1 Tapping Taxes

Digital Disruption and Revenue Administration Responses

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1.1 Introduction

Tapping taxes is a metaphor for exploring whether the next wave of digital disruption will have as dramatic an impact on the future management of revenue systems as it continues to have on business. In the future, digital integration of revenue systems could involve seamlessly tapping into the digital footprints of people and businesses. This chapter discusses some of the current technological innovations and trends that would make seamless integration possible. Examples are used to illustrate their potential as stepping-stones toward a future in which people tap to transact, their tax returns are seamlessly and automatically prepared, and their tax is calculated and paid. Indeed, depending on the policy options that governments choose, tax returns themselves could disappear. This chapter explores the capability implications of such a significant digital disruption for revenue administrations, practitioners, and taxpayers. Lastly, the chapter discusses some of the legal, ethical, and capability challenges with respect to data governance that tax administrators face operating in a world of digitally integrated living and working.

Although this chapter focuses on intra-country analysis, many of the issues arising have broader inter-country implications, given the varying pace of change in different tax jurisdictions and their increasing interconnectedness. While it is beyond the scope of this chapter to explore these, it is acknowledged that these are key issues with which many taxpayers, tax authorities, and tax advisors need to engage.

1.2 Digital Innovations and Trends

1.2.1 Transforming the World of Business

Technological innovations—particularly the rise of online business via internet platforms, social media, and (the now largely ubiquitous) smartphones—have rapidly changed how people work and live and how businesses operate. This looks set to continue. According to Deloitte Insights (2019), digital transformation over the past decade has been fueled by three big game-changers, as follows:

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(i) The development of digital experiences, not only as services to customers, but also in how organizations interact with their employees, stakeholders, and others. These are supported by algorithms, robotic process automation, and predictive analytical tools;
(ii) Data analytics and its ability to generate customer and organizational insights and, increasingly, the power to predict. Accompanying these opportunities are significant challenges in ensuring the quality of data, determining how to integrate data across various systems and divisions within the organization, and identifying the external data to obtain and match. Governing all these issues legally and ethically is becoming central to the reputation of organizations;
(iii) Cloud computing, initially used to shift workloads and improve capacity, is increasingly yielding new ways of gathering and making use of more data more quickly, and using cloud-native services to create new products and services.

These game-changing innovations have enabled businesses to speed up their processes, rapidly develop and adapt their products and services, and reach more customers, both in their neighborhoods and across the world. It has also led to new digital products and services, as well as the rise of new digital businesses such as Amazon, Uber, and Airbnb, which have disrupted industries and transformed business models.

However, the impact of these innovations has been broader than simply affecting individual businesses and disrupting certain channels and industries. A new digital-based economy is developing, enabled by digital platforms that are transforming a wide variety of markets and work arrangements (Kenney and Zysman 2016). Moreover, innovations are arriving on the scene at an increasingly fast pace: Driverless cars are already being tested in major cities, drones are delivering parcels, and three-dimensional printing is turning manufacturing and production on its head. Beyond business, ways of working and engaging with the world have also been transformed. The gig economy is redefining working relationships, and the social isolation requirements during the pandemic have proven that many employees can work remotely, at least for a short time.

Mobile technology enables constant communication, consumption of news, shopping, and entertainment, regardless of the consumer's location. Finances can be managed anywhere, at any time, and there is no need to carry cash or collect receipts with tap-and-go cards. Their use has become ubiquitous, with cash transactions being discouraged as a health risk during the pandemic. This break with the old is also evident from the discontinuation of checks in many countries; for example, South Africa recently announced that checks will not be accepted from 1 January 2021. Apple's Apple Pay (Apple 2019) goes further, being more akin to a virtual currency, storing currency in digital wallets in the cloud, and allowing payments from an iPhone. This is opening up the world of digital currencies for everyday transactions.

Smart homes are also on the way, with voice activation of security and music systems via smartphones becoming commonplace. Everyday appliances are

increasingly being transformed into devices capable of being connected to and controlled via the internet, resulting in an immense focus on "the internet of things" (IBM 2019). Disruptive financial trends, emerging new business models, and dramatic changes in the very functioning of businesses and their staffing have driven revenue administrations to adapt to remain effective and efficient.

1.2.2 Transforming the World of Tax Administration

Revenue systems and their administrators have proven to be resilient adaptors over years of rapid change. They have had to be, to keep up with taxpayers! Services needed, risk responses, and the collection of data and revenue changed significantly. It is now commonplace for routine data processing to be largely automated, and machine learning is used to respond automatically to routine inquiries. Data exploitation has gone from simple matching of third-party data to detect undisclosed income, to smart data analysis personalizing digital tax returns and identifying risks for intelligence-led compliance activities.

The coronavirus disease (COVID-19) has tested the resilience and adaptability of people and technology, as businesses have worked to maintain continuity during lockdowns that forced them rapidly to equip most of their staff to work remotely to protect their health. Revenue authorities proved their flexibility by significantly scaling back their compliance and debt collection activities in recognition of widespread financial distress while increasing taxpayer interactions and communications to support their governments' responses to the pandemic. They have had the unenviable challenge of balancing empathy while still protecting revenue and safeguarding tax compliance (International Monetary Fund 2020). Their ability to flex their systems, redeploy staff, and implement rapidly at scale has made them the key agencies for delivering government economic stimulus and business support measures.

The heart of today's revenue administrations is their huge databases, and the flow of data continuously replenishing them is their lifeblood. Data is not just a valuable tool for revenue administrations; revenue administrations have the largest and most comprehensive datasets in their nation, capable of providing insights into their people and businesses. Revenue administrations' data exploitation is increasingly personalized to taxpayers. Prefilling data helps taxpayers file accurate returns. Contact center officers and debt collectors can access personalized taxpayer profiles to provide personalized advice or tailor a debt repayment arrangement. This also helps identify compliance risks and develop counteracting strategies; and provides vital modeling for treasuries and governments in developing and implementing policy. For example, the ability of some administrations to analyze payroll data collected fortnightly or monthly provided invaluable intelligence for their governments in assessing the pandemic's impacts on businesses and the labor force, and the effectiveness of the government response. Increasingly, data is also at the heart of international collaboration on multijurisdictional compliance risks, and cross-agency and law-enforcement collaboration aimed at combating serious crime and other grave risks that require rapid, multiagency responses, including terrorism.

While engagement with revenue systems has become increasingly digital, they have fundamentally remained separate. Their core asset, their databases, are enhanced by combining data with third-party reported data and increasingly scraping publicly available information, but this process continues to be carried out predominantly in-house and is controlled by revenue authorities. However, it is unclear whether this is a sustainable model or is facing digital disruption.

The next wave of technological innovations (particularly artificial intelligence) (Hall and Pesenti 2017), combined with robotic automation and blockchain's ability to offer new levels of trusted transactions (Deloitte Insights 2019), could be a game-changer that creates a new level of personalized services, making it feasible for tax services to be offered securely and cheaply as a by-product of digital transactions. Such a development would profoundly impact the operating models of tax administrations. In this future model, instead of reporting data to revenue authorities, revenue systems would connect to customers' personalized profiles, allowing those customers' tax obligations to be managed as part of a bundle of services. In other words, the population of returns, calculation of tax or refunds, collection of tax, risk assessment, and compliance may all be integrated and managed seamlessly within a taxpayer's digital footprint. Based on current capabilities, online financial institutions are most likely to be able to provide these services seamlessly as part of the institution's personalized, automated services (see Section 1.4.1).

