A Case of the Governance of Digital Technology in Tax Administration

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ABSTRACT

Despite the growing importance of digital technology in recent years, a holistic view of its governance in tax administration is yet to be clearly articulated. This shortcoming is attributed to the lack of empirical research in this sensitive, yet important, public administration context. Using IT Governance conceptual framework, this case study research examines executive leadership perspectives (Information & Technology, Operations, and Customer Service) on the governance of digital technologies in a European tax administration. Specifically, the study explores the governance capabilities associated with a digital transformation initiative implemented in the tax administration. Findings revealed specific Structural, Decision-making, and Relational capabilities considered important from three disparate, yet complementary leadership views of digital technology governance in tax administration.

CCS CONCEPTS

• **Management of computing and information systems**; • **Government technology policy**; • **Human and societal aspects of security and privacy**;

KEYWORDS

Digital technology, Tax administration, Public administration, Technology governance, IT Governance

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1 INTRODUCTION

Tax administrations are increasingly adopting digital technologies to meet the challenges of globalization and the pressure to reduce tax collection gaps and boost governments access to the financial resources necessary to meet their respective development needs. However, the adoption and implementation of Information Technology (IT) systems require effective IT governance [1] to maximize the value delivery from IT investments [2]. According to the World Economic Forum, the tax administration at the centre of this study stands at 65.6% on the transformation metric focused on ensuring "public institutions embed strong governance principles, build a long-term vision and establish trust serving their citizens" [3]. This indicates the scope for improvement with regards to IT governance to support transformation. Despite governments' efforts to foment the development of IT governance, little is known about how IT is governed in government organizations. From the few existing research efforts in the public domain, no research investigates Digital Technology governance in tax administration. To bridge this knowledge gap, this research explores the capabilities required for governance of new technologies in tax administration.

This paper adopts a case study methodology underpinned by a conceptual framework constructed from the IT Governance literature (Structure, Processes, and Relational mechanisms). Guided by extant literature and in-depth interviews of three leaders (IT leader, operations leader, and customer service leader), this research examines the important capabilities governing digital technologies from these three leadership perspectives within a tax administration in a European country. This administration was selected as it consistently ranks in the top ten most effective countries to pay tax in, both in the EU and globally [4], performs well on tax contribution rates and compliance metrics, and regularly engages in experiments on how new digital technologies may benefit tax administration. Our guiding research questions are as follows: *what specific digital technology governance capabilities are considered critical to generating value from digital technologies in tax administrations?* and *how can these capabilities be appropriated to functional leadership in tax administration?* In research question one, using the IT governance conceptual framework, we attempt to understand what are the key capability types and areas that are required for tax administration to govern digital technologies. In research question two, we aim to examine how the three perspectives see the importance of digital technology governance in the organization and what governance capabilities are needed from these three functional views. We believe that answers to these two research questions will advance our understanding of the importance of digital technology governance from both an integrated and diffractive viewpoint.

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Findings not only confirm that the three IT Governance constructs (Structure, Processes, and Relational mechanisms) are relevant to organizations with high regulatory requirements like tax administration; they reveal hitherto unknown knowledge regarding each leadership viewpoints and how the integrated views can lead to effective governance of new digital technologies in tax administration.

2 CONCEPTUAL FRAMEWORK

2.1 IT Governance

While IT resources remain potential sources of value, they are not sufficient to create sustained innovations in public sector organization if not accompanied by IT governance capabilities; effective governance enables the organization to coordinate inter-organizational activities and respond rapidly, in a flexible manner, to new demands [5]. Therefore, IT governance is defined as the organizational capability to control the formulation and implementation of IT resources and strategies in the organization and to help the organization gain higher value from IT and IT investment [6][2].

However, a one-size-fits-all IT governance approach is not appropriate when studying organizations from across sectors and a failure to address sectoral differences is a critical mistake. There are contextual differences between public and private organizations that one needs to consider such as: the fact that the public sector faces less competitive pressures compared to the private sector, it's focus on creating public value vs. profit [7], and it's preference for low-cost processes as it concentrate on value for money to efficiently utilize public funds and give tangible outcomes [8]. Be it in the public or private sector, IT governance can be deployed using a combination of Structures, Processes, and Relational mechanisms. However, the nature of these capabilities - driven by their different contextual environments - differ in both sectors. Few examples include: IT governance structures in the public sector must balance effectiveness and efficiency in service provision, while private sector should provide goods and services that people can afford; Processes in the private sector are guided by market signals while in the public sector they are largely guided by societal obligations and concerns; Relational capabilities in the public sector can benefit from whole-of-government and cross-agency approaches while this approach is not available to most private sector organizations [9].

