. Digital payments

On 8 November 2016, overnight, the government announced demonetization, banning INR 500 and INR 1,000 bank notes to curb black money and terrorism. The intention was to ensure that money was deposited in bank accounts. Unexplained deposits during the demonetization period were considered to be income in the hands of taxpayers.

India has encouraged the use of digital payments to counter cash payments and the move to the cashless economy.^[60] Business entities exceeding prescribed thresholds are mandated to provide the digital payments app to their customers,^[61] failure to do so attracting a penalty. Furthermore, accepting or making cash payments in excess of the prescribed amount for loans or purchase and sale of immovable property^[62] or purchase and sale of goods and/or services over the prescribed amount, attracts disallowances and penalties.^[63] This situation brings transparency and provides an audit trail of the transactions as well as countering tax evasion and greatly reducing the circulation of black money.

3.3.3.3. Prefilled income tax returns and the processing of tax returns electronically

Union Cabinet has approved Integrated E-filing and Centralized Processing Center 2.0 Project (CPC 2.0) of the ITD.^[64] Currently, CPC 2.0 would introduce prefilled income tax returns, which should reduce the time to process tax returns and help taxpayers as well.^[65] This position ensures the faster processing of returns and the issuing of refunds to taxpayers' bank account directly without any action on the part of the ITD, and provides status updates using a mobile app, e-mails and SMSs, thereby ensuring transparency and accountability. In the next phase of the CPC Tax Deduction at Source, i.e. the CPC (TDS) 2.0, focus will be on recognizing technology-led innovations with regard to emerging technologies, such as AI, Analytics and Blockchain to bring further improvement to service delivery.^[66]

In the Union Budget 2019, the Finance Minister informed the Indian Parliament that income tax returns would be processed within 24 hours and tax refunds issued simultaneously.^[67] The Centralized Processing Center (CPC) processes the returns, selects tax returns for regular assessment proceedings, assists in identification of errors in tax returns and validates tax computation in tax returns. In its press release, the CBDT has highlighted that the refunds should be processed within one day from the previous 63 days by 2020.^[68]

The CPC has evolved from being a support function to the flagship of the ITD's digitization. Continued investment and improvisation of the CPC should help to reduce administrative burdens and result in greater efficiency for both taxpayers and the ITD.^[69]

Further, recently, the new statement of tax credit Form 26AS is notified, which reflects transactions undertaken by taxpayers exceeding a specified threshold, such as investments in securities, withdrawals and deposits from bank accounts in cash, and purchases or sales of real estate.^[70] This would deter taxpayers from hiding information and would ensure voluntary compliance. Also, under the Non-filers Monitoring System (NMS), the ITD captures information on financial transactions and sends notices to the taxpayers who have undertaken these transactions but not filed their tax returns.

60. In 2015, the government released the Unified Payments Interface (UPI) as an open-source platform that integrates other payment platforms by way of a single mobile application, thereby enabling quick, easy and inexpensive payments from any entity – individual, business or government agency – to any other entity. The UPI is an instant real-time payment system. Payments can be made to anyone through UPI ID or QR Code.

61. Section 269SU of the ITA, 1961 provides for the requirement to facilitate digital payment methods by businesses with turnover of INR 500 million.

62. Sections 269SS and 269T of the ITA, 1961 prescribes modes for accepting or making payments in respect of loans and/or deposits and/or consideration for immovable property other than cash for payments exceeding INR 20,000.

63. Section 269ST of the ITA, 1961 provides that no person shall accept payments in cash for more than INR 200,000. Section 40A(3) of the ITA, 1961 disallows expenses if payments made in cash exceed INR 10,000.

64. IN: Ministry of Finance, ITD, Press Release of 16 January 2019.

65. ITD statistics reveal that there has been 18% increase in e-returns in the year 2018-19. It also highlights that, with greater adoption of IT in processing of income tax returns and the emphasis on less intrusive verification, the time taken to process income tax returns is constantly reducing. See IN: Ministry of Finance, ITD, Press Release of 24 June 2019.

66. Written reply of Shri Anurag Singh Thakur, Minister of State for Finance & Corporate Affairs to question raised in Lok Sabha. See IN: Ministry of Finance, ITD, Press Release of 8 July 2019.

67. Para. 123 Finance Minister's Speech, Union Budget 2019.

68. Gireesh Chandra Prasad & Prashant K. Nanda, *Your ITR filing will soon get processed in just one day*, livemint, (19 Jan. 2019), available at www.livemint.com/Money/6j9NVxedxFUnFISpcz0waM/Your-ITR-filing-will-soon-get-processed-in-just-one-day.html (accessed 20 July 2020).

69. Prashant Kapoor, *CPC: The face of the digital Indian tax department*, Econ. Times (7 Feb. 2019), available at <https://cfo.economicstimes.indiatimes.com/news/cpc-the-face-of-the-digital-indian-tax-department/67882082> (accessed 20 July 2020).

70. IN: Ministry of Finance, ITD, Press Release of 18 July 2016.

The ITD has also come up with an online grievance management system for taxpayers called “E-Nivaran” wherein taxpayers can submit their grievances.