There are already examples of businesses working with artificial intelligence. Its ability to self-learn, combined with machine-learning robotic processes, is making it possible to move beyond automating straightforward services to create sophisticated, personally tailored, digital experiences. Netflix is a leading example of how to unlock personalized digital experiences, with its uniquely tailored streaming services that learn your tastes and adapt their offerings accordingly. Similarly, working examples are already in operation around the world using blockchain's ability to provide secure and trusted transactions. This includes "keyless," but secure, signature systems for accessing health records in Estonia, fraud-combating tools developed by Barclays Bank, and smart contracting that enables the automation of condition-based payment settlement between parties (Marr 2018). The public sector is also exploring its potential; for example, the Department of Work and Pensions of the United Kingdom (UK) is piloting the use of blockchain to manage benefit payments, using (with claimant approval) mobile phones to track applications and monitor benefits spending (Krishna, Fleming, and Assefa 2018). The use of this technology is also being explored to collect taxes at the same point where transactions are recorded (Krishna, Fleming, and Assefa 2018).

Some organizations are already developing services that could replace those provided by revenue authorities. For example, Australia's Commonwealth Bank offers its online banking customers the option of analyzing their transactions at any time to identify potential claims for various government payments. Another example is Wise Tech Global, a logistics software and supply chain execution business that is developing automated calculation and payment of value-added

tax (VAT) for 120 countries. This firm is engaging with the UK's Her Majesty's Revenue and Customs (HMRC) on the Making Tax Digital (MTD) program (see Section 1.4.2).

An important consequence of this model is that private sector service providers collect and analyze taxpayer data. There are many potential implications of the collection and exploitation of data as a commercial asset by the private sector, including using it for public purposes. Academics are currently exploring the potential for private sector capabilities to be used to monitor compliance with laws; for example, vehicle manufacturers could digitally analyze car performance to monitor if recidivist drivers are sticking to personalized speed limits (see Section 5.2.1).

1.3 Stepping-Stones to Digitally Resilient Revenue Administrations

This section looks at the developments that could be stepping-stones on the path to a digitally integrated revenue system.

1.3.1 Is Transformation in Financial Services the Pathway to Tap-and-Go Personal Tax?

The significant digital transformation underway in the financial services industry is the most likely stepping-stone for individual taxpayers to become tap-and-go clients. Financial services or institutions are already an important source of tax-related data for revenue authorities, but this data is becoming much richer as people increasingly transact digitally, particularly if they choose one provider for all their financial dealings. They could potentially offer a service analyzing customer transactions and identifying and collating tax-related data. The leading edge of financial services is at the forefront of innovation, but the industry is being digitally disrupted by new competitors such as Apple and is struggling with its bricks-and-mortar legacy.

The World Economic Forum (WEF), in conjunction with Deloitte Consulting LLP, conducted a large-scale review of the future of the financial services sector (WEF 2015), involving significant consultation with established institutions, financial services start-ups, academic scholars, and industry observers. A key conclusion was that retail banking must comprehensively change from physical branches to a digital platform. They also foreshadowed that "banking as a platform" would require banks to broaden their offerings, by bundling (or even integrating) services offered by third-party financial service providers such as financial managers. The complex, disruptive impact of digital innovations on every aspect of retail banking is modeled in Figure 1.1.

The impacts of digital disruption are already evident. Customers have rapidly embraced the convenience of digital banking for transferring funds, automating bill payments, and applying for loans from tablets or smartphones. Access to these services is expected to be 24/7 via easy-to-use and glitch-free applications, with

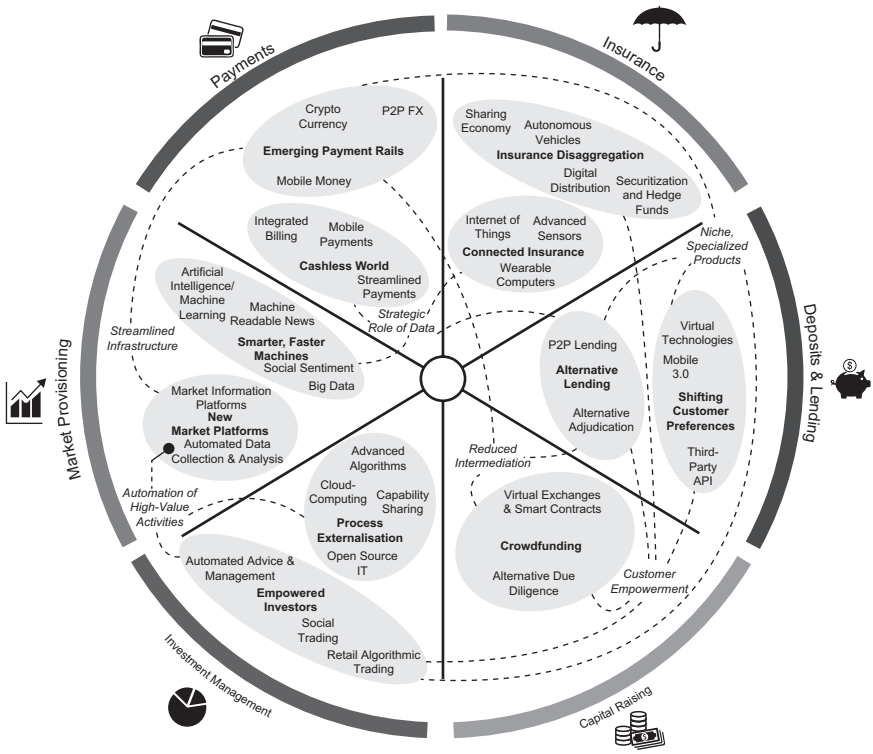

Figure 1.1 World Economic Forum's Impact of Disruptive Innovation on Retail Banking. Source: World Economic Forum. 2015. *The Future of Financial Services: How Disruptive Innovations Are Reshaping the Way Financial Services Are Structured, Provisioned and Consumed*. Vienna: World Economic Forum. www2.deloitte.com/global/en/pages/financial-services/articles/the-future-of-financial-services.html// (accessed 17 September 2019).

as little paper use and human contact as possible. Many customers have access through their banking platforms to related services, such as buying, selling, and monitoring shares; buying and renewing insurance; and other financial products. More customer-centric services are becoming available, as the ability to pay by mobile phone becomes a part of normal retail transactions. This trend has accelerated during COVID-19, with cashless transactions becoming the norm even for small businesses.

As banks' artificial intelligence functions and robotics become increasingly sophisticated, they may exclude other service providers from their platforms and replace them with automated services, such as wealth management, based on customers' unique profiles. These services will be able to calculate the best investment opportunities and interest rates and identify the best loan providers

available for a specific customer. Given regulated advice requirements to know their clients' financial affairs comprehensively, it will not be a large step to add new tax-related services, such as seamlessly compiling tax returns.