2.2 IT Governance in Public Organizations

A more widely accepted definition of IT governance in the public sector [10] [11] [12] [2] classified IT governance according to three distinct IT governance capabilities: *Decision-making Structural (connection)*, *Processes (coordination)*, and *Relational mechanisms (collaboration)* [6] [13]. *Decision-making Structure* relates to the responsibilities for various activities that are associated with the use of IT in the organization; *Processes* define different approaches that can guide decision-making and control of these activities; and the *Relational mechanisms* include all the practices that are designed to facilitate and manage formal and informal communications and interactions between both internal actors and external partners. Capabilities related to Relational mechanisms will be simply described as Relational Capabilities in the rest of the paper.

- Decision-Making Structure

De Haes and Van Grembergen [11] report that maturity in aligning IT to business goals is higher when organizations implement mature practices of IT governance formed around the board of directors, IT strategic committees at the level of board of directors, IT expertise at the level of board of directors, IT governance function/officer, IT steering committees, and meetings among IT executives and senior managers in the organization. Senior management support and involvement has gained a broad consensus in the literature as being critical for successful IT governance [1]. While studies [2] [12] [11] suggests that the consolidation of Decision-making Structures has a positive impact on effective IT governance in public organizations in general, a study of IT governance practices in Australian public sector [14] suggests that IT steering committees specifically, do not positively influence the level of effective IT governance. According to [14], in the public sector, there are various tiers of responsibility within and across the organizations that are attempting to cooperate, thus increasing potential tensions and conflicts as the organization carries out operations. The same study claims that there is uncertainty in the roles and responsibilities of key players (e.g. CIOs) in the organization in terms of decision-making process; conflict of interest and roles; limits on board independence; and inadequate role appointment processes. It appears that IT steering committees play an important role in the Belgian public sector [11], Indonesian government [12], Malaysian public administration, and Albanian public sector [1] compared to other regions such as Australia [15].

- IT Governance Processes

While structural practices play an important role, IT governance control and operational processes at tactical levels are needed as they could significantly contribute to IT control in public organizations [8]. Regarding the specific processes of IT governance, studies [2] [15] [14] suggest that performance measurement systems are widely used in government agencies. Key Performance Indicators and Rating systems are the two commonly used methods. Moreover, communication systems (emails, website, IP phones, meetings, etc.) are important for information sharing and critical to the success of IT governance [14]. Optimal assets utilization and resource allocation are necessary for government organizations. As such, studies [15] [12] [1] specifically highlight the importance of an IT resource management system and an application system as a means of keeping track of the available IT resources. Such systems are necessary to optimize knowledge and IT infrastructure [12] so that IT resources may lead to cost efficiencies, responsiveness, and information flows across the organization [1]. Investment management processes and system planning processes are identified as contributors to effective IT governance in the Indonesian public sector (Amali et al., 2014). System planning refers to the processes that are involved in setting the vision and architecture of IT governance. In the context of public agencies in Indonesia, this includes determination of IT for contributing to achieving the goals and needs of the organization and the realization of plans for the implementation of the IT vision and architecture. The investment management is the development and implementation of a plan to defined budgets or IT investment [12].

- Relational Capabilities

Table 1: IT Governance Capability Areas and Types – A summary of the IT Governance in Public Sector Literature

IT Governance Capability Types	Capability Areas	Specific Capabilities
Decision-making Structure	Formal positions and roles	Board of Directors
		IT strategy committees at the level of board of directors
	Boards, committees, and councils	IT expertise at level of board of directors
		IT [project] steering committee
	Integration of governance/alignment tasks in roles and responsibilities	IT executives
		IT governance function/officer
Processes	Strategic IT decision-making	Performance measurement systems (Key Performance Indicators, Rating systems)
		IT communication systems (Information sharing)
	Strategic IT monitoring	IT resource management system (Application system, Optimize IT-related knowledge, IT infrastructure)
		Investment management process (Managing budgets and IT investment)
		System planning process (Setting the vision, Achieving the goals and needs, Realization of plans for the implementation of the IT vision and architecture)
Relational Capabilities	Business-IT partnerships	Participation and collaboration between principal stakeholders
		Informal meetings between major players of the organization
	Shared learning	Knowledge management system Cross-functional business/IT training
		Organizational communication system