3.3.3.4. E-invoicing under GST

In general

The GST Council has approved the introduction of e-invoicing in phases for reporting of business-to-business (B2B) invoices to the GST system. This will be introduced on a voluntary basis.^[71] This will curb the claiming of fictitious Input Tax Credits (ITCs) as the tax administrations will have access to real-time data.

The e-invoice system, developed by the National Informatics Center (NIC), will be rolled out in phases. Taxpayers with a turnover of over INR 5 billion can implement it on voluntary basis from 1 January 2020, while those with a turnover of over INR 1 billion can adopt it on a voluntary basis from 1 February 2020. The system is likely to be made mandatory for taxpayers with a turnover of over INR 1 billion from 1 April 2020.

The GST system will prepare an automated “return” (based on the e-invoices generated) and deliver it to a trader with a digital signature, which would facilitate reconciliation. This action also eliminates the difficulty of using an advisor to prepare GST returns, as a trader can approve the same and submit it at the appointed time.^[72]

GST Network

The GST Network (GSTN), operating on public-private partnership, is an IT backbone for India’s GST regime and aims to bring all transactions of indirect taxpaying businesses onto one digital platform.^[73] All registrations, filings, compliances and credit assessments would be done digitally through the GSTN. Furthermore, the interface is being maintained in a way such that the ITD and other enforcement agencies can share the information.

3.3.4. Data privacy and protection of the rights of taxpayers

With India moving towards “digital India”, the need for a comprehensive data protection law was acknowledged by the government in the Draft Data Protection Bill,^[74] which was introduced in July 2018.^[75] On 4 December 2019, the Union Cabinet agreed the Personal Data Protection Bill (PDPB).^[76] This action ensures that the personal data of citizens is kept secure and protected. With digitization in every facet of life, it is important to protect the infringement of personal data. The Bill also establishes an independent authority, the Data Protection Authority of India (DPAI), which will be empowered with overseeing the enforcement of the law, which is modelled on the GDPR of the European Union. Furthermore, recently, the constitution bench of the SC has held the right to privacy as a fundamental right, subject to certain reasonable restrictions.^[77]

3.3.5. EOI

India, being a member of the steering group and a Vice Chair of the OECD Peer Review group, has been one of the early adopters of the AEOI, with first exchange occurring in 2017.^[78] It has also signed the MCAA for the exchange of CbC Reports.^[79] As of June 2020, India had also concluded 40 TIEAs with various jurisdictions. Furthermore, India has signed 69 bilateral Competent Authority Agreements (CAAs).^[80] In the first round of peer review India’s rating was compliant with regard to legal and regulatory framework. In the Phase II Review,^[81] India received a “largely compliant” rating. The Phase II review highlighted that India’s legal framework is generally in line with the international standard. The report observed that there was room for improvement in the

71. IN: Central Board of Indirect Taxes and Customs, Notification Nos. 68, 69, 70, 71 and 72/2019 (13 Dec. 2019)

72. K.V. Kurmanath, *Coming from January 1, machine-readable GST e-invoices*, BusinessLine (16 Dec. 2019), available at www.thehindubusinessline.com/economy/coming-from-january-1-machine-readable-gst-e-invoices/article30300461.ece# (accessed 20 July 2020).

73. IN: GST Council, Goods and Service Tax Network Information booklet, available at <http://www.gstcouncil.gov.in/sites/default/files/GSTN-INFORMATION-BOOKLET.pdf> (accessed 20 July 2020).

74. See IN: Ministry of Electronics and Information Technology (MeitY), Data Protection in India, India is Rapidly Transforming into a Digital Society, available at <https://digitalindia.gov.in/writereaddata/files/6.Data%20Protection%20in%20India.pdf> (accessed 20 July 2020).

75. IN: Draft Personal Data Protection Bill, 2019.

76. IN: Personal Data Protection Bill (PDPB), 2019.

77. IN: SC, 26 Sept. 2018, *Justice K. S. Puttuswamy (Retd.) and Anr. v. Union of India and Ors*, Writ Petition (Civil) No. 494 of 2012.

78. Suraj Jaiswal & Neeti Biyani, *India’s Experience with Exchange of Information Agreements*, A study by the Centre for Budget and Governance Accountability, available at www.cbgaindia.org/wp-content/uploads/2016/05/Indias-Experience-with-Exchange-of-Information-Agreements-Web-Publication.pdf (accessed 26 June 2020).

79. See OECD, *A new boost to transparency in international tax matters: 6 new countries sign agreement enabling automatic sharing of country-by-country reporting* (OECD), available at www.oecd.org/tax/a-new-boost-to-transparency-in-international-tax-matters-six-new-countries-sign-agreement-enabling-automatic-sharing-of-country-by-country-reporting.htm (accessed 26 June 2020).

80. OECD, *Activated Exchange Relationships for CRS Information* (Update May 2020), available at www.oecd.org/tax/automatic-exchange/international-framework-for-the-crs/exchange-relationships/ (accessed 26 June 2020).

