TAX DIGITALIZATION

OVERVIEW AND GUIDE

Success Factors in Tax Digitalization

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BETTER THAN CASH ALLIANCE

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FOREWORD

In the face of the trifecta of fiscal adversity currently facing governments as a result of the COVID-19 pandemic, this report brings good news. It showcases a promising tool for emerging market governments to begin overcoming this adversity: tax system digitalization.

Let us be clear, the fiscal impact of COVID-19 on emerging markets is devastating.

Economies are contracting significantly as a result of domestic and foreign lockdowns, which have stifled local and export markets. The World Bank's 2020 baseline forecast projects a 5.2% reduction in global GDP, which threatens to plunge over 71 million people into extreme poverty.

Public expenditures are rising precipitously in efforts to counter the pandemic's impact on lives and livelihoods. The IMF estimates that, thus far, the global cost of these fiscal measures is USD 8 trillion, or 9% of global GDP. Given the limited fiscal space of emerging economies, this has resulted in unsustainable budget deficits and concerning increases in debt-to-GDP ratios.

Financing sources to pay for urgent spending needs are dwindling. The elasticity of most revenue sources has shrunk tax bases as income and consumption have declined, which is a discouraging setback to recent successful domestic revenue mobilization reforms. Moreover, foreign funding sources have also dropped substantially. The Institute of International Finance estimates that investors have already withdrawn USD 96 billion from emerging-market stocks and bonds.

Tax system digitalization is not a magic bullet for solving these daunting fiscal challenges, but it can be an extremely valuable instrument in a government's fiscal toolbox. It can be used to enhance the cost-effectiveness of tax authorities by improving administrative efficiency and operational productivity, thus increasing net revenue. Also, it can reduce taxpayer financial and non-financial voluntary compliance costs, and can improve taxpayer trust and confidence through greater transparency and accountability, thereby strengthening the foundation of a successful tax system.

COVID-19 has amplified these attributes of tax digitalization, but it has added another substantial benefit: tax digitalization is characterized by touchless interactions, minimizing in-person contact.

The Better Than Cash Alliance member governments across the world are constantly searching for ways to serve their citizens better, faster, and more cost-effectively. It was at their request that the tax system digitalization work started.

We hope that this report and case studies provide a way forward for Alliance members and other emerging market governments to both serve their citizens and contribute to addressing the fiscal adversity resulting from the pandemic.

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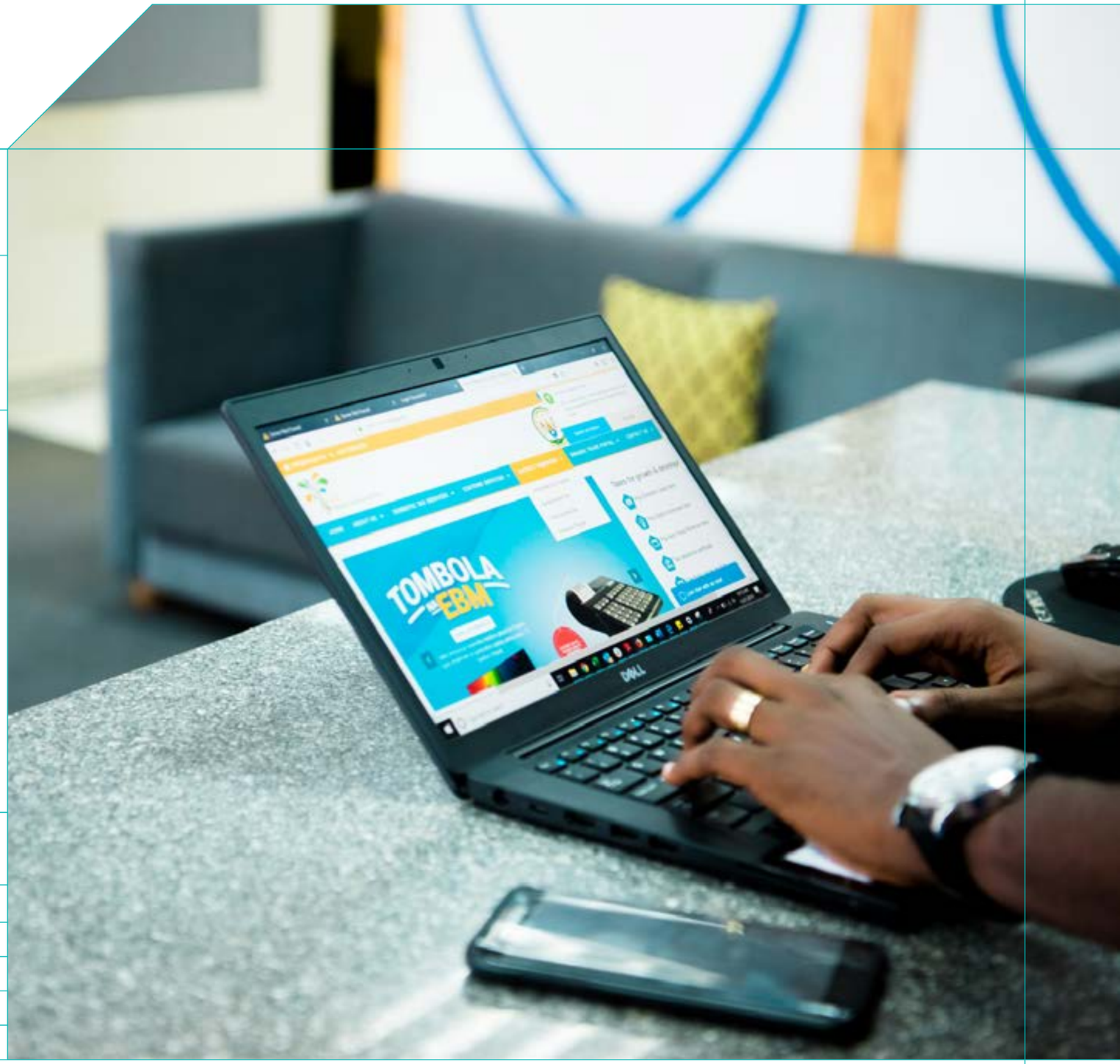
CONTENTS

ANNEXES



1. EXECUTIVE SUMMARY

This report presents a powerful new demonstration of how digital payments can transform millions of lives for the better. In emerging and developing countries (based on 2018 data), digitizing tax payments and related processes can raise an additional USD 300 billion[1] in government revenues annually. This represents almost one-third of the USD 1 trillion funding gap (estimated in 2018), which is pushing many of the Sustainable Development Goals (SDGs) out of reach.[2] The SDGs are the world's roadmap for people, prosperity, and planet; achieving them will deliver vast benefits – especially for the world's most vulnerable communities and ecosystems.

The devastating social and economic impacts of COVID-19 have heightened many of the challenges that the SDGs are designed to overcome. This, in turn, has heightened the need for proven solutions to keep the SDGs within reach. Digitalizing tax systems is such a proven solution, and is now needed more than ever. To date, over 800 tax policy measures have been taken by more than 100 countries worldwide in response to COVID-19.[3] Digitalization makes it easier for tax authorities to levy and collect taxes, and for businesses and individuals to pay them, among many other benefits, such as financial inclusion. Through a wide range of means described in this report, responsible digitalization enables governments to increase tax revenues. The value of digitalization has never been greater, at a time when governments face acute pressure on their national budgets, yet massive new public spending to protect their populations and economies.

Tax digitalization will also demand the attention of governments when charting their recoveries from the COVID-19 pandemic. Digitalizing taxes can open doors to stronger financial infrastructures and more confident international partners, and can also greatly improve public services, and reduce the need for in-person tax transactions as economies recover.

The report is both an evidence base and a practical guide to help policymakers harness the full potential of tax digitalization. Detailed case studies show how three leading countries are digitizing tax administration systems as a strategy to increase domestic revenue.[4] These cases underline the present urgency for governments to build effective, inclusive digital payments ecosystems to better cope with emergency situations in the future. For example:

Rwanda

Combined with tax reforms, investments in digital tax services between 2010 and 2016 increased the tax-to-GDP ratio from 13.1% to 16.6%, and led to 14% average annual growth in revenue collected from 2010 to 2018.