In public agencies, relational capabilities are also perceived as being easier to implement compared to IT governance processes, probably because some relational capabilities can have informal characteristics [11]. Existing research conducted in the public sector highlights that the nature of relational capabilities concerns active participation and collaboration between principal stakeholders, particularly Business-IT stakeholders (IT-Business alignment). An organizational communication system can be effective in facilitating this collaboration [2]. A study of the Belgian financial services sector [11] highlights the importance of informal meetings between decision-makers of the organization with no agenda, allowing business unit and IT senior management to talk about general activities and directions. Cross-functional business-IT training and learning is identified as being an equally important capabilities for ensuring IT/Business alignment. This can be achieved through training business people about IT and/or training IT people about business, impacting both the IT and business activities in the organization [11]. The same study acknowledges the role knowledge management systems plays in sharing and distributing knowledge about IT governance framework, responsibilities, tasks, etc. In the context of the public sector, it is natural that relational capabilities, once properly established in the organization, can promote synergy and mutual understanding between IT, top management, and other organizational units, such that IT can be directed, designed, implemented, and used in line with organizational priorities.

Most previous studies of IT governance are in the context of private institutions with very few focusing on public sector organization [1] [11] [14]. Table 1 summarizes the IT governance capability areas, capability types, and specific capabilities associated with each, gleaned from the existing IT governance literature in public sector.

2.3 Expected Outcome from IT Governance in Government Organizations

Studies show that the focus of IT governance in public organizations is on governments becoming large consumers of IT and moving toward public administration modernization [6]. In this scenario, the central concern of public administration is highly related to improving government performance, ensuring transparency and efficiency, and improving the quality of public IT-enabled solutions and services [16] [2]. In the e-Government space, transformation initiatives enabled by leveraging IT governance as a capability lead to 1) developing and delivering high quality and integrated public services; 2) effective relationship management; and 3) supporting economic and social development of citizens, local businesses, and civil society [17].

2.4 Existing IT governance frameworks

Various frameworks are being continuously developed and improved to accomplish goals of IT governance in the organization (both public and private). Control Objectives for Information and related Technologies (COBIT), Committee of Sponsoring Organization (COSO), and Information Technology Infrastructure Library (ITIL) are the most commonly used frameworks to govern IT within the organization and to enable quality IT service delivery [8].

3 METHODOLOGY

3.1 Case Study Method

A descriptive case study method [18] was chosen for this research with a qualitative approach to investigate and understand the governance of digital technology in tax administration. Such an approach allows us to be flexible when examining complex situations and

contexts, akin to public sector administrations, with their myriad of stakeholders, robust regulatory environment, and the far-reaching implications of adaptations to their operational processes. Descriptive case study allows the researchers to study a small number of people or groups that are central to a narrative; therefore, the participants in this study consisted of the Information and Technology Leader (CTO), Operations Leader, and Customer Service Leader (the three perspectives) within a large tax administration in a Northern European country. We are specifically interested in these three functional views within tax administration so that 1) we can understand how governance of new digital technologies is viewed and understood by each of the three key perspectives; 2) what capabilities of digital technology governance is essential for each of these functional groups and 3) what digital technology governance capabilities are convergence and complementary.

3.2 Protocol Design

This study forms part of a larger research programme examining disruptive digital technology adoption within public administration. To devise a protocol that explores the capabilities central to the effective digital technology governance whilst also incorporating broader factors related to digital technology adoption in the public sector an extensive literature review was conducted. The interview protocol was devised based on analysis of the literature and discovery of the key themes and components related to governance in such a context (public administration). The part of the interview protocol that is relevant to the goal of this study included open-ended questions covering topics on *organizational governance, data governance, policies, regulatory frameworks, ethical guidelines*; all of which emerged from literature analysis as components of governance. Three different yet complementary protocols were devised to target three key leadership functions within the administration – Information and Technology Leader (CTO), Operations Leader, and Customer Service Leader.

This study analyses the data related to the following five major governance questions covered in our protocol and are addressed to the three key leadership functions within the tax administration:

- How has digital technology adoption changed the overall organizational governance? (Structure and Process)
- How is collaboration encouraged and managed in the Tax Administration regarding technology use? (Relational)
- How do you think the existing policies, ethical guidelines, and regulatory frameworks can enable the effective adoption of digital technologies in Public Administration? (Structure and Process)
- What is the Tax Administration doing to maximize data potential of digital technologies? (Process)
- In what ways has the introduction of digital technologies changed the Tax Administration? (Outcome)

3.3 Data Collection and Analysis

The choice of semi-structured interviews was made based on the lack of existing work in this research area which raises the need for in-depth exploration of the interviewee's perspectives on the topic under investigation [19]. The important point is to describe the meaning of the phenomenon for a small number of individuals who have experienced it [20]. In-depth interviews were conducted online in Autumn 2020, in line with public health regulations. In each interview there were three researchers, each responsible for a specific set of questions contained within the protocol. The interviews took approximately seventy minutes each and they were recorded and transcribed in preparation for analysis. In addition to the primary data, secondary data in the form of public government documents and consultancy reports were gathered to further strengthen the researchers contextual understanding of the operational environment (case description).