81. *OECD’s EOI report rates India ‘largely compliant’, recommends improvements in request quality*, TaxSutra (20 Nov. 2017), available at www.taxsutra.com/news/18991/OECD-s-EOI-report-rates-India-largely-compliant-recommends-improvements-in-request-quality (accessed 26 June 2020).

monitoring of deadlines, the provision of status updates and reducing the response time. The report emphasized India should respond to EOI requests in a timely manner in all cases, by providing the information requested within 90 days of receipt of the request or if it is unable to do so, provide a status update. India has been showing considerable improvement in responding to the requests within the 90-day window. Furthermore, with regard to rights and safeguards of taxpayers and third parties, India was rated as compliant. In 2019, the CBDT emphasized the need to maintain the “confidentiality” of information obtained from foreign jurisdictions under the EOI process.^[82]

Under its domestic law, India has implemented a requirement to furnish statements in respect of specified financial transactions^[83] by specified financial institutions where the financial transactions are carried out by taxpayers exceeding prescribed amounts. The country also mandates financial institutions to report information regarding reportable accounts, such as account balances and details of account holders.^[84] This is to ensure compliance with FATCA and CRS requirements. Also, in line with Action 13 of the OECD/G20 BEPS Project, India has mandated CbC Report filing as part of its domestic tax law.^[85] Finally, the Project Insight platform developed in India should enable the implementation of the FATCA and the CRS.

3.4. Korea (Rep.)

3.4.1. In general

Korea is one of the most digitally advanced societies in the world. Sometime ago, the government expressed its interest in becoming the leader in digitalization. The country’s dynamic digitalization transformation of tax administration could serve as an example for other tax administrations on their way to digitalization.

The Korean tax administration relies mainly on revenues from personal income tax, corporate income tax and consumption tax. In Korea, there are 14 national types of taxes, for example, income tax, corporate tax, VAT, customs duty, and 11 local ones, for instance, property acquisition tax, registration tax and licence tax. Section 3.4.2. aims at describing Korea’s successful experience in implementing technologies, such as the introduction of e-invoices, prefilling forms, automatic submission of information to the National Tax Service (NTS) and the e-tax administration service that covers tax filing, payments, the issuing of tax certificates and numerous other tax transactions.

3.4.2. Internal organization of tax administration

3.4.2.1. Country strategy to deal with digitalization

Three generations of digitalization can be ascribed based on the history of the NTS from 1967 to the current time.^[86] One year after the foundation of the NTS, in 1967, a “research team” was created and trained in-house and abroad to prepare for the use of computerized systems. In the following years, digitalization gained force in relation to different types of taxes. Nevertheless, the system still failed to address taxpayers as service consumers. The most pressing problem was the necessity to integrate the systems. During the second generation NTS (1997 to 2014), systems were integrated for national tax purposes. All functions were computerized, for example, filling forms, audits and data and tax collection. Moreover, all local tax offices were connected to the main office, thereby allowing all tax officers to access, review and use data. In February 2015, the third generation NTS started to operate. The old and the new systems worked in parallel for a time to engage and train NTS officers, review the legal framework and modify the existing databases.

The most recent achievement of the NTS with regard to digitalization is the launch of its Big Data Center on 25 June 2019. In the short term, over the next four years, the plan will analyse outcomes in 2020 and then make observations on the project’s maturity in 2021. With the Big Data Center introducing AI, the tax administration can predict compliance costs and thereby avoid unexpected results. Facilitating tax compliance processes for the taxpayers, offering online services that enhance efficiency, as well as realizing fair taxation are the three core values for the future of the NTS. In this context, it is important to verify illegal deductions and the beneficial ownership of income so as to address tax avoidance and tax evasion. Based on the values presented, in order to facilitate tax compliance, the plan is to create an AI assistant for small businesses and self-employed individuals, thereby providing a modern guide for filling tax returns and delivering an immediate notice regarding deductions. Moreover, the detection

82. CBDT: Stresses on maintaining ‘confidentiality’ of information obtained from foreign jurisdictions under EOI process , taxutra (19 Sept. 2019), available at www.taxutra.com/news/23598/CBDT-Stresses-on-maintaining-confidentiality-of-information-obtained-from-foreign-jurisdictions-under-EOI-process (accessed 26 June 2020).

83. Sec. 285BA ITA, 1961. The specified financial transactions cover transactions in respect of the purchase or the sale of goods or property or interests in property, the provision of services, investments or expenditure and obtaining or granting loans or deposits.

84. IN: Income Tax Rules, 1962, Rule 114F.

85. Sec. 2856 ITA, 1961.

86. In the first generation “Automatic Data Processing” from 1967 to 1996, the focus was on the use of computers and on the development of efficiency by way of digitalization and processing data. From the 1990s onwards, a distributed processing system was developed that permitted tax officers to enter notices to tax assessments. The whole development of NTS can be traced on the NTS website, which presents a history overview at www.nts.go.kr/eng/about/about_01.asp?top_code=A001&sub_code=AS01&ssub_code=ASA1 (accessed 21 July 2020).

of tax evasion can be improved by reviewing credit card and cash receipt transactions, the unlawful use of properties and verifying illegitimate capital transactions. It is believed that the key to NTS's success as a tax administration is its solid infrastructure, strong support from the government and its organizational structure, which continually adapts to new developments.