Mexico

Mandatory e-invoicing between 2012 and 2017 drove a 48% increase in tax revenue from goods and services, increasing the tax-to-GDP ratio from 12.6% to 16.2%. From 2010 to 2016, overall tax revenue and social security contributions increased by around 95%, to over USD 177 billion.

Indonesia

The Directorate General of Taxes (DGT), Indonesia's national entity responsible for collecting federal taxes, has pursued digitalization as a critical means to encourage taxpayer compliance, leading to a 20% reduction in business tax compliance time between 2014 and 2019.

DEFINITION

Digitalizing tax administration refers to the use of digital and data-driven approaches to optimize the functions and operations of revenue authorities. These include taxpayer registration, filing, compliance and audit, payment, and disputes, as well as broader taxpayer services and user experience.

TOP 5 Benefits

governments have achieved by digitalizing tax systems

Higher revenue from increased taxpayer compliance

Tax avoidance and tax evasion cause significant revenue losses, which can be substantially recaptured by digitization. For example, researchers estimate that governments lose USD 200 billion in revenue every year to tax avoidance and evasion by large multinationals.[5] Digitalizing tax systems and joining the Automatic Exchange of Information (AEOI) – an international framework through which tax information is automatically shared between revenue authorities in different countries or jurisdictions – would allow emerging economies to recover USD 40–50 billion annually in corporate tax revenue alone.[6] In Mexico, 83% of taxpayers surveyed thought that it was likely they would face penalties if they failed to comply with their tax obligations.[7] In Rwanda, the number of registered taxpayers almost doubled after e-filing and e-payments were introduced, rising from 144,000 to 242,000.

Lower administrative costs through automation

Eliminating manual processes improves the efficiency and effectiveness of tax administration. Recent evidence from the Philippines, Ghana, and other countries suggests that digitalization can cut the cost of tax collection by as much as 30%.[8] Mexico reduced the cost of collection by 57% between 2006 and 2018, while Indonesia cut business tax compliance time by 20% between 2014 and 2019.[9] In Rwanda, electronic billing machines reduced the average time it takes businesses to file VAT returns from 45 hours down to 5.[10]

More transparency and accountability leading to reduced leakages and corruption

Shifting tax authorities to digital platforms improves administrative transparency and accountability. In Afghanistan, total revenue collection in 2016 was 20% higher than in 2015. The Afghan Revenue Department credits part of the increase to the automated tax collection system implemented at collection points. The automated system resulted in a significant simplification of processes, increasing transparency and reducing the administrative burden of managing cash.[11]

Better data for more effective decision-making

Tax digitalization generates more timely, accurate, and detailed data. The digitalization of tax is fully aligned with the G20 Anti-Corruption Work Plan 2019–2021, which calls on governments to take action to promote integrity and transparency through use of new technologies.[12] This allows tax authorities to better track revenue collections, measure user satisfaction, and assess staff performance. In Mexico, data are captured in a standardized way and the federal tax authority regularly shares information with other entities such as the Ministry of Finance's intelligence unit, the Mexican Social Security Institute, the Institute of the National Housing Fund for Workers, the National Banking and Stock Commission, and the Ministry of Economy, as well as with local governments.

A broader tax base from greater business formalization

A large informal economy (e.g. 34% of GDP in Sub-Saharan Africa[13]) means a narrower tax base and, therefore less revenue. Tax digitalization encourages small enterprises – defined by the OECD as businesses with between 10 and 49 employees – to gradually formalize and pay taxes.[14] In 2014, Mexico introduced legislation that made e-invoicing mandatory.[15] By 2016, production of formal goods and services rose by nearly 50%, significantly increasing the tax base. This, in turn, contributed to a 21% increase in the country's tax-to-GDP ratio between 2014 and 2016.

OVERVIEW OF TAX DIGITALIZATION BENEFITS AND CHALLENGES

	GOVERNMENT	BUSINESS	INDIVIDUALS
Main Value Proposition	Increased revenues at a lower administrative cost	Lower tax compliance burden	Lower tax compliance burden
Benefits	Increased revenue Lower admin cost Increased transparency leading to reduced corruption and greater legitimacy Data led policy making Greater business formalization	Reduced time and resources dedicated to taxes Greater transparency during tax cycle Increased use of technology after compliance	Reduced time and resources dedicated to taxes (e.g. advisor) Increased institutional trust
Challenges	Implementation challenges Low initial uptake Security and privacy risk (e.g. gov. misuse or 3rd party hacking)	Increased burden with more information demanded Cost of adaptation and learning Security and privacy risk (e.g. gov. misuse or 3rd party hacking)	More rigid payment deadlines Risk of an unfair tax system for those without digital access Security and privacy risk (e.g. gov. misuse or 3rd party hacking)

The Guide

This report summarizes global good practices and provides a step-by-step guide for governments to help digitalize their tax administration systems and maximize the benefits of doing so. Ten success factors are identified based on digitalization research, and in-depth case studies are provided from three countries that have taken strategic steps to digitalize their tax systems over recent years: Indonesia, Mexico, and Rwanda. These case studies are designed to support tax administrators, policymakers, private sector tax support services, and all players considering or implementing digitalization initiatives.

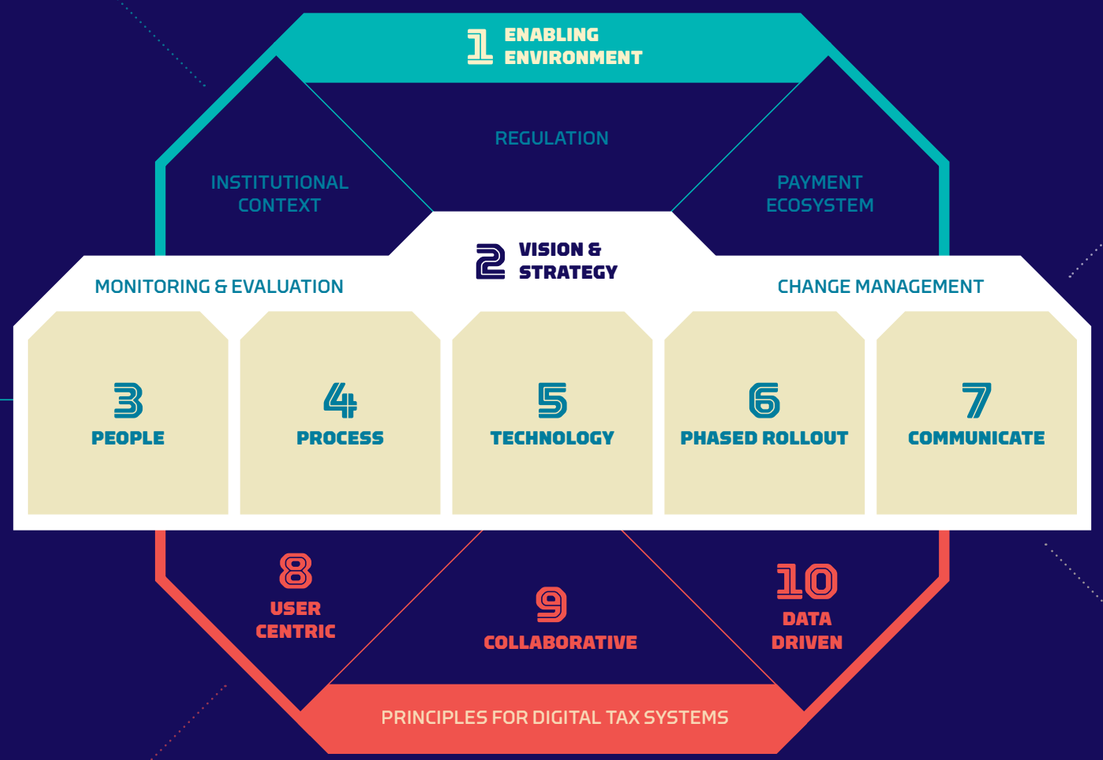


FIGURE 1: The success factors address the overarching framework for designing successful digital tax systems. This framework covers an enabling environment, which refers to the essential foundations for digital payments and digital tax administrations, along with strategic and operational factors, and general principles for tax digitalization initiatives.

Essential foundations for digital tax administrations Digital transformation projects in revenue authorities are often ambitious, multi-year initiatives. The environment in which these projects are undertaken directly impacts on the degree of success they achieve. For instance, if legal and regulatory frameworks do not recognize the legal validity of digital interactions with the revenue authority, this can mean in-person taxpayer registration is still required, negating much of the efficiency and cost benefit of digitalization.