Future banking experiences will be characterized by shifting customer preferences. There is already evidence of virtual channels providing broader functionality. This will become increasingly customer driven, based on their value propositions and experiences. Providing seamless customer experiences, with both internal and external service providers delivering real-time online and mobile solutions, will become the new norm. The development of "open banking" standards is key to growing this functionality, enabling financial data to be shared across multiple platforms.[1] Such standards are being rolled out around the world.

Virtual interaction is becoming increasingly embedded in customers' daily lives. A (largely) cashless society is likely in the not-too-distant future, although not ideal for all (Prabhakar 2020). eWallets and M-Pesa are but two of many examples where mobility and connectivity create an opportunity to interact on a mobile platform (Ndung'u 2018). Confidence in interaction is increasing as advances in geotagging, biometrics, and tokens improve the protection of parties to transactions from fraudsters. A cashless environment could lead to consolidation of the payment market, providing visibility into most of a customer's payment activities, valuable data on their lifestyle and preferences, and their wealth creation and management.

It will be a challenge to connect revenue systems to this disaggregated yet consolidated digital world. If revenue administrators want to follow their current model of third-party reporting data to be ingested and compared to direct reporting by taxpayers, the model is likely to be more challenging in the future. It will need to be gathered from a complex digital footprint. Platforms will include giants such as Google and Amazon, as well as a myriad of other sources such as local financial technology start-ups. Alternatively, data gathering and analysis could be outsourced; and tax return prefilling, calculation, and payment could become a fully integrated service, as part of the bundle of services offered on financial services platforms.

To illustrate the challenge and opportunity of interconnectedness, Parkinson et al. (2018) developed a "digitally extended self" model that illustrates the complexity and scale of the data generated by an individual's digital interactions. Their model consists of five concepts:

(1) A digital footprint, that is data descriptive of an individual laid down as a result of his/her using, or being observed by, computing devices;
(2) A third-party digital footprint, that is, digital footprints created by an individual or computer system that are descriptive of another individual (the data subject);
(3) A digital mosaic, that is, a collection of digital footprints that can be used to create a picture of a person (a simple digital mosaic consists of a person's own digital footprints, whereas a full digital mosaic includes the collection of both an individual's own and third-party digital footprints);

(4) A digital persona, that is, a model of an individual created by analyzing his/her digital footprints and/or other digital personas, and (optionally) additional second-level data; and
(5) A digitally extended self, that is, the combination of the foregoing elements, to provide the fullest possible digital representation of an individual.

Today, revenue authorities routinely collect data at levels (1) and (2). Figure 1.2 portrays the various data sources generated in the financial services of the digitally extended self from a wealth management perspective. It is a much richer picture, and of greatest relevance to revenue administrations is its ability to generate most of what is needed for preparing and calculating personal tax.

Figure 1.2 illustrates the various digital persona that can be created based on an individual's interactions and participation in wealth management. The advances discussed above, such as open banking, will result in data (currently generated predominantly by traditional financial institutions) expanding through the multitude of new entrants to the platform environment. Even under the current model of third-party data reporting, tax authorities will benefit, as they will receive more accurate and real-time information from a variety of sources. Compliance costs regarding data capturing and analysis might decrease, given the potential for seamless, standardized reporting.

1.3.2 Will Transformation in Business-to-Government Tax Services Make Business Tax Seamless?

The leading edge of innovation in business-to-government digital services is to embed tax and other requirements into commercial software that makes business reporting and transactions a by-product of their normal business and accounting processes. To achieve this revenue, authorities are developing an ecosystem of application programming interfaces in partnership with software developers. For example, in Australia, Single Touch Payroll-enabled accounting software automatically reports payroll information such as salaries and wages, pay-as-you-go withholding, and superannuation when employees are paid.

The MTD initiative in the UK is a state-of-the-art example of digital business-to-government tax service changes. This scheme, which commenced in 2019, compelled businesses to switch to digital to manage accounting practices, thereby automating e-filing for VAT, and has even greater ambitions with respect to other aspects of tax service digitalization. The scheme builds on a process that began with the creation of online filing at the turn of the millennium (Lymer, Hansford, and Pilkington 2006). Online filing is now available for all major UK taxes for business taxpayers as well as individuals, and 93.95% of all taxpayers who filed a 2018–2019 personal tax return used this service in the latest tax year (by 31 January 2020 for the 2018–2019 tax year) (HMRC 2020a).

More recent changes have included the creation of online business "accounts" that enable any business (or its suitably authorized advisors) to view the status of their tax affairs at any point. However, the MTD, as the newest branding for

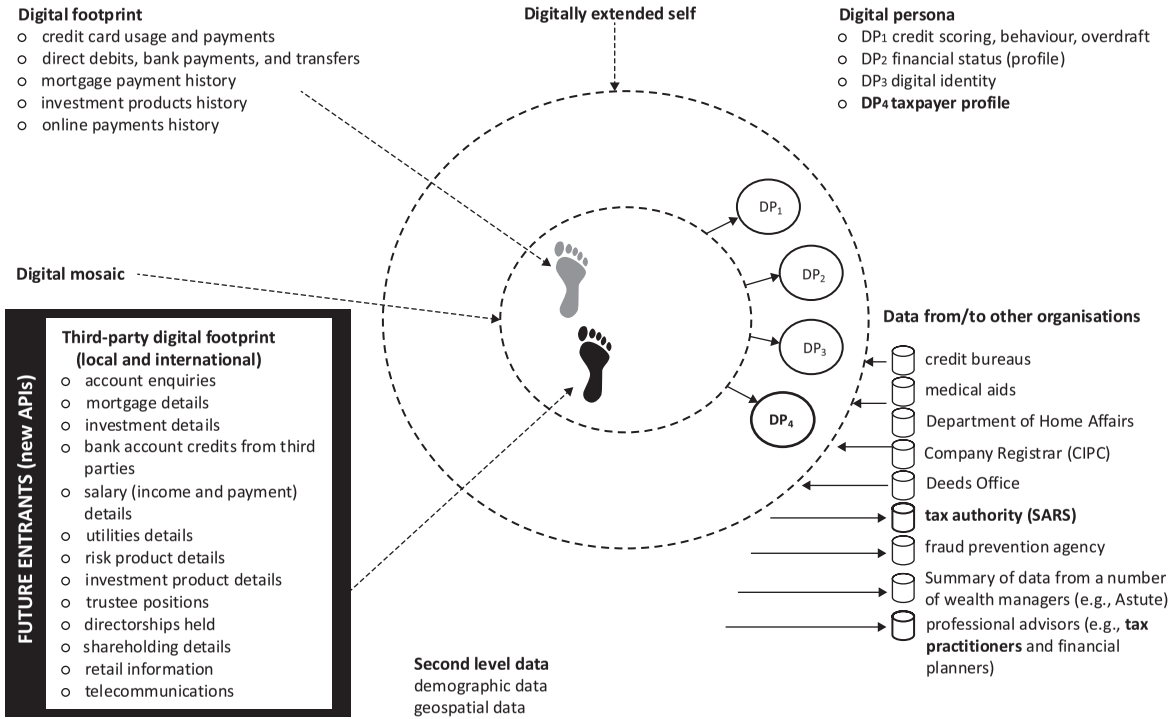

Figure 1.2 Digitally Extended Self from a Wealth Management Perspective. API = application programming interface, CIPC = Companies and Intellectual Property Commission, SARS = South African Revenue Service. Note: Although this figure refers to South African institutions, their functions are globally applicable and relevant. Source: adapted from Parkinson, B., D.E. Millard, K. O'Hara, and R. Giordano. 2018. "The Digitally Extended Self: A Lexicological Analysis of Personal Data." *Journal of Information Science* 44(4): 552–565.