To analyse the data, this research employed Interpretative Phenomenological Analysis (IPA) approach to give researchers the best opportunity to explore and understand the innermost deliberation of the real-life experiences of research participants. Analysis and coding of the collected data was conducted in a flexible manner with an iterative approach whereby the researchers began preliminary analysis immediately. This study encompasses three data coding iterations. For the initial coding, the researcher read and re-read the interview transcripts to identify and confirm common themes and to search for words or phrases that are repeated in the interviews data. After reading the transcripts several times, the researcher came up with some themes and categorizations of patterns in the data. The themes noted in this iteration were lengthy and convoluted which required further analysis. The second coding iteration evolved once a greater understanding of the lengthy data was developed by the researcher and the first generic chunky statements were further reduced into fewer words, themes, or categories to move closer to the essence of what the research participants were expressing. The final phase of analysis involved the identification of key emergent themes or categories which involved grouping the previously identified themes into a hierarchy of codes to identify thematically coherent interpretations of the data and the concept of technology governance. Analysis and coding of the data resulted in a robust, empirically tested three governance capability areas (Structure, Processes, and Relational capabilities) specifically relevant for tax administration. A well-known qualitative data analysis software platform (NVivo) was used to organize, code, and analyze our rich qualitative data and to obtain rigor in dealing with such data.

4 CASE DESCRIPTION

Our tax administration case is highly ranked amongst its OECD peers for ease of paying tax [4]. Performing well on these international metrics indicates an internationally respected administration however, as stated in the introduction there is scope for improvement with regards IT governance. The current strategy highlights the administration's focus on serving the community by fairly and efficiently collecting taxes, while their vision is to be a leading, trusted tax administration and an employer of choice. The administration introduced a modernized income tax system in 2019 enabling them to further fulfil key objectives within their statement of strategy. The statement of strategy (2017-2019) primarily focused on three key areas – 1.) improving service standards thereby enhancing customer satisfaction; 2.) provide secure digital and self-service channels while achieving high levels of voluntary compliance and preventing non-compliance; 3.) and ensuring a fair,

transparent, and effective tax administration that references international benchmarks and is highly rated. Achieving these broad objectives require clear strategic collaboration between the Customer Service leader, the Operations leader, and the Information and Technology leader. Therefore, these three leadership functions are the focus of this research. To fulfil the stated objectives the tax administration has become increasingly digital, moving closer to transactions, and accessing real-time data, further strengthening the necessity for strong governance principles. This move is evidenced by an income tax modernization programme whereby employers must report employees' pay and deductions in real-time, this information provided includes data on pay, tax, pensions for each employee. Income tax is the largest single tax head for the administration.

The modernized income tax system was successfully adopted by taxpayers with 61% registering in 2019 on the single access point for secure online services. Large corporate consulting firms, various practitioner accountancy groups, and individual entrepreneurs were amongst those that participated in the consultation process in the years prior to the tax modernization system launch, the consultation process focused on the impact of the new system on stakeholder groups. The submissions covered a range of topics from the impact of Real-Time Reporting (RTR) on SMEs to the need for technical elements such as sandboxes, betas, and early adopter programmes. The system allows taxpayers a single access point to monitor tax credits, reliefs, refunds, and liabilities, in addition to pension and retirement contributions. The online system offers additional features beyond tax such as a home purchase scheme and a debt management service. Tax receipts grew steadily year on year from 2012 to 2019, often exceeding forecasts, while the level of debt to the exchequer fell by 37% between 2018 and 2019. Furthermore, the volume and value of electronic transactions through digital and self-service channels reached their highest point ever while identified, prevented, or confronted non-compliance fell year on year between 2017 and 2019. The administration's budget also fell slightly to its lowest point in over a decade, standing at 0.75% of the gross collection of taxes and duties.

5 FINDINGS

5.1 Capabilities Critical to Effective Digital Technology Governance in Tax Administrations

This section answers the first research question by presenting capabilities that are required to govern implementation of digital technology in tax administration. The three constructs (presented in Section 2) are used to structure our findings. Table 2 presents the summary of the findings for the research question one.