Vision, strategy, change management, monitoring, and evaluation Countries that have successfully digitized tax systems, started with a clear vision and a robust strategy for realization. Change management is a central pillar of an effective digitalization strategy.

Overarching principles for digital tax systems These include customer-centricity, driving down compliance costs, and enhancing data capabilities to improve tax intelligence, compliance, and service delivery. Improving intelligence and service delivery in such a cross-cutting area of public policy also requires revenue authorities to collaborate with other public institutions and the private sector.

Effective implementation This requires a process re-design, and investment in attracting, retaining, and developing the right talent to deliver the agreed strategy. Managing complex technology projects requires new approaches, including progressive iteration and testing. Successful digitalization strategies are always accompanied by clear communication with internal and external stakeholders to ensure alignment and give due consideration to the views and concerns of all stakeholders. Robust performance and monitoring systems are also vital to help the revenue authority keep digitalization initiatives on track or course correct as needed.

Conclusion

These case studies show that although often complex and challenging, tax digitalization has the potential to deliver major benefits for governments, businesses, and individuals when it is designed and implemented effectively. Crucially, these benefits can drive financial inclusion and economic opportunity, particularly for women and marginalized groups. Mexico, Indonesia, and Rwanda provide a compelling picture of the power of digital tax systems to help achieve the SDGs by growing government revenues and empowering businesses.

Rwanda

The consistency of Rwanda's digital tax journey has delivered highly impressive results and provided valuable lessons for other jurisdictions. Rwanda's whole-of-government strategic vision and its focus on continuous improvement make the country a regional leader in deploying digital technologies to improve tax system performance. Some important lessons include: (1) leveraging strong government support to increase compliance and drive uptake of new systems and processes; (2) collaborating effectively with the private sector to create commercially viable delivery models for tax digitalization; and (3) adopting an agile approach to software implementation.

As Rwanda's digitalization journey continues to gather pace, new opportunities to drive progress are emerging, for example:

- **Strengthening organizational capability** by recruiting, training, and retaining top digital talent.
- **Using data insights to increase collection and compliance** by cross-checking data sources, such as e-billing machines and VAT-compliant transactions.
- **Increasing investment in simplifying tax services for small and micro-businesses,** including accommodation of varying levels of information technology literacy and access, with a strong focus on gender inclusion.

Mexico

Mexico has implemented a suite of tax policy and administration reforms that has lifted its tax-to-GDP ratio by a remarkable 4 percentage points between 2012 and 2016. The country's tax digitalization journey has many lessons to draw from: (1) crafting a compelling vision and strategy as an essential enabler of change, helps to align and sustain efforts over time; (2) securing flexible and long-term financing ensures reform effort are sustainable; and (3) using data to continuously improve internal operations and customer-facing services is key to a tax authority achieving its strategic objectives.

As Mexico continues to drive tax digitalization forward, some avenues of further opportunity could be explored:

- **Promoting an inclusive digital payments ecosystem.** Wider adoption of digital payments across the economy helps drive financial inclusion, broadens the tax base, and provides revenue authorities with more data about economic activity to improve compliance.
- **Simplifying tax processes to enable seamless digital taxpayer services.** Digitalization efforts offer an opportunity to further simplify services to reduce compliance costs, which, in turn, drives greater uptake by taxpayers. This can create a virtuous cycle by providing governments with greater revenue to invest in further productivity-enhancing reforms.
- **Collaborating with subnational levels of government.** Supporting regional and municipal tax authorities in their digital journeys – particularly through greater alignment across levels of government – can deliver significant benefits to all stakeholders, including individuals and businesses.

Indonesia

Indonesia has achieved important milestones in its digital tax journey, despite the complexities of managing a digital tax system across several levels of government, 17,000 islands, and over 600 ethnic groups and languages. Indonesia offers many lessons for other jurisdictions, including: (1) actively managing change and investing in people, improving training for tax officers, and a more competitive remuneration scheme to retain and recruit highly skilled staff;[16] (2) leveraging the growing digital ecosystem, in partnership with the private sector, to provide taxpayers with greater access to value-added services through third-party service providers; and (3) aligning stakeholders to enable an effective procurement process, with support from the highest levels of government.

As Indonesia continues on its digitalization journey, the following opportunities merit close consideration.

- **Articulating and building support for a long-term tax digitalization strategy.** Helping all stakeholders understand the country's digitalization journey and its vast potential benefits can help drive buy-in, uptake, and innovation.
- **Focusing on process simplification and optimization, especially for post-filing procedures.** For example, supplier VAT declarations are not systematically checked against buyer VAT declarations. This has resulted in ongoing tax evasion through false invoicing.
- **Reemphasizing data standardization to improve process flows.** The data architecture of systems used for reporting different taxes (i.e. VAT, Personal Income Tax) is often different, making data analysis highly challenging. Standardized data collection will enable far more data-driven insights to underpin more effective policymaking and implementation.
- **Continuing to leverage the country's growing digital payments ecosystem through public Application Programming Interfaces (APIs).** Public APIs enable tax authorities to offer new services to taxpayers at a faster rate, improving the taxpayer experience. This process needs to be managed carefully, employing responsible practices that protect end-users and their personal data.

2. AN OVERVIEW OF TAX DIGITALIZATION

Governments around the world face mounting pressure to mobilize domestic resources, improve services to taxpayers, and meet the Sustainable Development Goals (SDGs) to which they have committed. Emerging economies, in particular, will require substantially more revenue to finance the public services and other reforms needed to achieve the SDGs, particularly those related to poverty, hunger, and malnutrition, education, health, infrastructure, and public administration (SDGs 1, 2, 3, 4, 6, 7, 9, 10, and 16). Increased revenue is also essential for the productivity-enhancing reforms needed to deliver sustained, inclusive, and environmentally sustainable economic growth, along with the fair distribution of public resources (SDGs 5, 8, 11, 12, 13, 14, 15, and 17). Furthermore, SDG 16 - Peace, Justice and Strong Institutions outlines how digital payments dramatically improve transparency of transactions to and from governments. This helps hold governments accountable to a higher standard for usage of public funds and increases the funds available for vital public services, investments, and transfers.[17]

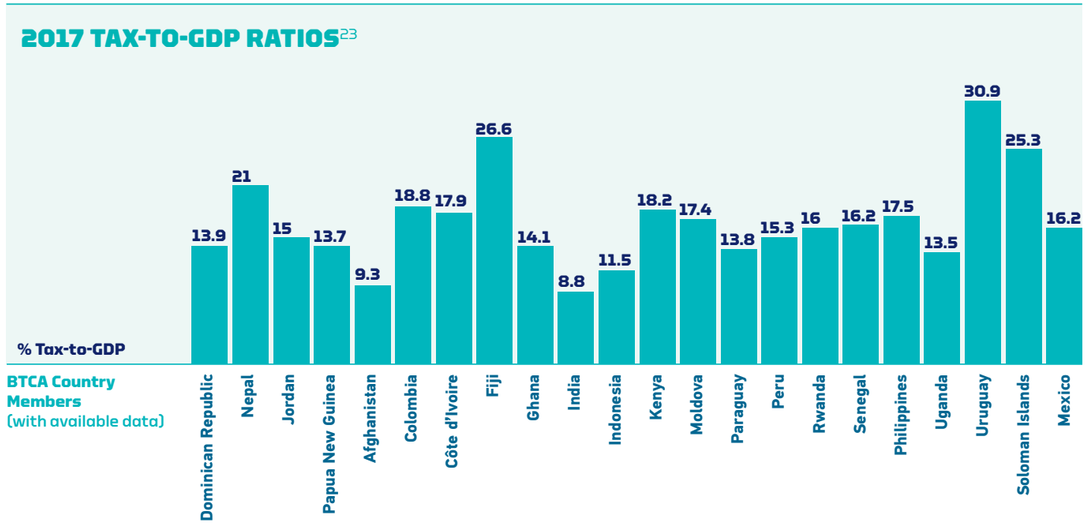
The global financing gap[18] for achieving the SDGs is estimated at USD 2.5-3 trillion per year.[19] This estimate pre-dates the global spread of COVID-19, so can be expected to have increased in recent months as government revenues decline dramatically as a result of pandemic-induced recessions, and progress over recent years towards some SDGs is reversed by the socio-economic impacts of the pandemic.

