

## **Extended Abstract – Working Paper**

### **DISRUPTIVE TECHNOLOGY IN TAX ADMINISTRATION: A SOCIO-TECHNICAL PERSPECTIVE**

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#### **Summary**

A well-functioning revenue service is central to a fair, democratic society. The revenue service is tasked with serving “the community by fairly and efficiently collecting taxes and duties and implementing Customs controls” (revenue.ie, 2020). Digital technologies are disrupting both public and private institutions. The public sector seeks solutions to improve government functions and enhance citizens’ services. Sophisticated digital technologies such as artificial intelligence (AI) applications focusing on automated information provision, and machine learning (ML) applications, which enhance decision-making processes (Androutsopoulou et al., 2019; Anastasopoulos and Whitford, 2019), are having a big impact on the relatively risk adverse and traditional governmental sector. However, the adoption and integration of these revolutionary technologies is not without its challenges, the potential of these technological tools alone are surfacing obstacles in and of themselves. This study examines the adoption and impact of digital technologies within the Irish Revenue Service with a specific focus on the socio-technical factors that impact adoption. Following an in-depth examination of the literature an analytical framework is presented, from which to assess the adoption of digital technologies in the Irish Revenue Service and their resultant impact on tax compliance. In order to effectively answer the emerging research question – “In what ways and with whom are the Irish Revenue Service developing and adopting digital technologies in order to improve taxation compliance?”, data will be collected through in-depth, semi-structured interviews with

the Chief Innovation Officer, the Operations Manager, and Customer Service Representatives in the Irish Revenue Service.

## **Literature Overview**

Tax authorities across the world, and in particular in OECD countries, have continued to invest in emerging and disruptive digital technologies. These technologies have been targeted at different aspects of the tax authority functions from interfacing with citizens to auditing activities, and from registering taxpayers to ensuring tax compliance. A functioning tax authority is central to a democratic society and high levels of tax compliance results in healthy public finances so citizens can benefit from improved public services without the imposition of a tax burden. This review explores some of the most promising and disruptive technological innovations with the potential to radically alter tax authorities and improve tax compliance. While algorithms and artificial intelligence can bring great benefits to tax authorities, it is important to remember that the revenue service exists to serve citizens and provide a public service. The human and societal element of the public service is an essential component to consider when exploring innovative technological solutions in public services, as such this study examines the phenomena of disruptive digital technologies and the impact they have on tax compliance, from a socio-technical perspective.

### *Technology and Compliance*

The introduction of virtual assistants or digital representatives which respond to questions in human language provide real-time access to information and support across a variety of government operations including taxation services (Androutsopoulou et al., 2019). Data analytics is another technological tool impacting service provision within public sector administration. Where tax, transparency, efficiency and fairness are concerned discussion of blockchain closely follows. The transparent nature of distributed ledger technology (DLT) may reduce corruption in public sector organisations while also decreasing intermediate processing and reducing budget spending, thereby increasing budget allocations and investment into other areas (Myeong and Jung, 2019). In fact, the World Economic Forum predicts that by 2025, 10% of global GDP will come from blockchain platforms while the transaction costs of financial companies will be reduced by 30%. DLTs may also enable the tokenization of assets and lower overall costs of transactions of such assets whilst enhancing transferability (Scholl and Bolivar, 2019). DLT can be applied to most financial services such as remittance and settlements, contracts, bond issuance, document verification, stock trading and joint customer

information management (Myeong and Jung, 2019; Ojo and Adebayo, 2017). According to Myeong and Jung (2019) blockchain technology “can be used to improve the efficiency of administration processing such as budgeting and communicating in various administrative fields such as banking, maintenance, and storing information”. It can democratize information, enhancing its security and ensuring the efficiency, equity, transparency, democracy and productivity of the administration – values that have been regarded as mutually contradictory are now possible with DLT and its application to the administration (Myeong and Jung, 2019).

According to Rozario and Issa (2020) data analytics can equip governments to better manage risk through prioritization, namely in the area of auditing. Government programs are financed by taxpayers’ payments and government auditors are the primary governance mechanism to ensure the public finances are efficiently and effectively managed. Data analytics assists auditors and governments with this objective; it can make governments “more accountable to citizens and transform the traditional governance model” (Pencheva et al., 2020, p. 31). Risk based data analytics enables auditors to overcome the difficulties of information overload as continuous auditing systems remove duplicate data and positively impact auditor judgment. Additional tools can identify riskier candidates for audit and increase audit efficiency (Rozario and Issa, 2020). Governments are well placed to leverage technology and engage in open innovation by empowering citizens to participate and collaborate in public services, once the power imbalance is managed (Katsonis and Botros, 2015). Digital technologies and in particular machine learning (ML) have the potential to contribute to intelligent financial fraud detection systems enabling authorities to better select firms for further examination (Hajek and Henriques, 2017), potentially saving taxpayers money and deterring further fraudulent activity. Big data analytics (BDA) can enable the public to participate in the improvement of public services when using these services at no extra cost (Huang and Yu, 2019).