3.4.2.2. "Home Tax System"

The NTS website Home Tax System is a digital platform on which the NTS proposes pre-filling forms to taxpayers. The system was launched in April 2002 with functions that allowed taxpayers to file tax returns electronically in respect of indirect taxes, e-notifications and e-payments. From 2004 to 2014, several functions were added, such as the e-filing of direct taxes, e-payments and the ability to obtain e-documents. From 2015 onwards, a new IT system was developed, integrating eight separate websites.

The Home Tax System directly contributed to lower compliance costs, more tax services for taxpayers and widened the number of taxpayers with no adverse effect on the NTS. It also proved to be effective in countering corruption. The system works 24/7, every day of the year and has 1.8 billion visits a year.^[87]

A number of functions are provided for taxpayers under the Home Tax System. The most relevant of these functions are: (1) the filing of e-tax returns; (2) the e-payment of taxes; (3) the issuing and searching for e-invoices; (4) the issuing and searching for cash receipts; (5) the verification of tax deduction data obtained by NTS from third parties; (6) pre-filed tax returns; and (7) notifications on payable or refundable salary taxes in advance.

The Home Tax System is also available in a mobile version for smartphones, which has 98 functions. The NTS is focused on the mobile system, as the number of mobile users is constantly increasing, with a significant preference for mobile apps over websites. For instance, in the Korail website (the Korean train system), the ratio between tickets booked via mobile devices versus computers was three to one in 2018. The same trend occurred with the number of users of the mobile tax system (SONTAX), where in 2018, the number of log-ins was 2,177,000, increasing to 4,048,000 in 2019, and the tax credit claims made by way of the mobile system increased to 88% in 2019, compared to 2018, i.e. from 532,000 in 2018 to 1,001,000 in 2019.^[88]

The NTS is focusing on the development of the mobile system based on four pillars to realize mobile expansion. These four pillars are: (1) intelligent mobile service delivery for customized services; (2) the expansion of the e-tax administration providing more mobile services, for example, more e-filing tax returns and integration of the information; (3) enhancing a full-service capability, thereby offering all tax-related services by way of a mobile, for example, the printing of certificates; and (4) providing smart assistance, such as chatbots, 24/7.

Since 2017, taxpayers have been able to pay their taxes with a credit card or with their mobile telephones using Samsung pay or using a virtual account created by the NTS. With this feature, since 2012, tax agents, who are required by taxpayers who have a certain level of business income, can review and verify the accuracy of their client's tax returns. The NTS has a "self-collect" information database, which is derived from a "tax invoice management system" that collects e-invoices from B2B transactions and the "CRS [cash receipt system] operator or the credit card company" in connection with the business-to-consumer (B2C) cash receipts and credit card payments.^[89]

3.4.2.3. Neo-Tax Integrated System

The Neo-Tax Integrated System (NTIS), which was introduced in 2015, is structured in an internal portal. The latter consists of a platform that is designed to manage all of the internal processes of the NTS. On the other hand, The Home Tax System is the online platform for taxpayers. Each taxpayer's ID and information from the commercial registry is connected to the portal, which itself is connected with 390 external systems. It is designed to replace face-to-face interaction between a tax officer and taxpayer. However, it may also be used for other, non-tax-related purposes, such as discussions on social benefits or pensions.

The NTIS permits the declaration and the management of almost all types of taxes online, apart from inheritance and gift taxes. Taxpayers may also request relevant certificates. The NTIS has around 20 million registered users, and almost 3.7% of the NTS workforce, approximately 20,000 employees, works on maintaining its IT system.^[90] With the introduction of the NTIS, the tax administration did not reduce the number of its employees but, rather, made them more efficient. The system also provides sufficient information in real time to allow the NTS to send alerts to taxpayers, thereby preventing illegal or irregular transactions.

87. This is based on information obtained from a representative of the Korean Tax Administration during the Digitalization of Tax Administration Forum, organized in Seoul from 24-28 June 2019 by Inter-American Development Bank and the National Tax Service of Korea.

88. Id., based on the presentation delivered by JinJinn-Sook Pyo, a d (Deputy Director for the Division 2, Information System Development of NTS, in Korea).

89. E-invoices were introduced in 2011, and 99.9% of the B2B transactions are documented by way of e-invoices. The e-cash receipt system was introduced in 2005 and represents 9.7% of the 2018 GDP in contrast to payments by way of credit cards, which accounted for 44.6% of the 2018 GDP. The NTS also has excellent relationships with the tax administrations of other countries, and cross-border flows of information are another important source of data. In particular, Korea exchanges information with 141 jurisdictions worldwide under, at the time of writing this article, its 93 tax treaties, 12 TIEAs and 112 MACs, which permit the country to obtain data from abroad.

90. For more information, see the NTS website at https://www.nts.go.kr/eng/resources/resour_21.asp?minfoKey=MINF7420080211223143.

The cash receipt system was the first in the world to digitalize B2C transactions and, during its implementation, the government gave taxpayers incentives to request relevant receipts. These included a cash receipt lottery and deductions from income tax only with the cash receipts. There were also penalties for those who did not comply. Currently, 99.8% of registered businesses use the second system. The information that flows from third parties, together with digital e-invoices, permits the tax administration to make available pre-filled forms to taxpayers, thereby making the tax system as effortless as possible.