the development of tax-related e-services, marks a major change to the scope of service developments. It requires business customers to use approved software to generate and send their quarterly VAT return from their digital records, rather than logging in to the HMRC portal and typing in the information. In a departure from previous practice and common international practice, in April 2019 it was made compulsory for all businesses with a taxable turnover above the VAT threshold (£85,000). This is a good example of the potential for innovative tax solutions that are digitally mediated. The various implementation delays experienced also illustrate the policy and operational development challenges to be faced. This illustrates how difficult it is to progress such schemes in practice, even when technological challenges have been overcome and the political will to proceed has been secured.

The UK government announced the MTD scheme in 2015 (in Budget 2015) and formally launched it in December 2015, running a consultation on the proposals from August 2016 (HMRC 2017). It envisaged that this integrated system would become a key platform for its plans to be one of the most digitally enabled tax services in the world. The scheme (or, more accurately, series of schemes under a headline banner) addresses several different aspects of creating a digital interface with the UK tax authorities. The key focus of this work narrowed in scope after initial public consultations, moving businesses engaging with VAT to a digital-only solution from April 2019. While this may not sound that radical, since many UK businesses were already e-filing their tax returns (as is the case in many other jurisdictions), this was only digitalized at the point of entry into the HMRC system. In contrast, the new rules have created "end-to-end" digitalizing from the underlying electronic accounting system onto which automated filing is "attached" via an application programming interface platform (HMRC 2018). Under MTD rules, files once digitalized must remain in digital format through whatever processes the business (or advisors) undertakes on its records to produce the content from which VAT filing is performed.

This has created key challenges for the accounting software industry, that is, to bring to market products enabling all firms that file VAT accounts to do so electronically. Although businesses below the VAT threshold need not switch to digital accounting, many are doing so. This has created a significant shift from paper-based or simple spreadsheet record-keeping (as the mainstay of many smaller [and even some larger] businesses) to electronic accounts. This means that most businesses turning over more than £85,000 per year will now account entirely digitally. Although this currently equates to 44% of UK businesses at most (Department for Business, Energy, and Industrial Strategy 2020), those not included will mostly be very small businesses with no employees. Importantly, it provides a platform from which other e-services can be launched across tax interactions and other areas of government if the implementation challenges of such provision can be overcome and suitably managed.

By March 2020 (HMRC 2020b), 1.4 million out of 5.94 million UK businesses had engaged with the MTD program (Department for Business, Energy, and Industrial Strategy 2020: Table A), including 280,000 businesses operating

below the VAT threshold who voluntarily joined this scheme earlier than required. The scheme was credited with collecting an additional £223.5 million in tax revenue, largely because of the accuracy gains achieved by end-to-end digital record keeping. This will grow significantly from April 2023 when income tax assessments for businesses and landlords (for all businesses turning over more than £10,000) will be added.

This UK innovation provides possible benefits to revenue authorities in terms of data access and integrity, inbuilt audit capability (particularly if eventually used in combination with blockchain technologies), and settlement process streamlining. However, it also creates challenges in maximizing this potential with respect to the skills base needed both by the revenue authorities and within the advisor community. With respect to compliance, in particular, it requires a significant change in the mix of skills needed by advisors to cater to smaller clients. While the MTD entails significant extra costs for all parties involved, it is hoped that, over time, these investments will be outweighed by the benefits offered to all parties by the move to digital record-keeping and tax payment compliance (e.g., better data availability at lower cost and lower regulatory "friction" for the taxpayer, increased data integrity and availability for the revenue authority, and a shift to higher-value support provision and enhanced services from advisors to their clients) (HMRC 2017). It will also bring tax affairs ever closer to real time, both for tax reporting and the settlement of tax liabilities (HMRC 2020b).

1.4 Capability Challenges: The Robots Are Here

Technology innovations are enabling the development of new digital businesses and the reinvention of incumbent businesses, which must adapt if they are to compete. The story is no different for government agencies. Innovations for revenue authorities, like many organizations, started with the automation of routine, repetitive tasks, such as processing returns. The second wave of innovation saw the development of digital services (e.g., electronic tax returns) and reengineered processes to support multichannel working (e.g., client relationship management, interactive voice recording, virtual assistants, and live chat), as call centers evolve into contact centers. With respect to compliance, smart data analytics and case management systems support expert tax inspectors. The third wave is already underway, with the potential applications of artificial intelligence and machine learning combining to replace many roles and reshape others, including those of professionals, with intelligent robotic capabilities that complement or even lead the work of humans (e.g., smart analytics predicting compliance risks for tax inspectors).

These trends are escalating. The McKinsey Global Institute (2019) has been studying the future of work, and in particular, the impact of automation. They estimate that, in the United States, technology may eliminate 22–27% of jobs, and up to 33% in some places. McKinsey also predicts significant workforce churn, with notable transitional unemployment, which can be partially offset if those displaced can be upskilled with skills needed for new roles being developed.

Furthermore, it is predicted that human work in the future will skew even more toward requiring socio-emotional skills and adding value through the ability to think creatively and laterally. The development of intelligent robotics will be significant for the tax profession and revenue administrators because of its ability to replace (or at least complement) knowledge work. Even bigger impacts are in store as revenue administrations move toward integrating tax record-keeping, calculations, and payments into taxpayers' digital footprints. This has significant implications for the capabilities of tax authorities and the tax profession.

1.4.1 New Capabilities: Revenue Authorities

Arendsen, Wittberg, and Goslinga (2019) envisage a fundamental shift in revenue administrations' business model (Table 1.1).

In moving into a digital future of seamless tax administration, revenue authorities will face three key capability challenges: (1) Developing and managing networked software and hardware, (2) managing data rights and governance of data where much of it is held and exploited by others in the network, and (3) developing professionals who are also digitally savvy and collaborative. Administrations' ability to develop their professional skills and culture is just as important as the first two capabilities.