### *Socio-technical Perspective*

Public administration is part of an ecosystem that is evolving and developing over time. In general, public institutions such as tax authorities are traditional and risk adverse. Innovations that disrupt the public sector, tend to emerge from the private sector. In order to benefit from such technological progress tax authorities will need to support the social and environmental factors necessary for disruptive technology adoption within the revenue service. The flow of knowledge between the private and public sector may occur through public-private partnerships. According to Dattani (2019, p. 6) a “‘revolving door’ of movement between

government and the private sector allows individuals to benefit from the knowledge gained and contacts made while within government”. Furthermore, private interests may shape governance as governments can become ‘locked-in’ due to reliance on contracted technology (Redden, 2018). Cannon and Chung posit, “regulators (who have in mind the solvency of the government) must work together with platform developers (who have a long-term interest in building legitimacy for their activity, reassuring participants of the legality of their investment into the platform, and streamlining a process for handling inevitable government relations questions such as taxable activity)” (2014, p. 3). The government structures of old need to adapt from being inward-looking to becoming outward-focused, trust is necessary to drive the change and collaboration between public and private entities is essential to drive government innovation in this new paradigm (Giest, 2017; Jasimuddin et al., 2017). According to Janssen et al (2020) traditional information sharing agreements such as trusted third parties (TTP) are being replaced with DLT that ensures decentralisation thus removing single points of failure or misuse. In a different vein the idea of Self-Sovereign Identity (SSI) whereby users or citizens govern their own data offers both transparency and empowerment to citizens and organisations (Janssen et al., 2020).

To summarise, there are a range of competing digital technologies that can confer benefits and carry risks for the tax authority that chooses to implement them. However, while these technologies can enable revenue services to improve their service efficiencies and effectiveness, from the outset they are costly to develop and disruptive to deploy. As such, revenue authorities must choose which ones are most effective for their service and how best to implement it in their organization. This study aims to better understand the selection, development, deployment, and collaborative efforts with third parties, involved in the use of digital technologies in the Irish Revenue Service, with the aim of improving taxation compliance.

### **The case of the Irish Revenue Service**

The Irish revenue service is tasked with serving “the community by fairly and efficiently collecting taxes and duties and implementing Customs controls” (revenue.ie, 2020). There are a range of disruptive digital technologies on the market that have the potential to further enhance tax compliance and strengthen the revenue service. For example, blockchain may be used within the public sector for identity management, record keeping, taxes and remittances and regulatory reporting. Ireland positions itself as a central player in the technology space and

is home to the European headquarters of many of the world’s largest technology firms. Ireland ranked 27<sup>th</sup> in the 2020 e-Government Development Index, down 5 places from 22<sup>nd</sup> in 2018 (see Table 1).

Table 1 – Ireland’s e-government development index and technological competency

Year	Rank	EGDI	Online Service Index	Telecom Infrast. Index	Human Capital Index	Mobile cellular telephone subscriptions per 100 inhabitants	Percentage of Individuals using the Internet	Fixed (wired) broadband subscriptions per 100 inhabitants	Active mobile-broadband subscriptions per 100 inhabitants
2020	27	.8433	.7706	.81	.9494	103.17	84.52	29.68	103.75
2018	22	.8287	.8264	.6970	.9626	103.15	85.01	28.78	100.8

Where technological innovation is concerned the public sector tends to be risk adverse and traditional and the Irish government are no different, yet innovative activity still occurs. In 2016 Irish Funds and Deloitte developed a blockchain based regulatory reporting platform, ‘RegChain’ (Irishfunds.ie, 2020). A proof of concept was developed focusing on Money Market and Investment Funds (MMIF), which is a quarterly return for all Irish Domiciled funds. This innovation was developed in direct response to increased regulatory burdens emerging following the global financial crisis. The identification, integration, and adoption of digital technologies in the public sector is impacted by the tax authorities leadership, culture and governance structures. This study examines the internal responses to external environment and innovation and the ways in which the Irish Revenue Service enables and supports the adoption of innovative technologies as a method of enhancing tax compliance amongst citizens.