3.4.3. Tax compliance measures – VAT, cash receipt (B2C) and the e-invoice (B2B) systems

This section considers importance of the Korean VAT system and the importance of the credit card system, the cash receipt system and the electronic management of e-invoices. In 1977, VAT was introduced in the tax reform to simplify the tax system, integrating VAT with business tax laws. From 1977 to 1980, the invoice system was manual and certain invoices were scanned and digitalized. In 1991, the digital invoice was introduced, followed by the Home Tax System in 2004.

In order to be able to deal with tax evaders, the tax administration generated tables with the total amount of sales and purchases. Currently, action is taken ex ante to prevent potential fraud and evasion. Another important factor is the wider use of credit cards since 1980, with 7.9% credit card use in 1999 compared to 70.3% in 2017.^[91] Accordingly, the use of the credit card receipt system increased, and to incentivize its use the government implemented a credit card receipt lottery.

The two crucial measures in the tax infrastructure are e-invoice and the cash receipt systems. With the implementation of these systems, significant increase in tax revenues was observed together with the reduction in compliance costs, resulting in an estimated yearly savings of KRW 978.2 billion and great improvements in transaction transparency.^[92]

The e-invoice consists of two systems: (1) one for the issuance of the e-invoice; and (2) the other for the data analysis. With the data obtained from e-invoices in real time, an early warning system was developed in 2008 and launched in 2011. The system is programmed to send out 40 types of alerts when irregularities are detected, for example, low volumes of transactions, the receipt of illegal invoices, receipts of high numbers of invoices in specific periods, and the like. The basic alerts are sent directly to the local office, but, if it is a serious situation, the alert is sent to the regional office, in which case the taxpayer is also notified. Following the introduction of the early warning system, unconventional transactions were reduced by around 30%.^[93]

The cash receipt system was introduced in 2005. By the end of 2004, the use of cash was higher than credit cards, 61% versus 39%, respectively.^[94] The system is used in B2C transactions, where cash receipt system stores have to issue a cash receipt when a customer makes a purchase and pays in cash. Cash receipt system operators send this information to the NTS automatically on a daily basis. Once the cash receipt is issued, customers can use their expenses as a deduction against their taxable income, and the cash receipt system store may ask for tax credit.

The devices used by cash receipt system stores are: (1) point of sale (POS) terminals incorporated into large business; (2) Value Added Network terminals, i.e. information provided through telephones; (3) personal computers (PCs) connected to internet in the case of low-income stores; and (4) portable terminals for delivery operators. In 2011, these services were offered by way of mobile telephones. In 2015, the cash receipt system was integrated with the Home Tax System as outlined in section 3.4.2.2.

The system is mandatory for almost every business, with registration required within the first three months. In the case of non-compliance, a penalty for the amount equivalent to 1% of the income obtained during the time of non-compliance is imposed.^[95]

3.4.4. Data privacy and taxpayers' rights protection

3.4.4.1. In general

This section focuses on the different tools used to protect the rights of taxpayers in Korea and how they all work. The first one is the Taxpayer Advocate (Ombudsman), created by law in 2010, to respond to taxpayer complaints or answer any questions from taxpayers. The ombudsman is a fully independent person from the NTS.

The second is the Taxpayers' Right Charter, introduced in 2010 with ten rights, mainly related to the presumption of innocence and rights related to the investigation process. In 2007, two more rights were introduced, regarding the notification rights and pre-assessment reviews. In 2018, the Charter went through a second review, as a result of which eight more rights were added, primarily relating to temporary bookkeeping rights, minimum investigation periods and the creation of the Taxpayers' Committee. Currently, the Taxpayers' Right Charter features 20 rights for taxpayers.

91. For more information, see Statistics Korea, available at <http://kostat.go.kr/portal/eng/index.action> (accessed 20 July 2020).

92. OECD, *Implementing Online Cash Registers: Benefits, Considerations and Guidance* (2019), p. 34.

93. *Supra* n. 88.

94. *Id.*

95. *Supra* n. 88, at p. 36.

The third measure is the creation of the Taxpayers Protection Committee (TPC), which aims to protect taxpayers' rights and interests regarding civil complaints or grievances and allows a taxpayer to request to stop an investigation in process. The TPC is an independent body of the NTS, organized at the NTS Committee, Regional and District levels. The system features two different processes for attending to a taxpayer's request. The first, regarding a request of assistance in tax investigation-related matters, involves the interaction of the taxpayer, the Taxpayer Advocate, the Director of the NTS Division in charge and the TPC.

The second process relates to the general question of assistance, with the interactions among the parties involved. The request process starts with a notification sent by the NTS to the taxpayer. The taxpayer then must file the complaint within 30 days before the expiry of the assessment period (five years maximum) and the complaint must be answered within the next 15 days, with a one-off extension of 30 days. Once the complaint is presented, the committee must review it at a TPC meeting and issue its verdict – accepting, accepting it partially or rejecting the complaint. In some cases, the complaint can be handled directly by the Taxpayer's Advocate or the notice can be corrected by virtue of the authority of the Director of the Division in charge on the request of the Taxpayer Advocate.