- Decision-Making Structure

Management and monitoring structure: The fundamental nature of public administration and more so tax administrations mean there are strong governance and oversight boards in place. In addition, the escalating push for transparency in public administrations is further driving the role of governance and oversight including the role of the IT governance board and steering groups. The core of this capability includes having board members and senior management responsible for technology governance and ensuring realistic and feasible technology developments and solutions for the organization in general. At the project level, a project steering committee is formed to control and monitor activities and processes involved in the new digital and technologically enabled initiative.

- Processes

IT management and monitoring: With the continuous technological innovations developing in recent decades such management and monitoring of processes and activities at both organizational and operational levels is increasingly important. We identified processes related to using available information, best practices, and monitoring tools to manage, continuously monitor, and assess digital technology-enabled solutions within the organization as important. Furthermore, processes related to the assessment of new technology adopted by the organization to anticipate impacts on costs, service users (e.g., employers and employees on payroll), and value delivery were identified. Standard reporting process and regular management meetings were deemed necessary to monitor activities and processes.

IT decision-making: This is a set of IT-related decisions made by the top leaders of the organization that are considered major to organizational health and survival. This case study suggests that, if the IT decision-making process is well understood, it is possible that organizations make smarter decisions on new technology adoption, technological resource allocation, and eventually realize expected benefits. There is a need to assess the feasibility of the adopted technology and the path to organizational adoption. Furthermore, technological solution usability and guidelines for improvement of these solutions are necessary to ensure smooth operational integration. From the customers' standpoint user groups needs must be identified and considered to further bolster technological potential (public administrations serve a broad range of stakeholders with competing needs that require consideration and balance).

Technology quality measurement: The effectiveness of technological solutions needs to be monitored on a continuous basis to ensure proper allocation of resources and appropriate decision-making. Data suggests that dashboards may be used to monitor the effectiveness of solutions while national metrics such as the number of system service users can elucidate the success and adoption rate of new technological solutions.

Compliance management: Public administrations must follow enacted legislation and fulfil various tax requirements, these constraints also impact how new technological applications are selected, adopted, and governed. In tax administrations, legal oversight tends to be clear and strongly enforced, making legislation a key driver of decision-making within revenue even down to selection and use of new digital solutions. Legal requirements partially govern the process and activities through which the digital solution operates, and it fully governs service users' data, including how it is collected, utilised, processed, and stored to ensure citizen data is protected.

Data management: Data is one of the public administrations' key resources. Tax administrations have a wealth of rich, reliable, unbiased data and technological solutions have the potential to extract meaningful knowledge from such data. The implications of

having such a vast reservoir of data are both an asset and a liability –a way to better understand service users' while also potentially acting as a single point of failure given the centralisation of large quantities of sensitive data. Data management processes (improving data quality and data sources, data enrichment, data privacy etc.), data infrastructure, data analytics, and business analytics are crucial to maximize the value of available data.

Identification of service users' needs and preferences: As previously mentioned, public administrations have a responsibility to many diverse stakeholders from individual citizens to large trade unions, and small sole operators to multinational conglomerates. Technology can streamline the complexity of serving a broad spectrum of user groups. To achieve that, one important capability is to perform customer segmentation to identify the specific needs of different user groups. This capability facilitates technological choices to be made in such a way that service user's data could be analysed and used in a more meaningful way so that the technological solution can deliver customized services to address different user groups needs and desires. This could conceivably lead to aligning business needs with service user's needs and therefore accelerate the generation of business and service users' value.

- Relational Capabilities

Ideation: The rapid pace of digital disruption coupled with the resource constraints of public administration has resulted in a reliance on third parties for innovative capacity, technological solution development, and innovative system implementation. This is positive in the sense that there is a cross-pollination of ideas however an overreliance on third parties can be a result of weak internal capabilities and lead to a vendor lock-in issue and an imbalance of power. On the other hand, an aggregate of service user's opinion about a particular technological solution or service use and experience is recognized as an important force for the adoption and development of services.

Engagement and strategic alliance: The nature of public administrations means they do not operate in a vacuum, in fact, they are often boundary spanners with a complex network of stakeholders including business partners, service users, government liaison operatives, trade unions, employees etc. The breadth of this network necessitates engagement across both public and private sector organizations. New technological solutions must accommodate a collaborative approach to ensure adequate engagement and buy-in is secured. Co-creation is also a useful function to enhance participation and ensure new solutions fit stakeholders' requirements and integrate with existing systems.