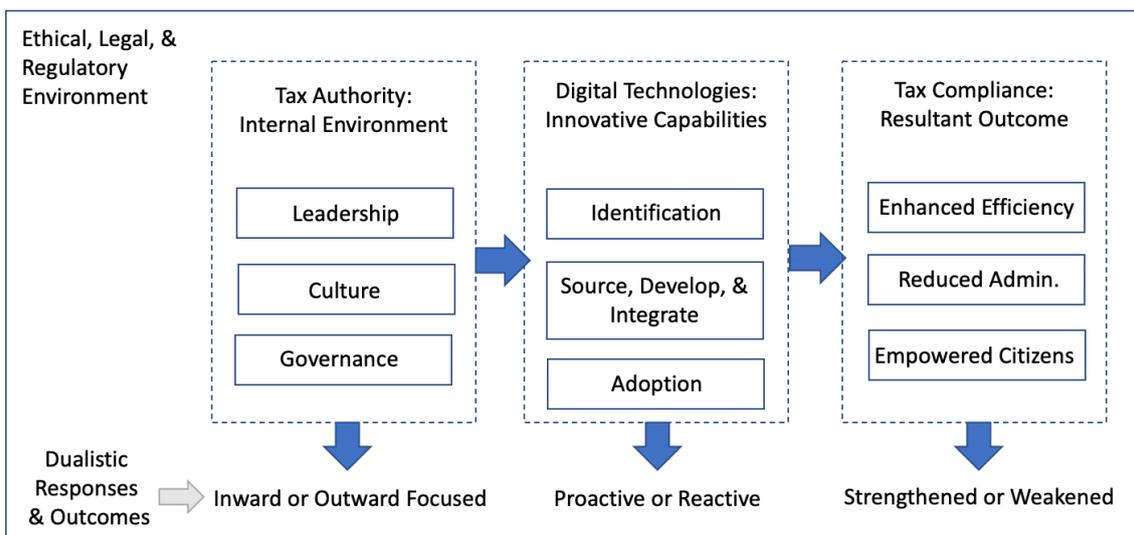
### Research Question and Analytical Framework

Following close consideration of the literature exploring digital technologies and their use and potential impact on public sector services, in particular the revenue service, this study is concerned with the following overarching research question and sub-questions –

In what ways and with whom are the Irish Revenue Service developing and adopting digital technologies in order to improve taxation compliance?

- In what ways do the internal environment of the tax authority impact the identification and adoption of digital technologies?
- How does the tax authority prioritize and attain the innovative capabilities necessary for developing a digitised revenue service?
- Which digital technologies are having the greatest impact on tax compliance?

Figure I - Digital Technology in the Revenue Service: Environment, Innovation, & Outcome



### Methodological Approach and Empirical Findings

The objective of this study is to understand internal responses to external innovation and the ways in which the Irish Revenue Service enables and supports the adoption of innovative technologies as a method of enhancing tax compliance. The research question will be investigated through a qualitative case study design. Case study research “is not a methodological choice but a choice of what is to be studied” (Stake, 2000, p. 435). It is an empirical inquiry that investigates a contemporary phenomenon, within its real-life setting – in this case innovative digital technologies within a national tax authority (Yin, 2017). Within the technology transfer field case study research has been lauded for the new knowledge and insights it can bring (Cunningham et al., 2017). This approach enables researchers to examine complex topics in rich detail, allowing for the benefit of contextual embeddedness. The method

requires theoretical or purposive sampling (Eisenhardt, 1989) whereby researchers select cases that specifically highlight the phenomenon of interest.

Following an extensive review of the literature an analytical framework emerged and formed the basis of an interview protocol which will be used to guide the data collection. Data will be gathered through in-depth, semi-structured interviews with the Chief Innovation Officer (CIO), a business operations manager, a customer service representative, and a business group representative. The interviews will take place in the coming weeks (September 2020) and the data emerging from them will be recorded, transcribed, coded, and analysed in order to shed light on the adoption of digital technology and its resultant impact on tax compliance, within the Irish Revenue Service. The data emerging from this study will provide a descriptive and illustrative case from which to develop a theoretical framework to test more extensively in other jurisdictions across Europe. The qualitative, rich data emerging from this study will also provide the basis for a more in-depth study on the public administration as a whole.

### **Expected Contributions**

This in-depth case-study will result in a rich dataset, that will be relevant for practice and provide insights for theory development.

### *Implications for Practice*

This research will provide insights into the use and application of digital technologies and their resultant impact on tax compliance. It will provide an understanding of the factors that influence the implementation and adoption of disruptive technologies in a public sector context. The cultural, leadership, and governance structures within tax authorities are well established and defined – yet digital technology has the potential to radically impact these internal structures and create the impetus for public tax authorities to collaborate and co-create with private entities as a means of enhancing their innovative capabilities. The primary objective of adopting new technology and collaborating with external agents is to enhance public value, improve public services and strengthen the tax authority. Although the insights emerging from this study will not be generalisable given the context specificities – their rich nature will be transferable to similar environments and provide insights into the role and impact of factors in other public sector domains (e.g. tax authorities in other OECD nations).

### *Implications for Theory*

This study will provide the basis for the development of a theoretical model, and the foundation for propositions on the adoption and implementation of disruptive technology in the public sector. While there is a myriad of academic literature on tax compliance, the novelty of this research lies at the nexus between digital technology and the way in which socio-technical factors impact the potential impact of disruptive technology on tax compliance. The inclusion of internal, organisational factors (leadership, culture, governance) and external, environmental aspects (legal, ethical, regulatory) will provide rich insights for theory development focused on technology adoption in the public sector.

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