3.4.4.2. Addressing privacy issues

With regard to issues of privacy, the NTS has instituted some specific ways in which to protect data. These are: (1) security reinforcement among NTS staff by improving security awareness, strengthen the security audits and subdividing the taxation data access permits; (2) protection against hacking by giving to each taxpayer one number that is different from their tax IDs and having encrypted information in their computers; (3) security against the loss of information by way of outsourced services by centralizing systems; (4) complete separation between intranet and internet by working on two different computers, one for intranet functions and the other for internet; and (5) computer security by the use of an internet protocol (IP) management system, where each IP must be registered with the NTS and the unauthorized IPs are automatically blocked.

The NTS also works with the National Cyber Security Center (NTS CSC) to protect the NTS against public cyberattacks and prevent malicious cyberattacks against NTS personnel. The centre monitors and analyses threats of cyberattacks 24/7, 365 days of the year, taking measures in cooperation with other agencies to detect attacks, analyse correlations between events and measure risk levels. With regard to any potentially threatening event, the system responds with a four-phase process and eight security methods.

3.4.5. EOI

Standards for the EOI, which has more and more participating countries, require a degree of technological, computing and administrative capacity. Korea, has participated in the global initiatives led by the OECD and G20 to deal with offshore tax evasion and avoidance by concluding agreements to exchange tax information with an increasing number of countries.^[96] Moreover, Korea is one of the countries that has signed the Multilateral Convention on Mutual Administrative Assistance in Tax Matters in March 2020. In addition to tax treaties to avoid the double taxation, Korea has also concluded numerous TIEAs with countries, including tax havens.

In its domestic law, measures to counter tax fraud and evasion by way of financial transactions in borrowed names and suspicious cash transactions have been regulated in the Law on Reporting and Using Specified Financial Transaction Information.^[97] The provisions included in the Law permit the NTS to access data held by the Korea Financial Intelligence Unit (KoFIU) in instances where there is evidence of alleged tax evasion and where KoFIU data is used to collect taxes in arrears. This well-designed and functioning internal system improves the capacity of Korea to engage in the efficient EOI, both automatically and on request.

3.5. Summary of lessons learned

As the examples of China (see section 3.2.) or Korea (see section 3.4.) have shown, clear strategic planning and detailed goals for each stage of the digitalization is crucial. A well-developed strategy before the broad adoption of new technologies or IT systems gives rise to greater chances of success, as China has done with its pilot programmes in the more advanced tax bureaus such as those in Jiangsu and Shenzhen (see section 3.2.3.). In this way, successful experiences and shortcomings from the pilots can be learnt and improvement can be made accordingly. Similarly, as the example of Korea discussed in section 3.4. indicates, following the steps and gradually increasing the level of digitalization of the NTS has proved to be successful, thereby making the NTS one of the most digitalized tax administrations in the world. In the same way, since 2014, India has been steadily and swiftly transforming its tax administration through technological implementation in the field of litigation, dispute resolution or transfer pricing (see section 3.3.). From e-filing and e-assessments to recent web-based hearings before the court, India is successfully digitalizing its tax administration.

96. On 13 March 2019, Korea issued a revised version of the Regulations to implement Automatic Exchange of Financial Information – KR: Regulation on the Implementation of the Automatic Exchange of Financial Information according to the Information Exchange Agreement.

97. KR: Law on Reporting and Using Specified Financial Transaction Information.

When adopting the strategy, a whole of government approach that addresses not only technological, but also social and cultural change is of crucial importance. Currently, in addition to capable attorneys, skilled professionals who understand technology, data scientists and risk specialists are also in demand. Tax Administrations must adapt their human resource policies and acquire new competences in a constantly changing environment. They need to employ staff with special skills, as well as professionals who can create new business models and have the know-how to work with modern communication channels. As the NTS example discussed in section 3.4. proves, the tax administrations must be prepared to invest in new technologies and train their workforce to be up to speed with the 21st century digital revolution.

Cooperation between the tax administrations and the private sector may give rise to a bigger impact for the digital revolution. The implementation of Blockchain invoicing in China with the assistance of Tencent was a successful experience of such public-private partnership (see section 3.2.3.1.). Similarly, India has been developing the platform Project Insight by way of a public-private partnership to ensure the effective utilization of information by the tax administration (see section 3.3.2.2.). The tax administration may team up with the pioneers in the private sector, and use the commercially developed technologies to improve the public management system. The private sector can, in turn, benefit from such cooperation, as the overall efficiency of tax services is improved, and certain tax procedures, such as declarations and tax refunds, can be simplified.

4. Considerations for a Successful Tax Administration Policy

4.1. In general

Developing a sustainable tax environment requires a strategy that is adjusted to a country's needs and political system. It can be observed that the successes of countries are based on the appropriate implementation of comprehensive reforms, which often start out with a whole-of-government approach, as in Russia,^[98] where e-invoicing systems permit immediate access to data on the sales of firm and in Brazil,^[99] which even make daily cash operations available to the public. Estonia serves as a good example, as it has put in place an e-government system. This small country, which is one of the most digitalized in the world, has worked to resolve how government entities can work together to address issues and has instigated a government-wide digitalization plan.