Innovation culture and training: While public administrations are traditionally regarded as conservative organizations the increasing impetus of remaining technologically relevant necessitates the development of innovation culture through support and training initiatives. This includes ensuring IT staff are equipped with the foundations necessary to engage in the innovation process and use new tools and technologies. Furthermore, openness to innovative ideas that emerge through IT personnel and innovation programmes is encouraged while there is an emphasis on ensuring such staff are well-informed and exposed to new international developments relevant to their field. There may also be a need to consider learning and training for external stakeholders such as equipping service users breach the digital divide and encourage online engagement with digital services through managed training schemes.

5.2 Leadership Views on Capabilities for Digital Technology Governance

This section aims to answer the second research question by providing complementary perspectives of the three leaders. Before presenting findings related to each leadership views, we highlight the three major and well-balanced convergent viewpoints regarding capabilities required for successful digital technology governance in the case organization. Table 2 presents the summary of the findings for the research question two.

Strategic alignment: Data from the case indicates that despite the apparent different leadership perspectives on digital technology governance within the tax administration, there is a *significant strategic alignment between these three perspectives*. This manifests in the overarching shared objective to use digital technology to ensure that taxation happens by default (Customer Service Leader) and as naturally as possible (Information & Technology Leader).

Real-time data: *Providing real-time data* that is highly accessible to the organization internally and across other public departments can guide both the tax administration and collaborating public departments, such as the Department for Social Protection to support citizens and provide cross-departmental shared public services. Data suggests that there is an appreciation for the right choice of digital technology adoption (Information & Technology Leader) that provides a rich source of data to support operations (Operations Leader), which in turn can help harness the power of technology and data available to the organization to answer business and service users' needs (Customer Service Leader).

Engagement and collaboration: This case study claims that there is clear acknowledgement of the importance of serving citizens and working with stakeholders however, the emphasis on public consultation, collaboration, idea generation as a result of working with external stakeholders, and the dependency on public opinion, highlight an extremely service driven approach that places the service users at the heart of the administration. The act of *working with external entities* is a source of ideation and value creation – for the Information and Technology Leader that includes procuring new technologies, for the Operations Leader it involves working with external outsource partners, for the Customer Service leader it relates to engagement with taxpayers. Thus, external engagement in a variety of forms is regarded as fundamental to continued progress by all leaders. These approaches to digital technology governance and the acknowledge of external engagement and collaboration illustrates the closeness between the administration and service users, which in turn facilitates open communication and an understanding of user needs.

Information & Technology Leadership View of Technology Governance: The Information & Technology Leader is the senior leader overseeing the assessment and selection of new information and technological solutions within the tax administration. They are the individual responsible for data and technology and they are central to the new technological solution implementation

Table 2: An Integrated View of Digital Technology Governance in Tax Administration

IT Governance Capability Types	IT Governance-Capability Areas in TA	Specific Capabilities –TA's Senior ManagementPerspective	Specific Capabilities –TA's OperationalPerspective	Specific Capabilities –TA's Customer ServicePerspective
Decision-making Structure	Management and monitoring structure	Governance board, Governance project steering group	Governance board, Governance project steering group	Governance board, IT project executive team
Processes	IT management and monitoring	Monitoring and management of IT processes and activities at the organizational level	Monitoring and management of IT processes and activities at the operational level	Standard reporting processes, Monthly meetings organization
	IT decision-making	Technology assessment, Potential technology adoption	Technological solution use and further improvement guidelines and suggestions	Identification of user's needs of the IT service/solution
	Technology quality measurement		Monitoring users and IT service effectiveness using dashboards	Measuring the number of users of the IT service, Measuring the new users of the modernized/transformed public services
	Compliance management (regulation, legislation, and tax law)	Identification of technological solutions of the organization, Technology maintenance process, Financial management, Collaboration and recruitment process, Procurement process, Data management at the organizational level (compliance with data regulation)	Compliance management at the operational and business activities and processes, Public service delivery management, Data management at the operational level (compliance with data regulation)	Data management at the service user's level (compliance with data regulation (GDPR)), Technology adoption and modernization
	Data management	Improve data availability, quality, and sources, Making data unbiased, Identification of relevant/selective data for the potential technology use, Monitor data privacy and protection at the organizational level	Enriching data, Improve quality of data for better management of activities, Unleash user's preferences by using user's data, Monitor data privacy and protection at the operational and process level, Monitor and regulate data access restriction (business requirements mandatory)	Improve data availability and data sources (other orgs), Making data as tax liability, Improve data accessibility via adequate data warehouse, Data analytics powered by data analytics warehouse, Data analytics using BI and other analytics tools, Monitor data privacy and protection at the use level
	Identification of service users' needs and preferences		Customer segmentation based on different user's groups needs and preferences, Data analysis to understand and unleash user's service preferences	Users-business needs alignment