In Africa alone, prior to COVID-19, gap estimates varied from USD 300 billion to about USD 900 billion per year. Meanwhile, global flows of foreign direct investment (FDI) fell by 23% from USD 1.87 trillion in 2016 to USD 1.43 trillion in 2017,[20] and private investments in SDG-related infrastructure for emerging economies were lower in 2018 than in 2012.[21]

To achieve the SDGs by 2030, countries will have to mobilize domestic resources and make larger contributions to development. By mobilizing an average of 3–5% of GDP in additional revenue, Sub-Saharan Africa (SSA) could raise USD 50–80 billion, substantially more than the estimated USD 36 billion in Official Development Assistance (ODA) received by SSA countries in 2016.

The 2015 Addis Ababa Action Agenda (AAAA)[22] provided a global framework for financing sustainable development by aligning all funding flows and policies with economic, social, and environmental priorities. The Agenda recognizes the importance of domestic resource mobilization, supported by international assistance, to achieve the SDGs.

Globally, tax-to-GPD ratios range between 6.6% in the Democratic Republic of Congo and 46.1% in France. Organisation for Economic Co-operation and Development (OECD) countries averaged 34.2% in 2017, while Latin America and the Caribbean had an average of 22.8%, Africa's average was at 18.2%, and Asia's average was 21%.



Enhancing domestic resource mobilization is essential for improving tax policy and administration. The primary function of a tax system is typically to generate revenue needed to deliver public policies, while maximizing economic efficiency and easing burdens on the poorest segments of society. The most effective modern tax administrations aim to collect sufficient revenue, maintain low administration and compliance costs, and treat taxpayers fairly. The most effective systems are able to convince the majority of taxpayers to meet their obligations voluntarily so that tax authorities can focus their scarce enforcement resources on the few who do not comply. Some countries have made significant progress in the last 20 years. For example, Korea, Mexico, Turkey, and South Africa all increased their overall tax collection by more than 6% of GDP, with improved compliance playing a key role, along with other reforms. This percentage increase is an extraordinary accomplishment, bearing in mind that GDP also grew during the same period. For many countries, the implementation of information technologies (IT) played an important role in these increases.

Governments around the world are increasingly turning to digitalization to improve their tax administrations. Tax digitalization is the transformation of tax administration from manual to digital systems. It can enhance the entire tax process, from interactions with taxpayers ('front-end' tax functions) to internal processes ('back-end' tax functions). Among other services, tax digitalization includes electronic filing, electronic invoicing, digital tax payment, automated tax form pre-population, and data-driven review and audit selection. Tax digitalization also provides governments with large volumes of data that can be used in data-led decision-making to transform their services.

Countries across all regions are expanding their capabilities in tax digitalization. This trend is apparent in both developed and emerging economies. From 2014 to 2018, the number of countries accepting income taxes online almost doubled, from 73 to 139.[25] In Nigeria, in early 2019, the Lagos State Internal Revenue Service (LIRS) launched an e-filing platform for employers' tax returns.[26] In Pakistan, in June 2019, the Federal Board of Revenue (FBR) formally launched the online FBR Tax Profiling System, enabling 53 million people to check their bank details, properties, utility bills, and travel history. In terms of OECD countries, Canada now offers an app that sends tax reminders to taxpayers, Spain has tracked daily transactions digitally since 2017, and Ireland has introduced real-time payroll tax reporting.[27,28]

Tax digitalization strengthens the capacity of emerging economies to collect much needed domestic revenue. In Kenya, the digitalization of VAT operations helped identify data inconsistencies and raised VAT collections by more than KES 106.71 billion (USD 1 billion) between 2016 and 2017.[29] In Nepal, a comprehensive program for digitalizing tax administration has been in effect since 1997. By 2014/15, 98% of tax filings and nearly 100% of registrations were conducted online. Nepal's tax-to-GDP ratio grew from 8.7% in 1999/2000 to 18.7% in 2015/16.[30] Along with other tax and customs reforms, Nepal's digitalization efforts evolved into a fully integrated tax system by 2017.

Countries also use tax digitalization, specifically e-invoicing, to bring micro-enterprises and MSEs into the formal economy and thereby increase tax revenue. Informal economies significantly lower a government's tax base. This is felt acutely in SSA and Latin America and the Caribbean, where informal economies are estimated at 34% of GDP on average. In comparison, informal economies across East Asia are estimated at 20% of GDP, on average.[31] Informal economies are costing SSA USD 49 billion per year in total.[32] Following 2014 legislation mandating the use of e-invoices, Mexico brought 4.2 million micro-enterprises into the formal economy, helped by larger businesses pushing their providers to use e-invoices and to formalize.[33] This drove a 48% increase in tax on goods and services, which rose from MXN 880.1 billion (USD 36.27 billion) in 2014 to MXN 1.3 trillion (USD 53.57 billion) in 2016, and significantly contributed to a 2.9% rise in Mexico's tax-to-GDP ratio over the same period.[34]

Tax digitalization can also help address the issues that tax havens continue to pose for revenue collection on a global level. Collectively, tax havens cost governments between USD 500 billion and USD 600 billion a year in lost corporate tax revenue, of which low-income economies account for around USD 200 billion.[35] However, the Common Reporting Standard (CRS), which requires authorities to digitalize their processes to enable the Automatic Exchange of Information (AEOI), has delivered some encouraging results. Specifically, AEOI has led to a 20–25% reduction in bank deposits in international financial centers, according to initial data.[36] Extrapolating on these results, by digitalizing their tax systems and participating in AEOI, emerging economies could collect between USD 40 billion and USD 50 billion annually in corporate tax revenue, equivalent to half of the combined education budgets for SSA.[37]

Tax administrations of the future will be increasingly automated and personalized and will collect payments in real time. Governments are becoming increasingly tech-savvy and new technologies are growing in popularity, including QR codes for payments and invoices, digital signatures, and online cash registers. Tax digitalization brings significant opportunities for authorities to boost efficiency and total revenue. However, digitalization also comes with a responsibility to protect growing banks of taxpayer data. A crucial question many policymakers and tax administrators face is how to both digitalize tax system and build the internal capacity to manage the operations and data that result from digitalization. Accordingly, this report focuses on digitalization as one of the key strategies that countries have used to increase their tax revenue and improve their services. Although causality between tax revenue and digitalization cannot always be reliably established, the experiences analyzed in the preparation of this report present an encouraging picture of the benefits of digitalizing tax systems, for tax authorities, taxpayers, and governments alike.

Tax digitalization also requires taxpayers and tax authorities to adapt. This report captures not only how authorities use digital tax systems, but also how businesses and individuals interact with them. It lays out the benefits that tax digitalization brings, as well as the costs and difficulties it presents, along with measures that have been – or could be – implemented to ensure all participants in the tax system are able to adapt to fully realize these benefits.

DIGITIZE VS. DIGITALIZE

Digitization: Digitization refers to the process of changing from analog to digital formats, such as transforming paper currency into an electronic or digital store of value, increasing accessibility, and usability.

Digitalization: Digitalization refers to the use of digital technologies to change an operating model and transform operational processes, providing additional revenue and value-producing opportunities.[24]

AUTOMATIC EXCHANGE OF INFORMATION (AEOI)

AEOI has strengthened international efforts to increase transparency, cooperation, and accountability among financial institutions and tax administrations.

Developed by the OECD and G20, AEOI provides for the transfer of non-resident financial account information to tax authorities in the account holder's country of residence.[38] As of June 2019, more than 4500 AEOI were in effect, with 90 tax authorities implementing the Common Reporting Standard (CRS) in 2018. As a result, information regarding 47 million offshore accounts - with a total value of around EUR 4.9 trillion (USD 5.3 trillion) - has been exchanged for the first time. Jurisdictions around the globe identified over EUR 95 billion (USD 102.74 billion) in additional revenue (including tax, interest, and penalties) through such initiatives.

2.1. OPPORTUNITIES AND CHALLENGES OF TAX DIGITALIZATION

Tax digitalization offers distinct value propositions for governments, businesses, and individuals. The following sections illustrate the potential impacts of tax digitalization for each of these groups.