The current massive production of data calls for governments to adopt a strategic approach to their use of data and strengthen public sector intelligence. A unified system, which could work for all government agencies, should be an integral part of a government's mission. The plan should be to provide the best quality of services to the taxpayers, instead of just focusing on the role of auditors. With the adoption of digital solutions, such as pre-filled tax returns, the transparency of available data increases, and so should the mutual trust between taxpayers and tax administrations. In sum, digital transformations should establish a path to facilitate the compliance process and ease the process for both tax administrations and taxpayers.

The key to a robust digital transformation requires having a technically skilled workforce, with specialties in digital technologies, data science, statistics, psychology, communications and other interdisciplinary fields.

In spite of ever-decreasing budgets, the public sector aims to accommodate growing demands for better and more efficient public services. Putting in place improved organizational arrangements and coordination mechanisms could significantly increase tax compliance, yield more revenue, and, therefore, contribute greatly to a country's socioeconomic development. The cultural change associated with digital transformations also has the potential to improve and streamline the tax environment.

4.2. Compliance models

Korea has taken a bold move and stepped away from an ex post approach, where taxpayers fill out the tax return first and, after that, the tax administrations may conduct an ex post assessment manually, to an ex ante approach, where the data flows directly from third parties to the tax administration, thereby permitting pre-assessment verification and pre-filled tax returns. Similarly, in 2019, India announced that soon it would have pre-filled income tax returns and that these returns would be processed within 24 hours with tax refunds issued simultaneously. Facilitating compliance and advancing it is supposed to lead towards the real-time compliance model, which ultimately is the goal of tax administrations. Real-time compliance indicates that transactional data are transferred to tax administrations in real time, without the necessity of submitting it separately to the tax administration.

Currently, most tax administrations have not yet introduced digital measures to facilitate better relations with taxpayers. This manifests itself in the long delays in tax compliance, often taking between three to five years to finalize tax assessments. In contrast, countries that have introduced digital solutions in interactions between tax administration and taxpayers, particularly in the indirect tax area, compliance occurs almost immediately or the process is significantly reduced, being a maximum of 90 days. This discrepancy in length in respect of the process can be attributed to compliance model differences. Under the traditional model,

98. For more on Russia, see C. Giles, *Russia's role in producing the tax man of the future*, Fin. Times (FT) (28 July 2019), available at www.ft.com/content/38967766-aec8-11e9-8030-530adfa879c2 (accessed 20 July 2020).

99. For more on Brazil, see Institute of Chartered Accountants in England and Wales (ICAEW), *Digitalisation of tax: International perspectives* p. 18 (2019 Edition), available at www.icaew.com/-/media/corporate/files/technical/information-technology/thought-leadership/digital-tax.ashx (accessed 20 July 2020).

a taxpayer must request data from different sources, then analyse and prepare the data, calculate the adjustments to prepare and submit the return, then wait for a potential audit. However, with the implementation of solutions based on new technologies, some of these processes have become obsolete, as the flow and analysis of data is managed automatically. On the other hand, as the example of Korea indicates, compliance models based on digital solutions use IT programs, which extract data directly from the source systems and pass it directly to the tax administrations, which process the pre-filled forms. Accordingly, the tax administration can conduct an e-audit, e-assessment and e-match, all with the readily available information.

4.3. Should a rapid or a gradual approach be adopted to implement the technology in the tax administration?

How the technology should be introduced into the administration is one of the considerations that governments should evaluate before introducing technology into their systems. The key question is whether implementation should be gradual on a pilot basis, introduced in phases or whether the entire system should be converted all at once adopting the “big bang” approach. How the extant system of the tax administration should be integrated with technology depends on various factors, such as the size of the population of the country in question, the effect on taxpayers and technical issues such as data migration and/or conversion and/or interface requirements.^[100]

The adaptation process with regard to a successful digital transformation can be approached in two different ways. The first option involves retaining the old, traditional system, while, at the same time, implementing the new digital system. This solution might be more costly and more labour-intensive, as the tax administration would have to maintain two systems at once. However, it is less risky, as taxpayers who are not already familiar with the new technology used by the tax administrations would have the option to continue using the traditional system as they start learning how to use the new digitalized process. The second option is the big bang approach, with countries adopting new technologies and switching the system completely within a short period of time, thereby making it mandatory for taxpayers to use the new digitalized systems. This approach is riskier, as both tax administration officials and less digitalized taxpayers may struggle to adapt to the system, but it helps facilitate a quick transition. Both approaches have their advantages and disadvantages, which should be evaluated by the governments bearing the following factors in mind.

The advantage of implementing by way of the big bang approach is that data migration is simpler and there is no need to operate the existing and new system together. It is also cost-effective to implement the system all at once. However, the disadvantage is that, if the big bang approach is not tested and implemented properly, the entire system will fail. For bigger economies with large populations, this approach may not be suitable as a great deal of training is required for users. For such economies, the system can be gradually introduced in phases by way of prototypes, evaluating the results at each stage.

Such considerations should always be taken into account by administrators before implementing technology into their tax systems. Even though it might be desirable to find a one-size-fits-all solution, there is no perfect strategy for the digital transformation process. As there are a number of circumstances that must be taken into account, the right approach depends on each country's characteristics, its current level of development, the available resources and its institutional capacity.