Integration into digital footprints fundamentally shifts the role of administrations to one of designing and managing a system that is engaged in the world of taxpayers, rather than its own, standalone process. The infrastructure, software, and people capabilities required for the revenue administration of the future will need to focus much more on technology and collaboration. There are many current examples of collaboration, including where key technology skills are needed for change programs or consultation processes around implementing

Table 1.1 Rethinking Tax Administrations' Business Model

Present	*Future*
Focus on the tax return	Focus on tax services
Tax administration as a "stand-alone" organization	Tax administration as part of a network
Focus on case level	Focus on system level
Focus on pre-filing services and post-filing verification	Focus on "tax-inclusive" processes and seamless interaction
Bringing data to rules	Bringing rules to data
Tax law and audit competencies are key assets	Knowledge and information management are key assets
Interaction with taxpayers focuses on the taxation process	Interaction with taxpayers focuses on providing enablers

Source: Arendsen, R., L. Wittberg, and S. Goslinga. 2019. *Towards a New Business Model for Tax Administration—Exploring Paradigm Shifts.* Tax Administration Research Centre 7th Annual Conference, 11–12 April. Exeter: University of Exeter Business School.

new policy. However, these are fundamentally different from designs aimed at fitting seamlessly into someone else's platform and depending on someone else's software to produce tax outcomes as a by-product of other processes.

The cultural and workforce implications are significant. Until recently, technological change mainly affected the routine processes of administration. The wave of change happening now is a game-changer for knowledge (expert) workers. Tax professionals' roles may change fundamentally as intelligent robotics become capable of producing much of the research, analysis, and (ultimately) advice previously provided by tax experts. There is already evidence that smart analytics can automate many risk assessment and case selection processes. Audit processes are increasingly becoming complementary activities, with data gathered and analyzed using taxpayers' systems and other sources fed to tax professionals through automated case management systems. Tax experts in such a world will not necessarily add value through their tax-related knowledge (although they will certainly still need it) but could add value to what intelligent robots produce by embracing complexity and thinking laterally and creatively. Tax experts' people skills, which enable them to personalize their engagement with taxpayers and the myriad partners and stakeholders in a world of digital footprints, will be invaluable.

The challenges do not stop here. These days, work and borders are fluid. Businesses, large and small, are as present online as they are on the street. They collaborate with suppliers and logistics firms and do business wherever in the world it is best and most cost-effective to do so. Threats such as identity theft and cyberattacks can manifest anywhere, and often do so simultaneously. Tax professionals need to understand this world to understand their taxpayers, and must adapt to this way of working. They should also be able to connect just as easily across the globe as across the workplace. Flexible and adaptive working with multi-expert teams that form and reform will become commonplace, and will often occur virtually. COVID-19 has both highlighted the need for greater virtual working and accelerated the development of such practices for all forms of businesses, both private and public.

1.4.2 New Capabilities: Tax Practitioners

The days when tax professionals prepared returns are disappearing quickly. Increasingly, revenue administrations are embracing prefilling and making the same service available to agents for their clients. Their software automates much of the tax return preparation process, and their value increasingly lies in tax advice and tax compliance assurance. Continuous investments in hardware, software, and skills will be as important for tax practitioners as for tax authorities.

As knowledge workers, tax practitioners face a future similar to that of other professions where intelligent robotics are making inroads into their work. Such practitioners will require similar, complementary capabilities to work seamlessly with robotics. How they engage with their business clients is already changing, as their clients embrace electronic business management and record-keeping, which is linked to accounting software that enables the flow of tax return information

reporting directly to revenue administrations (see MTD Section 1.3.2). As discussed in Section 1.4.1, tax professionals' individual clients' data may be generated seamlessly, requiring no intervention or capturing on the part of the tax professional. Thus, they will need to add value by offering tax advice and planning, or other similar services.

Tax professionals must also ensure that their clients consent to them accessing their information from a variety of business platforms to ensure that they have the same view of their clients as the tax authority does. Any disparity in information could result in ill-informed or incomplete advice, which could present a risk for the tax professional.

1.4.3 New Capabilities: Taxpayers

Going forward, taxpayers will need to become much more technologically, legally, and financially competent. As revenue administrations increasingly move online, taxpayers will need relevant digital literacy to engage fully. However, revenue authorities must be careful not to create a digital divide and should continue to provide appropriate alternate channels. Not all taxpayers, particularly in developing countries, will be able to afford and/or have the capability to access financial platforms and fully engage with digitally enhanced revenue administration.

Given the movement to share data in and across platforms, taxpayers should be fully informed of their rights and responsibilities for their own personal data. They must understand their digitally extended self (Parkinson et al. 2018), which is created through their engagements with myriad platforms, and be aware of who accesses their data, and to what end.

More holistic financial and tax planning is possible since taxpayers will have easy and cheap access to personalized information as part of their bundled services. HMRC is currently trialing the real-time view of taxpayers' tax positions and their obligations regarding their income and investments, linked to their individual tax accounts. Taxpayers will need to be educated on the interrelatedness of financial and tax planning, which, although currently not very prominent in the financial literacy field, is slowly gaining traction.

1.5 Data Governance

1.5.1 Legal and Ethical Challenges

Online services, net-connected devices (from smartwatches to smart cars), and increasingly smart infrastructure and cities are creating a new world of personalized experience, fueled by unprecedented levels of data about people and businesses being harvested, exploited, and shared. Technological innovations make it possible for government entities not only to utilize these developments but also to become part of the ecosystem. The clever exploitation of data by the developing digital world is yielding much new information and new opportunities. This borderless world also creates new legal challenges and responsibilities,

especially around the right to privacy, consent, and data security for consumers and taxpayers.

Revenue authorities must consider their rights to capture information in this environment, and how to balance that with businesses' and individuals' rights to privacy. In a digitally integrated world, data security is even more challenging and the impacts of tax data hacking even more significant.

One example of how things could go horribly wrong is the hacking of the tax data of the entire Bulgarian population. This had implications far beyond Bulgaria's borders and led the Organisation for Economic Co-operation and Development (OECD) to admit that the information stolen included data transferred between revenue authorities under a system derived from the United States Foreign Account Tax Compliance Act (FATCA) (Burggraf 2019).

The development of the multilateral exchange of information has been an important testbed for revenue administrations to develop their data gathering and sharing capabilities while testing their legal rights to gather and share information. Great strides have been made since the introduction of the Automatic Exchange of Information, which has resulted in higher levels of compliance and better data quality. Traditionally, the Exchange of Information consisted of three components: Spontaneous exchange, exchange on request, and automatic exchange. Dupuis and Sturbois (2018) identify a fourth type of exchange: The extraterritorial tax audit (as per the FATCA). However, as discussed, this type of data exchange can give rise to several unintended consequences. To address some of these issues, the OECD (2014) developed the Common Reporting Standard, which established international guidelines and standards on data sharing.

It cannot be overemphasized that taxpayers' rights must be sufficiently considered in this multilateral approach. Some legal challenges have already been identified, such as the pending UK lawsuit challenging the legality of data-sharing by the Government of the UK under the FATCA (Burggraf 2019).[2] The drive to achieve global transparency and sharing of information (e.g., base erosion and profit shifting) creates the prospect of revenue authorities gaining more access to information from around the world. The development of the open banking initiative, which could provide a holistic view of a taxpayer's financial transactions through several integrated platforms, provides a further such opportunity. This initiative provides the opportunity to transact and share information across various platforms. One of its underlying principles is that consumers must provide informed consent (PricewaterhouseCoopers 2018).

Much of the regulatory focus on legal and ethical challenges in the use of personal data is on the private sector, with questions around consent, inappropriate exploitation, and data sharing for profit (e.g., Facebook). Events such as the Facebook-Cambridge Analytica saga have caused institutions such as the WEF, International Monetary Fund, and World Bank Group to call for the development of global principles guiding the use, collection, and sharing of data.