Table 2: (*Continued*)

IT Governance Capability Types	IT Governance-Capability Areas in TA	Specific Capabilities –TA's Senior ManagementPerspective	Specific Capabilities –TA's OperationalPerspective	Specific Capabilities –TA's Customer ServicePerspective
Relational Mechanisms	Ideation	Ideation [assess and adopt innovative ideas from external business partners]	Ideation [innovative ideas to emerge from engaging with IT staff and business partners]	Ideation [innovative ideas emerge from direct engagement with service users and key stakeholders], Public consultation [Reliance on public opinion], Avoiding vendor lock-in
	Engagement and strategic alliance	Identification of few but key business partners	Engage through customer's panels, Co-creation with service users	Public consultation, Engagement with key stakeholders (payroll associations and other Government departments/agencies)
	Innovation culture and training	Promoting innovation culture, Encouraging staff to use new tools and techs, Enable the organization to provide required infrastructure and foundation for staff to be innovation and technology driven	Innovation programmes, IT personnel to develop and deliver innovative ideas	Learning [service users], Technology adoption through proper and managed training activities
Technology Impact/Outcome Areas according to each perspective				
		Benefit realization, Cost reduction, Quick decision-making at the organizational level, Staff efficiency, Proper investment, Natural taxation	Quick decision-making at the operational level, Successful service transformation, Secured customer's data	Quick decision-making at the end users level, Deliberate use of technology for service users, Unleashing and maximizing the value of data and seeing data in a different way, Employee's entitlement benefit in real time, Transparency in the provided solution, Making taxation by default

process in addition to overseeing its adoption and feasibility throughout the organization. The Information & Technology Leader oversees the governance of the technology through assessment of its merits and potential for its adoption while establishing appropriate governance measures. The Information & Technology Leader oversees the administrations relationships with business partners and represents the interests of the administration. Broad assessment of the organizational impact of new technologies falls under their remit. The management and maintenance of the technological solutions and coordination of the governance steering group are also tasks performed by the Information & Technology Leader in addition to overseeing the role and use of third parties and initiating the development of in-house skills and capabilities. The Information & Technology Leader has a top tier view of the organization and as such they are best placed to understand the potential implications of the technology for the organization as a whole. They are central to the cultivation of a climate for innovation, ensuring staff have access to the tools, technologies and supports that enable them to experiment and engage in new procedures and techniques that will enable the administration to stay relevant in the everchanging digital environment.

Operations Leadership View of Technology Governance -The Operations Leadership is central to the daily functions of the administration, ensuring the processes and activities necessary for the technological solution to succeed, are in place. They have a responsibility to develop guidelines and manuals to support technological solutions while ensuring alignment to the legislative requirements while also delivering for the administration. The Operations leader is responsible for governing the technological solution, in particular, the use of the technology and the development of guidelines and noting areas for improvement. The Operations Leader engages with customers through a customer panel to assess how the technology fulfils service user requirements. This engagement may lead to co-creation with service users. The deployment of integrated technology solutions that lead to changes in a system will require quick decision to be made at critical junctures and the Operations Leader shoulders this responsibility. Their role and knowledge of the daily processes and activities central to technology deployment place them in a strong position to monitor and manage the new digital solutions while also learning from third parties and assessing innovative ideas trialled in other jurisdictions. The Operations Leader is responsible for developing innovative programmes, supporting an innovation culture, and developing IT personnel. They are uniquely placed to monitor service users through dashboard access while also having enough high-level knowledge to monitor international developments in both public and private sectors.

Customer Service Leadership View of Technology Governance - The Customer Service Leadership is primarily concerned with the satisfaction of service users. The Customer Service Leader has access to metrics and data necessary to truly understand users' digital journey. The information emerging from new technologies within the administration can be used to further design an increasingly desirable platform that meets user requirements, while also ensuring the administrations business needs are fulfilled. Simultaneously they must ensure that legislative requirements such as GDPR are fulfilled, and data management practices are adhered to. They are externally facing and engage with the public and key external stakeholder groups; this may include collaborative design processes to facilitate co-creation of solutions or engaging with other public administrations to ensure smooth integrated public services. The Customer Service Leader is tasked with ensuring that technology is used deliberately and transparently while maximising the value of data and provide real-time insights. From a management and monitoring perspective, the Customer Service Leader engages with multiple governance layers including – the IT project executive team and the governance board. Changes to taxation systems may necessitate public consultation and engagement with user groups, the Customer Service Leader is responsible for such activities, and they also seek to minimise vendor lock-in. Data management at the analytical level falls under this leader's remit.