FIGURE 2
OVERVIEW OF TAX DIGITALIZATION BENEFITS AND CHALLENGES

	GOVERNMENT	BUSINESS	INDIVIDUALS
Main Value Proposition	Increased revenues at a lower administrative cost	Lower tax compliance burden	Lower tax compliance burden
BENEFITS	Increased revenue Lower admin cost Increased transparency leading to reduced corruption and greater legitimacy Data led policy making Greater business formalization	Reduced time and resources dedicated to taxes Greater transparency during tax cycle Increased use of technology after compliance	Reduced time and resources dedicated to taxes (e.g. advisor) Increased institutional trust
CHALLENGES	Implementation challenges Low initial uptake Security and privacy risk (e.g. gov. misuse or 3rd party hacking)	Increased burden with more information demanded Cost of adaptation and learning Security and privacy risk (e.g. gov. misuse or 3rd party hacking)	More rigid payment deadlines Risk of an unfair tax system for those without digital access Security and privacy risk (e.g. gov. misuse or 3rd party hacking)

2.1.1. Impact of tax digitalization for governments

BENEFITS

Increased tax revenues. By simplifying the tax process, authorities incentivize voluntary compliance. This results in a larger taxpayer base, reduced tax avoidance, and more effective use of scarce tax enforcement resources.

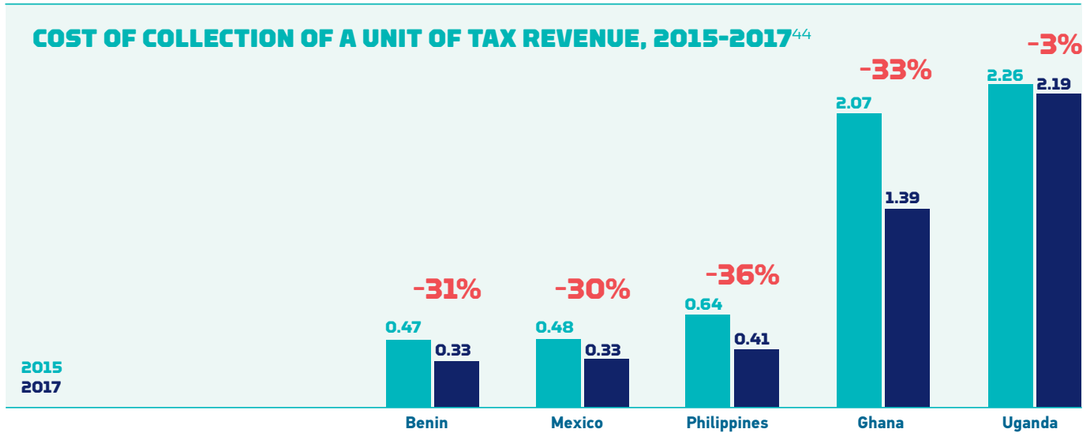
Although the impact of digitalization varies significantly depending on country contexts and conditions, several countries are taking significant strides forward in capturing its value. In Nepal, outreach to taxpayers and simplifying tax compliance through e-registration and e-filing effectively broadened the tax base and tax revenue. Between the financial years 2009/10 and 2015/16, PIT registrations increased six-fold, from less than 100,000 to 603,581, while personal account number (PAN) registrations more than doubled to 849,236. The total number of VAT returns filed almost doubled from 487,191 in financial year 2010/11 to 914,270 in 2014/15. The total number of PIT returns filed increased from less than 194,000 to more than 438,000 over the same period.[39]

The practical effect of using the Point of Sale (PoS) systems on VAT results could also be observed in the Dominican Republic. One study compared the VAT performance of companies fitted with electronic fiscal devices (EFDs, defined as systems that directly transfer data to a tax administration database) with companies not yet using these tools. The study found VAT received by the group using EFDs rose much faster than for those not using EFDs. VAT non-compliance also fell by 14.7 percentage points between 2004 (when the EFDs were introduced) and 2008.[40]

Lower administrative costs and processing times. Automated processes create significant efficiencies for tax administrations. They decrease the number of interactions with taxpayers, as well as the number of complaints, disputes, and refunds. As a result, the cost of tax collection also falls. The UK Government's *Digital Efficiency Report* found that the cost of digital transactions was 50 times lower than that for face-to-face transactions and 20 times lower than for telephone transactions.

Several countries have experienced this dramatic lowering of costs. For example, between 2015 and 2017, the cost of collecting 100 units of tax revenue fell in the Philippines from 0.64 to 0.41, in Brazil from 0.69 to 0.33, and in Ghana from 2.07 to 1.39.[41] Such cost savings can enable governments to invest in technology solutions for other areas of e-government,[42] or to invest in expanding access to digital government services to more people, especially those in poor or remote communities.

To promote the use of digital payments, some countries have designed tax rebate programs for card payments. For example, in 2014 in Uruguay, 4% and 2% discounts were applied to debit and credit card purchases, respectively. A year later, the number of electronic payments had increased by 42%. Debit card transactions grew by 65% in 2016 and 78% in 2017.[43]



Digitalization also helps reduce processing times. In Tanzania, digitalizing customs clearance and duties resulted in the average import clearance time falling from nine days to less than one day.[45]

Increased transparency and legitimacy, with fewer leakages. All digital tax transactions are recorded and traceable. The automation of payments reduces interactions between tax officers and taxpayers, and significantly reduces opportunities for fraud and theft to go undetected. This increases taxpayer confidence that tax payments will go to the state treasury and be used for policies that benefit the community. A recent IMF analysis found that when the government invests in information and communication technologies (ICT), transparency increases, and bribery becomes much easier to detect.[46]

In Côte d'Ivoire, after that country's 2011 civil war, school fees were paid almost exclusively in cash and were subject to high levels of bribery, theft, and other security issues. This eroded the quality of the education system. In 2011, the Ministry of National and Technical Education began requiring school payments to be made digitally, with most parents using mobile wallets to do so. By 2014, 99% of secondary school student fees were paid digitally. The result was a significant reduction in lost payments, fraud, theft, and the administrative costs and risks of managing cash.[47]

The latest estimate by the Economic Commission for Latin America and the Caribbean (ECLAC) suggests that, in 2017, tax avoidance in Latin America cost 6.3% of total GDP, equivalent to USD 335 billion. To put this figure in context, total capital expenditure by national governments in Latin America was approximately USD 115 billion in 2016.[48]

Artificial Intelligence (AI) and predictive analytics are enabling tax authorities in countries with advanced tax digitalization systems to detect, penalize, and deter tax evasion. For example, the UK's HM Revenue & Customs, through its Connect system, uses social network analysis and data mining to cross-reference company and individual tax records, and uncover fraudulent or undisclosed activity.[49]

Better and more timely data for policymaking. Detailed tax data can be used by governments to support their decision-making and policy processes, and to interact with the public. For example, tax data can provide insights into the state of the economy by region or by sector, identifying growth areas or new business models. Traditionally, analysis has been carried out using official fiscal statistics (monthly, quarterly, or even annual, depending on the country) that are published with a significant lag. Even in economies that produce monthly fiscal reports, publication delays can limit the capacity of such data to provide early warnings of potential fiscal events or other macroeconomic shocks.[50] Optimal data use hinges on the type and format of data available, and on the ability of tax administrations to extract and aggregate useful information. Brazil is one of the best examples regarding the extent and timeliness of data available, as it makes daily data public through its Transparency Portal.

To fully capture these benefits, tax administrations must control how they share and protect data, to build taxpayers' confidence in the privacy and proper use of their data, and to avoid distrust that can lead to lower compliance with reporting and other tax obligations. Positive examples include the United Kingdom and South Africa, which only make the data available in 'data laboratories' – controlled environments that prevent potential leaks or misuse of taxpayer data.