The implementation of legislation such as the General Data Protection Regulation in Europe or the Protection of Personal Information in South Africa are examples of the measures governing the use of personal data. Yet, it must

be asked whether revenue administrations will be required to obtain informed consent. For example, in the South African constitution, the Promotion of Administrative Justice Act and the Tax Administration Act allow the tax authority to obtain information from third parties on medical aid and retirement fund contributions without obtaining consent. Going forward, this mandate could be expanded to all relevant sources as required, but care should be taken not to infringe on the ambit of the law.

In the South African context, Goldswain (2017) discusses the concept of "clean hands," which focuses on tax authorities' power and mandate to gather certain information through tax audits, inquiries, and search-and-seizure procedures. Under this concept, the authorities must ensure that their actions are reasonable and rational, and "keep their hands clean" to ensure they do not violate a taxpayer's right to administrative justice. Such activities might appear to contradict the right to privacy, as per section 14 of the constitution. It is important to note that section 33(1) of the constitution (Republic of South Africa 1996) states that "everyone has the right to administrative action that is lawful, reasonable and procedurally fair"; section 33(2) provides that "everyone whose rights have been adversely affected by administrative action has the right to be given written reasons"; and section 33(3) requires that "[n]ational legislation must be enacted to give effect to these rights." The Promotion of Administrative Justice Act (3 of 2000), promulgated to give effect to section 33(3) of the constitution, sets out the scope and ambit of the right to just administrative action. These rights are highly relevant to taxpayers experiencing lifestyle audits.

As time progresses and digital presences increase, it will become clearer how far the boundaries of data capture are allowed to expand. An interesting battle worth following is the pending court case between the Public Protector and the President of the Republic of South Africa. Media reports describing the points of contention reveal that the president's attorney is arguing that the public protector violated the Financial Intelligence Centre Act, by using intelligence provided to her office as evidence in a report on the president's election campaign. The crux of the argument is the difference between "intelligence" and "evidence"—the public protector is being accused of "misusing" Financial Intelligence Centre information. If this case goes to court, more explicit principles will be developed for the sharing and use of sensitive information, including personal financial information.

It is unclear if the same principles and legal constraints apply to governments' tapping into private data profiles or if they will be less restrictive, if considered in the national interest, for example. There is already unease and challenges in several countries over how tax data shared with government welfare agencies in particular are being used. Some examples of this include the Australian Senate inquiry into Australia's Centrelink Robodebt collection activities, and the UK debates about how data could reasonably be shared between the Department of Work and Pensions, which manages the UK benefits system, and HMRC, which manages the tax system.

Questions that may arise include the following: What should be the legal and ethical boundaries of public or private organizations in combining data from other public sources to profile businesses and citizens? Should this be allowed without explicit consent, and how transparent should it be? What limits should be placed on its use and the length of time held, among other things?

In the case of revenue administrations, there are already quite strict limits on data collection, sharing, and confidentiality. However, it is less clear how taxpayers can be made comfortable, and whether these limits are adequate in a world of digital interconnection.

1.5.2 The Future of Data Governance

As technological innovations continue to facilitate the dramatic reshaping of businesses, markets, and communities, academics and other thought leaders are considering how citizens' behavior could be regulated and rights protected in future. For governments and regulators, the challenges are twofold: (1) How to offer contemporary services needed to tap into the ecosystem, and (2) how to build the capability to regulate it. It must also be asked, how far should governments and regulators integrate with digital footprints should they become co-dependent? The section below outlines some of the policy and regulatory challenges, as well as some of the more radical ideas being developed in the debate on how far to go and what to do to protect privacy. While some of these ideas seem as unlikely as tap-and-go taxes, all are possible.

1.5.2.1 Governance-by-Data, or Personalized Law

Academics are already discussing the potential for regulators to tap into commercially collected data to personalize laws and regulations for individuals. For example, data collected by vehicle manufacturers monitoring performance could be used to personalize speed limits for drivers previously caught speeding (Elkin-Koren and Gal 2019). While this scenario may seem unlikely to be applicable in a tax context, related data could be relevant, such as validating travel allowance claims. Such data may also be relevant to the ability to monitor and limit the financial transactions of serial "phoenix-ers," bankrupt individuals, or white-collar criminals.

From a policy perspective, governments will need to determine whether the advantages of streamlining risk targeting, personalizing compliance, and increasing the efficiency of law enforcement justify the constant monitoring and curtailing of people's reasonable expectation of privacy. Most people will voluntarily consent to companies such as Google collecting, analyzing, and sharing their data in exchange for free profiles, email, and search tools, among other things. However, a growing body of case law shows that people do not assume when signing up that they are agreeing to near-constant monitoring by the service provider (see *Carpenter v. United States*, 138 S Ct 2206 2018). The reactions of Facebook users to revelations about the company collecting and sharing their

data clearly illustrate that most people fail to grasp the many ways in which data is being collected or the extent to which it is being shared. This is likely to be even more controversial if the collector is the government, as it is not possible in this circumstance to switch off or switch providers (Elkin-Koren and Gal 2019).

A counter-argument can also be made. For example, in the area of utility service switching, automation could change for the better market dynamics between suppliers, who previously dominated by controlling terms of access and rates of pay, and consumers, whom technology will enable to become more dynamic in negotiating in the marketplace for their needs to be met. This may well lead to shorter-term contracting and more dynamic pricing, due to the ability to automate a switching process that currently involves significant friction. Many consumers do not currently engage in this process and are not reaping the financial benefits (e.g., staying on higher cost tariffs for the same service or product provision, when switching suppliers would be to their benefit).

1.5.2.2 Data Trusts

Developed by Rinik (2019), the idea of data trusts aims to strengthen the protection of people's data and its usage. Borrowing from trust law principles, customers consent to their data being provided to the data controller, but not as a gift, and limited *only* to use for pre-agreed purposes. Customers can sign up with as many data controllers as they wish, and with specific limitations relevant to the situation. The key point is that the data controller has a trustee (fiduciary) responsibility to monitor and ensure that the data under its control is properly protected, and only used within the limits of the consent provided by each individual customer. An important benefit of this approach is that there is an identifiable person whose role is to represent the interests of and protect customers' data rights. Rinik observes,

> If the data subject is treated as a beneficiary of the data trust this may give them more of a voice in the processing of their data and address the power imbalance that has been created in the market for data.
>
> (2019)

Critics see this as unnecessarily complex and likely to be bogged down in legal debate about who (companies or individuals) owns personal information in the myriad circumstances in which data can be generated. Kerry and Morris (2019) argue that a better approach is to bolster privacy legislation, which should empower individuals through more layered and meaningful transparency and individual rights to know, correct, and delete personal information in databases held by others (Kerry and Morris 2019).