6 DISCUSSION AND CONCLUSION

This work investigates the digital technology governance capabilities and the different perspectives on such governance from the three leadership functions in tax administration. Analysis of the data emerging from the three complementary perspectives provided a robust understanding of the key capabilities within tax administration and advances our understanding of how an integrated leadership views may impact the effectiveness of digital technology governance in tax administrations.

6.1 Managerial implications

Findings from this study shed light on how tax administration practitioners conceive and enact digital technology governance. Findings from this study identify specific Structures, Processes, and Relational capabilities that are relevant for organizations in meeting high regulatory requirements associated with tax administrations. The findings of this study are consistent with other research [11] [1] and show that effective digital technology governance in tax administration requires the harmonization of IT and business units. This case study tries to involve both the business unit and IT unit in the project activity by setting up IT project committees comprised of business and IT personnel. This is very important to create synergy between IT and Business units. Finally, enhancing relational capabilities can strengthen the foundation for formal Decision-making Structures and Processes. Nevertheless, for large and complex organizations such as our case, less effort is required to build and maintain relational capabilities with high-profile third-party organizations as multinationals with the significantly greater capacity for formal contracting processes and overheads are keen to strengthen their business relationships with them.

6.2 Research implications

Unlike previous work on the relationship between specific IT governance practices [15], effects of these practices on performance of IT and business [2], and effectiveness and performance of IT governance in general [14] [21], this study considers a broader conceptual approach for digital technology governance. While most of the studies focused on presenting the elements in static view models [21], this study extends previous research in that it helps to explain the multiple views to digital technology governance within a public organization. Therefore, this study contributes to existing knowledge by presenting an interdependent (the dependency that exists between the three leadership viewpoints towards achieving the organizational objectives) and holistic (considering the three major leadership groups) model for implementing effective digital technology governance in public administration, more specifically, tax administration.

This study further recognizes that the three constructs (Structure, Processes, and Relational capabilities) could be viewed as organizational capabilities that are required to strengthen and implement digital technology governance and its responsiveness to the new technological and organizational demands. While each public organization needs to focus on all three, the optimal mix of Structures, Processes and Relational capabilities may be different in public organizations. In our case study, we realized that the different views of the digital technology governance elements of Structure, Processes, and Relational capabilities were useful in understanding the complex organizational environment of the Tax administration with its IT department working as a separate entity with multiple business units. We can expect that the design and implementation

of Structure, Processes, and Relational capabilities would be different in less complex organizational environments (e.g., in small public agencies). As a result, determining the optimal mix of the three constructs would be contingent on the organizational context. Future empirical work can provide more insights into the design of these three governance elements in other organizational contexts.

Finally, considerable effort in the IT governance literature has been undertaken based on the relational capabilities that are internally developed such as interactions between leaders, IT staff, and other organizational units [2], [21]. However, findings from this work suggests relational capabilities include a set of relational capabilities that support collaboration 1) across different government organizations (e.g., interaction between tax administration and social protection), 2) between the organization and third parties (e.g., large advisory and consulting organizations like PwC or Accenture), 3) between other tax departments (e.g., Custom and VAT), and 4) with service users (e.g., Customer panels). The strong engagement protocols instituted between the Information and Technology Leader and other public administrations, the Operations Leader and other tax departments, and the Customer Service Leader and service users, resulted in access to real-time, reliable data that allowed the administration to respond rapidly and in an agile way to the new demands and public health crisis (time of COVID 19). The result of this led to the delivery of quality data that shaped social protection measures and supported those most affected by the pandemic. This use of data to provide support to the society's most vulnerable demonstrates the values of effective digital technology governance. Although we achieved a better understanding of a balanced mix of Structures, Processes, and Relational capabilities in this complex organizational environment, a number of issues remain unclear. First, while the role that the IT project steering group plays is clear, the role and responsibility of the IT governance Board were not clear. Thus, as [14] argues, in big government organizations there is uncertainty in decision-making roles therefore, it is plausible to speculate that the Board may not be directly involved in the new IT and digital technology development. Second, the IT function remains an important entity to plan and deliver technological solutions for the organization despite business unit sponsorship and ownership of solutions.

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