Increased formalization. Transaction costs are one of the main factors that discourage MSMEs from joining the formal economy, and hence becoming part of the tax base. Digitalization is easing this burden by providing tools like e-registration. By digitizing invoices and introducing e-accounting, tax authorities can drive informal businesses towards formalization to continue working with the larger formal companies they supply. In Mexico, mandatory e-invoicing brought approximately 4.2 million micro-businesses into the formal economy.[51] It is estimated that the formalization of each 1% of the informal economy produces a 0.125% rise in the tax-to-GDP ratio without any changes to tax rates. Research from the World Bank has demonstrated that holistic, digitally enabled tax strategies that allow tax authorities to access taxpayer data, and match information from various public and private sources, reduce the size of the informal economy.[52]

In South Korea, wage earners can claim tax deductions for purchases made through digital payments. Early research indicates that this initiative helped increase the number of formal financial transactions and could encourage informal firms to register to receive these financial incentives, and meet customer demands for electronic payment receipts.[53]

Digitalization also offers significant benefits to small businesses and women, who often face higher levels of digital exclusion. Key benefits include lower costs to comply with tax obligations, and less need to travel, providing more time for women to spend growing their businesses or on domestic work, which is typically expected in dramatically higher proportions, relative to men. Both design and implementation of digital tax initiatives should consider the specific needs and priorities of these groups.

RESPONSIBLE DIGITAL PAYMENT GUIDELINES (RDPG)

The adoption of digital tax payments requires that taxpayers be treated fairly and feel protected from risks such as loss of privacy, exposure to fraud, and unauthorized fees. Service providers should proactively take steps to protect their clients, and regulators should ensure a sound consumer protection regulatory framework. To support this process, the Better Than Cash Alliance identified eight good practices for engaging with clients who are sending or receiving digital payments and who have previously been financially excluded or underserved, as set out in the Responsible Digital Payments Guidelines.

CHALLENGES

Complex processes for selecting and procuring technology can lead to overspending, reticence, and delays in implementation. As set out in the Guide included in this report, procurement of technological tax tools requires careful planning and can greatly impact the ability to implement digitalization programs on time and on budget. Mongolia recently announced that it was abandoning its plans to implement a commercial off-the-shelf (COTS) platform. Instead, it will explore developing a bespoke system through Mongolia's state-owned enterprise that administers tax and customs ICT.[54] In Rwanda, the tax authority worked with three different ICT suppliers before finding the right solution. Such direction changes can come at an extensive cost to tax administrations, ultimately borne by the country's taxpayers.

Resistance to change among tax administration staff can also cause delays. Tax officers could oppose and delay the adoption of new technologies, perceiving them as threats to their jobs or to their ability to misappropriate public resources. Chile faced such challenges at the outset of its e-filing system; some tax preparers were reluctant to use the new system because they were unfamiliar with the technology and saw it as a threat to their jobs and the sustainability of their entire profession.[55]

Limited readiness among taxpayers to adopt digital tools. It can be challenging to incentivize businesses and individuals to adopt digital tax tools. They may be unwilling or simply unprepared, because of the many factors including low levels of digital literacy and access to digital technology. This can reduce compliance in the short term. A study conducted in South Africa in 2016 found that low access to computers with internet service posed the most significant barrier to e-filing take-up.[56] Such examples underscore the importance of assessing taxpayers' various needs, communicating effectively with taxpayers about how to access and use digital technology, as well as incentive programs to help with the transition to digitalized taxation.[57]

Threats to privacy and security. With governments holding significant amounts of sensitive taxpayer information, data security is a top priority. According to the Institute of Chartered Accountants in England and Wales (ICAEW), 'phishing, man-in-the-middle attacks, identity theft, spearfishing, social engineering, and other forms of cybersecurity breaches are serious wherever important information is transmitted. But in tax administration, the threat is especially high due to the valuable and sensitive nature of the information in question'.[58] Tax digitalization can lead to increased fraud attempts, especially related to false invoices. When fast-tracking business registration and e-invoice submission, authorities must be vigilant against fake businesses filing false invoices and claiming VAT refunds before quickly dissolving.

Typically, to generate a company for the purpose of issuing false invoices, all that is needed is an internet protocol (IP) address. Many cases are extremely complex. For example, real businesses simulate operations above their capacity for tax benefits, such as undue refunds from fabricated balances. This kind of activity reduces not only the VAT base, but also the income tax base by reducing the profit margin of an enterprise. False invoices are also used to explain irregular purchases, launder assets, pay bribes, and provide economic support to organized crime and terrorism.[59]

2.1.2. Impact of tax digitalization for business

BENEFITS

A reduction in the time and resources that businesses need for tax compliance. PwC and the World Bank's *Paying Taxes 2019* study found that between 2004 and 2017, the average time businesses spent complying with their tax obligations fell by 84 hours per year, mostly as a result of technological innovation. The same study found that businesses spend, on average, 237 hours annually in tax-related activities, with South America (547 hours, on average) and Africa (285 hours, on average) the regions with most time-consuming tax obligations.[60] Time saved on tax compliance can enable businesses to reduce staff costs, or reassign staff to more productive activities, including those that help grow the business.

In countries in which e-filing has been implemented, tax authorities need to continue improving their systems, for example, by fixing bugs or integrating tax and accounting systems to reduce the time needed for taxpayers to prepare for filing. For example, in 2017, Albania reduced its annual per business filing preparation time by an average of 96 hours by upgrading its IT infrastructure to require businesses to file VAT, CIT, and payroll tax online, and by integrating its tax platform with accounting systems. In Côte d'Ivoire, the average time to prepare and file taxes decreased by 24% per business in 2017 following the introduction of an e-filing system for corporations. In South Africa, e-taxation reduced corporations' compliance time and costs by more than 22% on average.[61]

An IMF study published in 2019 explored the impact of VAT e-invoicing on compliance in Peru. It found that e-invoicing increased firm sales, purchases, and VAT by over 5% on average in the first year after adoption, with this impact growing over time. However, these effects vary markedly across firms, with larger impacts among smaller firms and those firms at higher risk of tax non-compliance, whereas the impact on the largest firms was negligible. The research suggests that e-invoicing can improve tax compliance among specific groups of firms by lowering compliance costs and by strengthening deterrence effects.[62]

Increased transparency of the tax digitalization process for businesses. Because all tax-related information is digitally available and communications are digitally recorded in digitalized tax systems, businesses have a clearer understanding of their tax status as the system evolves.

Researchers in Sierra Leone and Ghana investigated the efficacy of efforts to increase transparency and engagement around taxes. They found that for tax information to be meaningfully transparent, it should be timely, accessible (including in local languages), specific to taxpayer needs (e.g. providing info on applicable tax rates and payment due dates), and linked to specific public expenditures (such as local services). A digital tax system can help to achieve all of these objectives.[63]

Increased use of technology after complying with digitalized taxes. Businesses are increasingly digitalizing to comply with tax regulations. Tax digitalization can catalyze their use of technology and lead to improvements in other aspects of their operations. Research conducted in Tajikistan in 2017 found that businesses are significantly more likely to use other technologies (including email and digital accounting) after adopting e-filing.[64]

CHALLENGES

Cost of compliance. As compliance requirements evolve, they can pose financial challenges for businesses that might be required to invest in new software, as well as capacity challenges for businesses that need to train their teams regarding new regulations and tools. For example, in Brazil, the implementation of e-invoicing was expensive, both for the government and for businesses to comply with. Now, many off-the-shelf enterprise resource planning (ERP) solutions are available in Brazil to help businesses comply with e-filing legislation, although such solutions took some time and incurred one-off implementation costs. One business interviewed for this report estimated the cost of these solutions at 10–15% of the cost of an entirely new accounting system.[65]

Increased data-sharing and technology requirements. Tax digitalization can compel businesses to expand their finance and ICT teams to meet new data-sharing requirements, creating additional staffing costs. It can also require businesses to upgrade their accounting processes and technology to comply with new requirements.

Increased security and privacy risks. As businesses maintain ever-greater stores of digitized information, their vulnerability to hackers and other types of crime increases. Extortion cases have been reported in which hackers steal a company's data and demand payment for return. In one interview conducted for this report, a representative of a Mexican business concerned about the threat of hackers noted that they had experienced an extortion attempt. This example is consistent with multiple hacking instances communicated to Mexican authorities and reported in the news media.

Increased burden of providing information required by AEOI. The challenges outlined above can be exacerbated by the newly introduced AEOI framework. AEOI requests can sometimes lead to individual countries seeking onerous amounts of information from companies and, in some cases, gathering proprietary business data.