The Open Data Institute (ODI) and the State Data-Sharing (SDS) Initiative are also leading contributors to develop approaches to protect sensitive information while encouraging data sharing. The ODI was established as a non-profit, non-partisan company in 2012, and it works with companies and governments

alike to build open, trustworthy data ecosystems to increase the trustworthiness of the data collected based on ethical considerations of data collection and usage (ODI 2019). The SDS initiative has similar goals, aiming to provide administrative records containing personally identifiable information for the efficient operation of government programs. One project in which they engaged was a study of

> federal and state corporate tax and unemployment insurance data confidentiality laws and regulations to increase understanding of the different legal approaches states apply to protect sensitive information and allow for data sharing to support analysis and evaluation of economic and workforce development programs.
>
> (SDS 2019)

1.5.2.3 Reconceptualizing Security and Safety

Cybersecurity models are based on real-world experience. People tend to consider protecting digital perimeters against unauthorized access with firewalls and passwords, similar to locking doors. Elish (2019) argues that with artificial intelligence and machine learning it is necessary to think beyond the perimeters:

> [T]he vulnerabilities of AI and ML aren't just touch-points where an attacker may gain entry; the vulnerabilities exist in the interactions within and between the social, cultural, political, and technical elements of a system. The unique vulnerabilities of "intelligent" systems are the very mechanisms through which they become "intelligent" and interact with the world. That is, attackers leverage the intelligence of a system by redirecting and manipulating the capacity to learn or to act on what has been learned, undeterred by security practices focused solely on access.

For example, researchers have demonstrated that a computer vision system could be tricked into seeing a stop sign as a speed limit sign reading "45 MPH." The authors of that paper described how they altered a stop sign in a way that would fool the system, but also be dismissed as graffiti by a human observer. Elish (2019) argues that artificial intelligence and machine learning must be understood as socio-technical systems, where the "technology" is not separate from the actors and social processes that make up the system. To achieve safe and secure artificial intelligence, it is necessary to move beyond the traditional concerns of safety and security research and carry out more sociologically oriented research into its vulnerabilities. Traditional research reports are only one way of conducting such research. Elish (2019) suggests additional methods could include "abusability testing," white hat hacker or "bug bounty" programs, and "red teaming" scenarios, or even employing science-fiction writers to flesh out potential future vulnerabilities.

1.6 Conclusion and Policy Recommendations

This chapter discussed the technological innovations transforming how businesses operate and how people work and live. It considered the concurrent digital

journey of revenue administrations and their resilience as they have made significant adaptations to their business models. It also discussed the next wave of digital innovations and identified some likely developments that are leading to a fundamental rethink of people's digital footprints as a complex and rich "digitally extended self." It explored the potential of these innovations to digitally disrupt how revenue systems are managed.

The chapter used changes in retail banking to illustrate deeper changes that could take digital disruption to a more fundamental level, where managing individual taxpayers' tax obligations is a by-product of tapping to transact. Examples of changes taking place in revenue system interactions, such as the MTD scheme in the UK, illustrated how business tax obligations may also become a seamless by-product of their business management processes.

The chapter concludes that the rise of financial platforms and their ability to provide a range of virtual personalized services is a potential disrupter. In the future, these platforms might seamlessly integrate individual taxpayers' returns and payments into their digital footprint. For businesses, the best opportunity to integrate reporting and payment obligations seamlessly is by embedding these requirements in their business software, as seen in the MTD scheme in the UK.

This chapter discussed these and other examples of capabilities being developed as potential stepping-stones and demonstrated that this alternative model is not far-fetched and its development is not necessarily far in the future. COVID-19 is accelerating the shift to digital, spurring more digital innovation, and creating expectations of seamless convenient digital interaction as communities become more digitally confident and literate.

The chapter explored the implications and potential of this alternative business model. The shift in skills, culture, and technology capabilities is significant. New skills that are needed go beyond mastering digital interaction and working complementarily with artificial intelligence. A significant shift in how the system and stakeholder relationships are managed, from consulting to collaborative partnering, will be required in a world where revenue administrations no longer own the data or the services. The chapter also explored capability implications for practitioners and taxpayers. For governments, there are also important policy implications as to how to gather, exploit, and govern data, and how to protect citizens' rights to the privacy of their digitally extended self. There is also a new ethical dilemma as to whether governments should use the capability of private sector providers to monitor their customers' interactions to ensure compliance with legal obligations.

1.6.1 Recommendations

(1) Revenue administrations should urgently consider the efficacy of continuing to operate on a standalone basis, and at minimum plan to have much higher connectivity and touchpoints with external data sources that better integrate their systems into taxpayers' digital footprints;

(2) Revenue authorities should assess their digital capability gap (systems, skills, and culture). This should include exploring the potential of artificial intelligence and machine learning to change how professional work is done and consider the implications for redesigning knowledge work and workforce skills;
(3) Governments and revenue administrations should consider whether seamless integration of services and obligations into people's digitally extended selves should be the future model for personal taxpayer interactions. The broader implications for government service delivery should be considered;
(4) Rights to privacy, requirements for consent, access to personal data, and rights to amend it should be reviewed to ensure they provide adequate protection for developing digitally extended selves. This should include data governance arrangements and the designation of accountable parties where data is shared and exploited by co-providers who contribute to the development of digital profiles and together deliver seamless digital experiences;
(5) Governments should review their policies on how to gather, exploit, and share data in the context of new disruptive technologies;
(6) Revenue administrations' powers to access data and rely on reporting should be reviewed in the context of third parties capturing and exploiting data seamlessly for tax responsibility fulfillment. The accountability of third parties for the accuracy of outcomes in relation to their taxpayer customers should also be considered;
(7) Governments should consider the potential of utilizing the capability of private sector providers who digitally track customer interactions as a public compliance tool to monitor whether personalized legal obligations are met;
(8) Policies on data governance for the exploitation of private sector data for public use should be developed. The roles and responsibilities of all parties in an ecosystem where data is not owned or controlled by one party should be considered, including how trust is maintained across the whole system. The need for whole-government solutions for creating and building trust and exemplary data-handling reputations should be explored. This should include core principles of data security and privacy developed at national levels, and how they can be rigorously enforced to engender confidence in national capabilities to act responsibly and prevent abuse.

Notes

1 For details on these standards in the UK, see www.moneysavingexpert.com/banking/open-banking/.
2 An American who has resided in Britain since 2000 is challenging the forwarding of her data to the Internal Revenue Service by the British tax authority, claiming that her data protection and privacy rights are being infringed.

References

Apple. 2019. Apple-Pay: Cashless Made Effortless. https://www.apple.com/apple-pay/ (accessed 20 September 2019).

Arendsen, R., L. Wittberg, and S. Goslinga. 2019. Towards a New Business Model for Tax Administration—Exploring Paradigm Shifts. *Tax Administration Research Centre 7th Annual Conference*, 11–12 April. Exeter: University of Exeter Business School.

Burggraf, H. 2019. Lawsuit in UK to Challenge Legality of British Gov't's Data-Sharing under FATCA. *American Expat Financial News Journal*. 12 September. https://www.americanexpatfinance.com/tax/item/255-lawsuit-in-uk-to-challenge-legality-of-british-gov-t-s-data-sharing-under-fatca (accessed 18 September 2019).

Deloitte Insights. 2019. *Tech Trends 2019: Beyond the Digital Frontier*. https://www2.deloitte.com/za/en/pages/technology/articles/technology-consulting-tech-trends-collection.html (accessed 18 September 2019).