4.4. Tax transparency and privacy

Technology already affects tax administration in a number of ways. Digital technologies have helped to streamline tax collection procedures, thereby reducing taxpayers' compliance costs and enhancing organizational transparency. On the other hand, they have also given rise to many issues regarding the rights of taxpayers and their protection. Questions surrounding data privacy are emerging almost as quickly as the development of the technology itself. Moreover, new cyber-security threats are becoming apparent, increasing levels of mistrust. Consequently, it is important to develop a structured approach to identify risks and potential incidents of security breaches, taking into account that ensuring privacy and security protection is critical to preserving trust in government institutions and foster secure interactions with government by digital means. A number of questions follow on from this situation.

First, the tax administration's sources of information are already expansive. Traditional sources of taxpayer information include tax returns, third party information from, for example, banks and other financial institutions, the employers of taxpayers, business partners and other government agencies. With digitization, new sources of information, such as social media, surveillance cameras and the Internet of Things, have become available,^[101] thereby enlarging the available information in an unprecedented manner.

100. M. Cotton & G. Dark, *Use of Technology in Tax Administrations 3: Implementing a Commercial-off-the-Shelf (COTS) Tax System*, Fiscal Affairs Department, International Monetary Fund (IMF) (Mar. 2017), available at www.imf.org/~media/Files/Publications/TNM/2017/tnm1703.ashx (accessed 29 June 2020).

101. S. Stevens, *Cutting-edge techniques to collect information from taxpayers*, in *Tax Transparency* ch. 5 (F.B. Yvasliar & J. Hey eds., EATLP Intl. Tax Series, vol. 17 (IBFD 2019) Books IBFD).

Second, cutting-edge data analysis techniques are the tools tax administration can use to deal with these novel and very large amounts of information. For instance, some tax administrations have already applied Big Data and AI to monitor taxpayer behaviour and select targets for tax audits.^[102] Tax administrations can automatically cross-check the information provided by taxpayers and that they have obtained information obtained from other sources, thereby detecting any underreporting or non-reporting of income.^[103] For instance, India is working on the “Project Insight” proposal, which would conduct data mining based on the taxpayer’s behaviour and would track his social media accounts (see section 3.3.2.2.). Such technologies have the potential to increase the power of the tax administrations. As Hatfield (2015) predicts, there will be a “tax surveillance system” within the next 25 years.^[104]

There is no doubt that a digitalized “tax surveillance system” could benefit the tax system. It would increase tax transparency, thereby deterring tax evasion and alleviate the compliance gap.^[105] It could also extend the use of pre-populated tax returns, which can simplify tax compliance procedures and reduce the compliance burden for taxpayers.

As digitalization could significantly increase tax transparency, it could also give rise to a large number of questions regarding the protection of taxpayer privacy and data. For instance, data over-collection, data misuse, the proportionality regarding routine data mining and potential bias from the data analytical algorithms are all issues that could arise.

Taxpayers face a growing power of tax administrations fuelled by digitalization. As digitalization expands the capabilities of governments, the protection of the rights of taxpayers, including the right to privacy and data protection should be considered in light of the broader societal debates on good tax governance.

5. Conclusions

The tax environment is changing fast, so the past is not a good guide for the future. It is time for real-time tax compliance and the modernized assessment and collection of taxes. The role of tax administration is also changing. They are no longer auditors of outcomes, but rather certifiers of systems. One of their goals is to promote growth, gaining a competitive advantage in countries that provide good services, i.e. using technology to provide certainty, security and, therefore, improving competitiveness. As a result, tax administrations need professionals who have a good understanding of technology.

All of the examples discussed in this article present a technology implementation for the purpose of resolving different issues. Moreover, a whole range of technologies is being adopted. The Fourth Industrial Revolution brought with it a new wave of disruptive technologies, such as AI, Blockchain, Big Data, the Internet of Things and 3D printing, among others. New types of transactions also started to appear, together with the increased digitalization of the economy. Globalization has influenced the economy, thereby allowing taxpayers to easily access foreign markets and take advantage of tax avoidance schemes. The great amount of information, the high expectations regarding the quantity and quality of services offered by tax administrations and the necessary protection of taxpayers’ rights have all compelled tax administrations to change their operational models.

Consequently, the discussions regarding the implementation of new technologies for tax administrations do not only evolve around benefits and possible solutions, but also potential threats and scepticism. One of the reasons for such scepticism centres on the potential threats to data privacy and protection. In the long run, this has to do with the protection of taxpayer rights and privacy as a prerequisite and/or precondition to the effective tax collection. The proper answer to these concerns is to promote voluntary compliance based on government trust. On the other hand, a tax administration’s ability to address this issue fairly and transparently poses major concerns for taxpayers, who are understandably less willing to comply with the new solutions. Finally, when it comes to data protection, another relevant point is how tax administrations can protect the data and also offer transversal digital services, i.e. in intersecting the systems of other government agencies.

102. OECD, *Advanced Analytics for Better Tax Administration* p. 20 (OECD 2016). Based on the OECD 2016 survey, 15 out of 16 countries that responded have applied advanced analytics for audit case prioritization.

103. Id.

104. M. Hatfield, *Taxation and Surveillance: An Agenda*, 17 Yale J.L. & Tech., p. 319 (2015), available at <https://yjolt.org/taxation-and-surveillance-agenda> (accessed 29 June 2020).

105. Id.