2.1.3. Impact of tax digitalization for individuals

BENEFITS

A reduced compliance burden, with time and cost savings. Tax digitalization reduces the time it takes individuals to comply with their tax obligations. For example, pre-population of tax forms significantly reduces the time it takes to complete returns. Online returns can also eliminate the need to travel to tax offices. South Africa introduced e-filing in 2003 for VAT and pay-as-you-earn taxes and expanded this in 2006 to cover CIT and PIT. As a result, average tax compliance costs dropped by 22.4%, and the time taken to comply with VAT dropped by 21.8%.[66]

Increased digital literacy. The need to go online to complete tax returns can lead to individuals engaging more with digital products and increasing their comfort with digital platforms, products, and services more broadly.

CHALLENGES

Learning and re-learning how to use the digital tax system. New tax systems can require individuals to use both digital and in-person channels to comply with their overall tax obligations. As tax systems evolve and continue their transition to digital platforms, with frequent upgrades and process changes, it can be difficult for taxpayers to keep up. Further, digital processes mean tax collectors have much less flexibility, if any, to extend deadlines on a discretionary case-by-case basis.[67] In response to this challenge, the Australian Tax Office introduced 'Alex' – a virtual assistant to help answer general taxation inquiries for citizens and businesses.[68]

Digitalized tax payments may require taxpayers to have digital financial accounts, which may discriminate against some groups. A number of countries offer rebates for taxpayers filing online to incentivize new behaviors. As a result, some individuals who are not digitally literate or connected end up paying more tax than those with the ability to file online. The inequity is compounded when this demographic is poorer than IT-literate taxpayers, as is usually the case.

Personal data security and privacy risks when submitting tax returns. Tax filing requires individuals to share significant amounts of personal data with tax authorities, sometimes through third-party service providers. This can lead to suspicion as to how governments may use these data, which in turn hinders the uptake of digital tax solutions, especially when their use is not mandated. There is also a very real risk of personal data being misappropriated. In the United States, a massive data breach at the Internal Revenue Service in 2016 led to the potential theft of more than 700,000 social security numbers and other sensitive information,[69] exposing individuals to fraud. In July 2019, more than 4 million of Bulgaria's 7 million citizens were affected by a security breach at the country's tax authority that compromised their personally identifiable information and financial records. The names, addresses, personal identification numbers, and ID card details of an estimated 200 citizens were shared with media outlets by those who had committed the breach.[70]

2.2. GLOBAL TRENDS IN TAX DIGITALIZATION

Tax digitalization is evolving rapidly in both developed and emerging economies. Countries are increasingly launching or expanding their digitalization efforts and continuing to innovate. Each country has its own individual goals and faces unique challenges along the way. However, there are several common rationales for digitalization, as well as several common digitalization approaches, or steps that countries have adopted.

This report identifies five global trends in tax digitalization: (i) a growing focus on resource mobilization in emerging economies; (ii) rising use of big data; (iii) the rise of broader digital economies; (iv) the rise of digital government; and (v) an increase in digital literacy and connectivity.

GLOBAL TREND

A growing focus on resource mobilization in emerging economies is boosting support for tax digitalization.

Many governments seek to broaden their tax bases, improve compliance, and curb avoidance, so that they have more budgetary resources at their disposal to advance other policy priorities, such as tackling poverty, or improving education and health outcomes.

This increased focus is much needed. According to the IMF, funding required for low-income countries to address five SDG areas – education, health, roads, electricity and water and sanitation – will increase to 15% of GDP by 2030, on average. Most of SSA will require even higher levels of funding, given development levels in the region.[71] International support has been identified as crucial to promoting more effective, efficient, and equitable domestic revenue mobilization (DRM). The Addis Tax Initiative (ATI) and the Platform for Collaboration on Tax (PCT) were both created to guide international support.

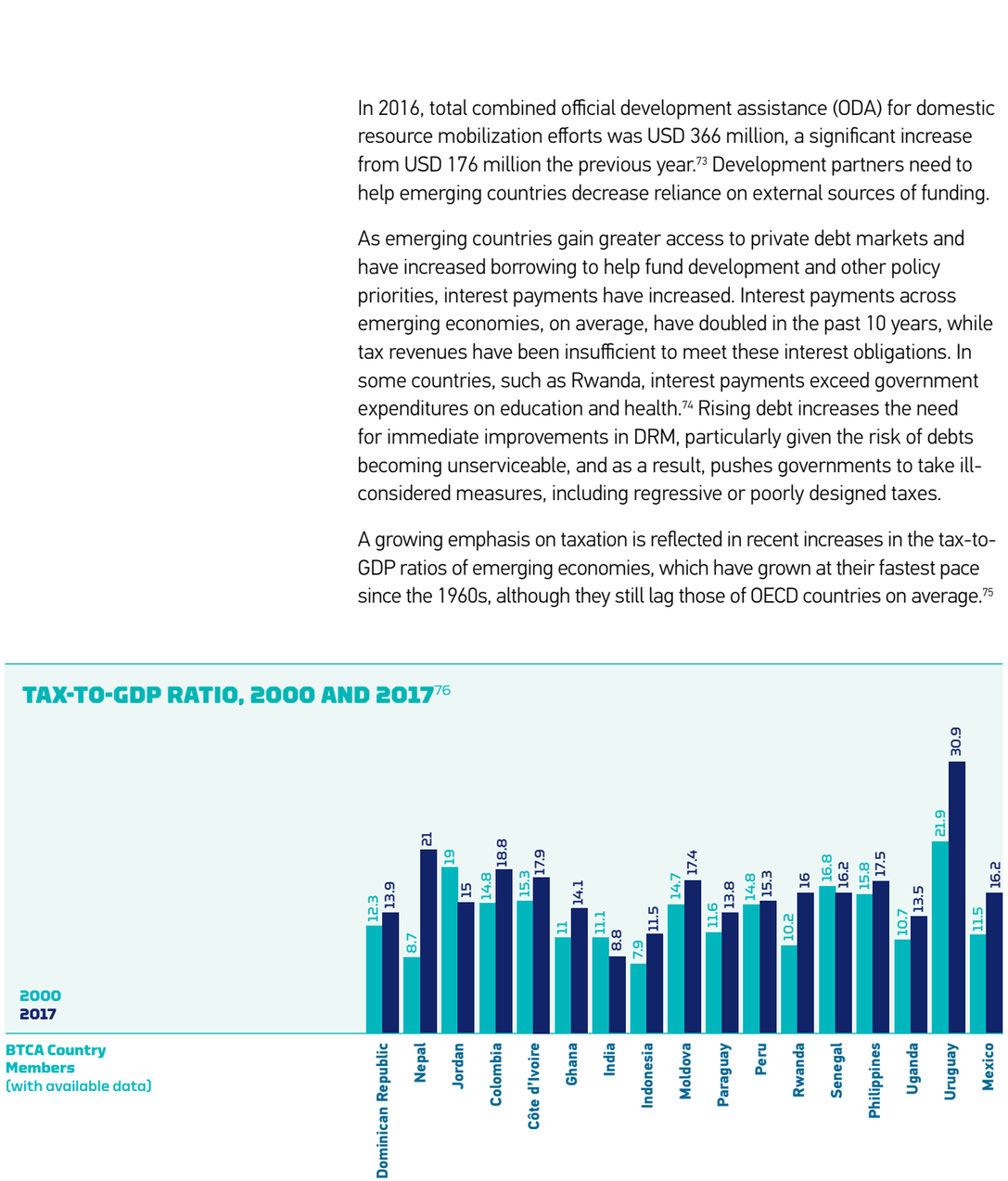
Currently, 20 development partners and 25 partner countries have signed the ATI Declaration. ATI calls for a doubling of international technical support by development partners, such as Australia, Belgium, Canada, Denmark, European Commission, Finland, France, Germany, Ireland, Italy, South Korea, Luxembourg, Netherlands, Norway, Slovakia, Slovenia, Sweden, Switzerland, United Kingdom, and United States, by 2020, and more policy coherence by all members to create synergies towards achieving the goals. In response, more than 20 supporting organizations, including the IMF, the World Bank, Oxfam, and the Bill and Melinda Gates Foundation (BMGF), have joined as supporting organizations.[72] The PCT aims to create better cooperation on tax issues between the OECD, IMF, United Nations (UN), and World Bank.

In 2016, total combined official development assistance (ODA) for domestic resource mobilization efforts was USD 366 million, a significant increase from USD 176 million the previous year.[73] Development partners need to help emerging countries decrease reliance on external sources of funding.