Department for Business, Energy and Industrial Strategy. 2020. *Business Population Estimates for the UK and Regions 2020*. London: Government of the United Kingdom, Department for Business, Energy and Industrial Strategy. https://www.gov.uk/government/publications/business-population-estimates-2020/business-population-estimates-for-the-uk-and-regions-2020-statistical-release-html#composition-of-the-2020-business-population (accessed 28 November 2020).

Dupuis, A. and G. Sturbois. 2018. Exchange of Information vs Data Protection: A Brave New World of Transparency. *Mondaq*. 3 December. http://www.mondaq.com/x/760046/data+protection/Exchange+of+information+vs+data+protection+A+brave+new+world+of+transparency (accessed 15 September 2019).

Elish, M. C. 2019. When Humans Attack: Re-Thinking Safety, Security and AI. *Data and Society*. https://points.datasociety.net/when-humans-attack-re-thinking-safety-security-and-ai-b7a15506a115 (accessed 16 August 2019).

Elkin-Koren, N. and M. S. Gal. 2019. The Chilling Effect of Governance-by-Data on Data Markets. *The University of Chicago Law Review* 86: 403–431.

Goldswain, G. K. 2017. Clean Hands—Is This or a Similar Concept Used by the Courts to Determine a Taxpayer's Right to Just Administrative Action? *Southern African Business Review* 21: 55–84.

Hall, W. and J. Pesenti. 2017. *Growing the Artificial Intelligence Industry in the UK*. London: Government of the United Kingdom. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/652097/Growing_the_artificial_intelligence_industry_in_the_UK.pdf (accessed 16 August 2019).

Her Majesty's Revenue and Customs (HMRC). 2017. Bringing Business Tax into the Digital Age—Summary of Responses. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/587433/Making_Tax_Digital_-_Bringing_business_tax_into_the_digital_age_-_Summary_of_responses.pdf (accessed 15 September 2019).

HMRC. 2018. VAT Notice 700/22: Making Tax Digital for VAT. https://www.gov.uk/government/publications/vat-notice-70022-making-tax-digital-for-vat/vat-notice-70022-making-tax-digital-for-vat (accessed 15 September 2019).

HMRC. 2020a. *Record Breaking 10.4 Million Customers Filed Online*. HMRC Press Release, 3 February. https://www.mynewsdesk.com/uk/hm-revenue-customs-hmrc/pressreleases/record-breaking-10-dot-4-million-customers-filed-online-2967159 (accessed 28 November 2020).

HMRC. 2020b. 2019 to 2020—Annual Report and Accounts. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/933121/HMRC_Annual_Report_and_Accounts_2019_to_2020__Web_.pdf (accessed 28 November 2020).

International Business Machines Corporation. 2019. What is the Internet of Things (IoT)? https://www.ibm.com/blogs/internet-of-things/what-is-the-iot/ (accessed 20 September 2019).

International Monetary Fund. 2020. *Special Series on Fiscal Policies to Respond to COVID-19: Tax and Customs Administration Responses.* Washington, DC: International Monetary Fund. https://www.imf.org/~/media/Files/Publications/covid19-special-notes/special-series-on-covid-19-tax-and-customs-administration-responses.ashx (accessed 21 November 2020).

Kenney, M. and J. Zysman. 2016. The Rise of the Platform Economy. *Issues in Science and Technology* 32: 3.

Kerry, C. F. and J. B. Morris. 2019. *Why Data Ownership is the Wrong Approach to Protecting Privacy.* Washington, DC: Brookings Institution. https://www.brookings.edu/blog/techtank/2019/06/26/why-data-ownership-is-the-wrong-approach-to-protecting-privacy/ (accessed 16 August 2019).

Krishna, A., M. Fleming, and S. Assefa. 2018. Instilling Digital Trust—Blockchain and Cognitive Computing for Government. In: *Digital Revolutions in Public Finance*, edited by S. Gupta, M. Keen, A. Shah, and G. Verdier. Washington, DC: International Monetary Fund. 173–197.

Lymer, A., A. Hansford, and C. Pilkington. 2006. IT Adoption Strategies and Their Application to efiling Self Assessment Tax Returns: The Case of the UK. *eJournal of Tax Research* 4(1) August: 80–96.

Marr, B. 2018. 35 Amazing Real World Examples of How Blockchain is Changing Our World. *Forbes.* https://www.forbes.com/sites/bernardmarr/2018/01/22/35-amazing-real-world-examples-of-how-blockchain-is-changing-our-world (accessed 15 September 2019).

McKinsey Global Institute. 2019. America's Future of Work. https://www.mckinsey.com/featured-insights/future-of-work/americas-future-of-work (accessed 16 August 2019).

Ndung'u, N. 2018. Digitization in Kenya—Revolutionizing Tax Design and Revenue Administration. In: *Digital Revolutions in Public Finance*, edited by S. Gupta, M. Keen, A. Shah, and G. Verdier. Washington, DC: International Monetary Fund. 241–257.

Open Data Institute. 2019. *About the ODI.* London: Open Data Institute. https://theodi.org/about-the-odi/ (accessed 17 September 2019).

Organisation for Economic Co-operation and Development. 2014. *Standard for Automatic Exchange of Financial Account Information in Tax Matters.* Paris: Organisation for Economic Co-operation and Development Publishing.

Parkinson, B., D. E. Millard, K. O'Hara, and R. Giordano. 2018. The Digitally Extended Self: A Lexicological Analysis of Personal Data. *Journal of Information Science* 44(4): 552–565.

Prabhakar, R. 2020. *Coping with Contactless—COVID-19 and Cash. Centre for Household Assets and Savings Management.* #Buildbackbetter briefing series BP6/2020. Birmingham: University of Birmingham, Centre on Household Assets and Savings Management. https://www.birmingham.ac.uk/documents/college

-social-sciences/social-policy/chasm/briefing-papers/covid19/chasm-bp6-2020.pdf (accessed 17 September 2019).

PricewaterhouseCoopers. 2018. The Future of Banking is Open: How to Seize the Open Banking Opportunity. https://www.pwc.co.uk/industries/financial-services/insights/seize-open-banking-opportunity.html (accessed 16 August 2019).

Republic of South Africa. 1996. *Constitution of the Republic of South Africa, Act 108 of 1996.* Pretoria: Government Printers.

Rinik, C. 2019. Data Trusts: More Data than Trust? The Perspective of the Data Subject in the Face of a Growing Problem. *The International Review of Law, Computers and Technology* 34(3): 342–363. https://www.tandfonline.com/doi/abs/10.1080/13600869.2019.1594621 (accessed 18 August 2019).

State Data Sharing Initiative. 2019. *Better Access.* http://statedatasharing.org/better-access/ (accessed 17 September 2019).

World Economic Forum. 2015. *The Future of Financial Services: How Disruptive Innovations are Reshaping the Way Financial Services are Structured, Provisioned and Consumed.* Vienna: World Economic Forum. https://www2.deloitte.com/global/en/pages/financial-services/articles/the-future-of-financial-services.html// (accessed 17 September 2019).