As emerging countries gain greater access to private debt markets and have increased borrowing to help fund development and other policy priorities, interest payments have increased. Interest payments across emerging economies, on average, have doubled in the past 10 years, while tax revenues have been insufficient to meet these interest obligations. In some countries, such as Rwanda, interest payments exceed government expenditures on education and health.[74] Rising debt increases the need for immediate improvements in DRM, particularly given the risk of debts becoming unserviceable, and as a result, pushes governments to take ill-considered measures, including regressive or poorly designed taxes.

A growing emphasis on taxation is reflected in recent increases in the tax-to-GDP ratios of emerging economies, which have grown at their fastest pace since the 1960s, although they still lag those of OECD countries on average.[75]

TAX-TO-GDP RATIO, 2000 AND 2017[76]



GLOBAL TREND

Tech innovations - such as cloud computing, big data, and advanced analytics - are unlocking more of the potential of tax digitalization.

Computing power is rising exponentially, with cloud technology enabling organizations to access computing and storage capacity with decreasing need for local hardware. In 2019, cloud services were expected to grow by over 17% globally.[77] Governments are adopting this technology all over the world. The estimated global value of the government cloud market is expected to be USD 49.2 billion by 2023.[78]

Such rapid technological advances are allowing countries with limited resources to accelerate their tax digitalization efforts. In 2017, the Philippines published its 'cloud-first' policy to enable data-sharing among government agencies, eliminate legacy systems, and enable scalability and flexibility of the technology.[79] In 2019, India launched a cloud initiative entitled Meghraj to accelerate the delivery of e-services, speed up development and deployment of applications, and optimize infrastructure cost.[80] Data analytics are also advancing, with new developments in artificial intelligence (AI) and increasing focus on data analysis within public and private organizations. Global investment in AI start-ups amounted to over USD 50 billion between 2011 and mid-2018.[81]

Tax administrations are by necessity data-rich. In addition to collecting data from tax filings, authorities are now making use of third-party data, including VAT invoices, employer salary information, data from financial institutions, and data from other government agencies. Big data and advanced analytics enable tax administrations to derive more value from these vast stores of information, and to develop new, convenient services for taxpayers. At a national level, big data technology with advanced analytics can, among other things: counter VAT and tax fraud through automatic data matching; improve compliance through algorithmic audit selection; integrate the informal economy by bringing businesses and people into the formal economy; and connect newly built tax related datasets (e.g. land cadasters for property taxes). In India, the Ministry of Finance is deploying a faceless assessment system based on artificial intelligence and machine learning. Starting in October 2019, this system aims to cut out all person-to-person interactions between taxpayers and the tax administration. The initiative is intended to improve the accuracy and transparency of India's tax assessment process, thereby expanding the tax base and increasing compliance.[82]

Big data also enables more seamless international collaboration thanks to the AEOI, which helps countries combat tax evasion by enabling them to digitally exchange data relating to non-resident financial accounts.[83]

GLOBAL TREND

The rise of the digital economy has made tax digitalization essential.

Digital companies operating at a global scale have become major players in the world economy. In the second quarter of 2019, the world's five largest companies (Microsoft, Amazon, Apple, Alphabet, and Facebook) were tech-based. Taxing these firms is particularly challenging because tech-based companies do not necessarily have to be physically present in a location to do business there, even though, in some business models, user participation is central to the value of their product. In addition, information about customers, acquired without remuneration, has long had commercial value which complicates taxation. Furthermore, there is little consensus about how to allocate the right to tax income that is generated from cross-border activities in the digital age.

The OECD's Base Erosion and Profit Shifting (BEPS) Action Plan identified tax challenges arising from the digitalization of the global economy as one of its main areas of focus. Experts in the field now widely recognize that measures seeking to separate or 'ring-fence' a subset of digital economy firms or activities would not be feasible. The OECD will provide a final report on taxation in the digital economy to the G20 in 2020.[84]

Meanwhile, as the search for a common approach continues, policy in many countries has increasingly focused on short-term measures. Many countries have adopted – or plan to adopt – some form of digital services tax (DST). Countries such as Chile, Uruguay, and India have chosen to withhold or 'equalize' taxes on payments for advertising and other specified digital services provided by residents to non-resident businesses. In this way, domestic authorities avoid the need to identify the amount of locally taxable revenue earned by non-resident businesses. Although they are simpler to design and administer, such taxes are susceptible to avoidance, for example, by companies using related offshore entities to purchase the services.

Argentina's tax administration agency determined that Uber drivers were not just users of a platform but were dependent workers. As a result of the determination, Uber became liable for around ARS 405.36 million (USD 6 million) in VAT, income tax, and social security contributions.[85] Some low-income countries including Benin, Tanzania, Uganda, and Zambia have recently introduced taxes on the use of certain digital services such as social media, rather than on the revenues of service providers.[86]

Regardless of the different and evolving regulatory approaches around the world, tax digitalization will be vital to effectively taxing these enormous (and still-growing) tech companies. It will also help to foster collaboration between different national tax authorities.

GLOBAL TREND

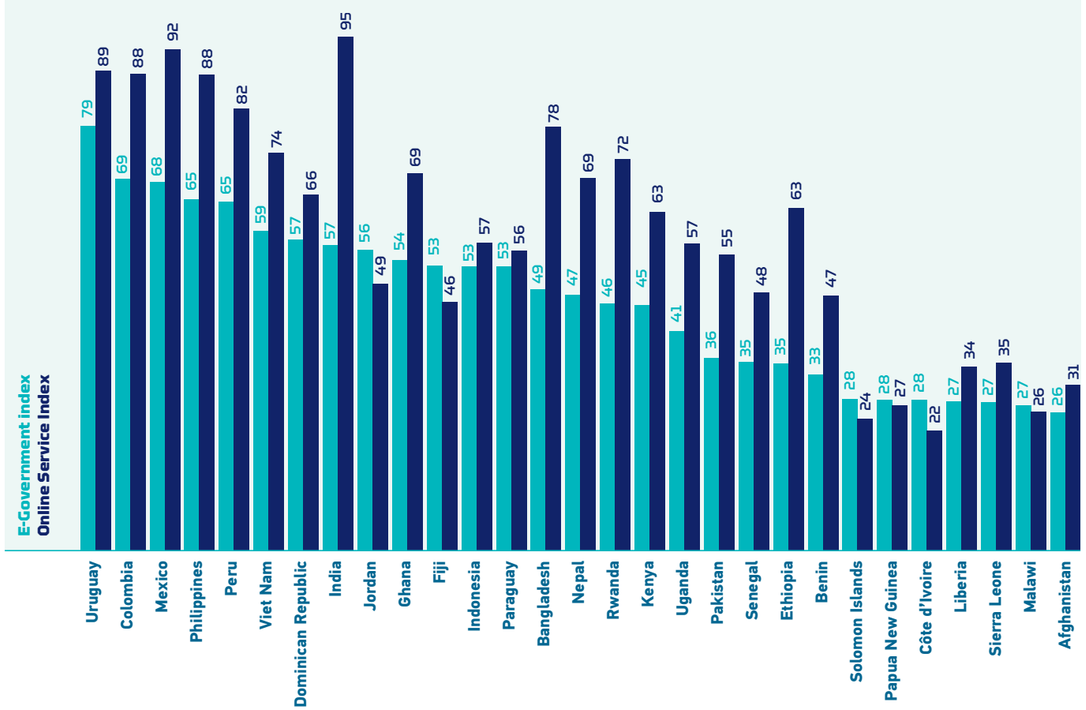
Digital government is becoming a top policy priority and elevating tax digitalization in the process.

Digital government is the delivery of services and content across the digital ecosystem to create public value. It enables governments to access real-time data, automate processes, and deliver more user-friendly services for their populations. It also enables greater transparency by making payments and interactions traceable, and by reducing interactions between civil servants and individuals. Digital government aims to facilitate the free flow of data among agencies and achieve a more integrated public sector. Such integration can improve service delivery and information flows.

Digital public service delivery is becoming increasingly affordable for users, and ever more cost-effective for governments. Digital tools enable governments to design and deliver more targeted, personalized, and up-to-date service. This results in improved access and convenience, saving time and travel costs for taxpayers who no longer need to visit tax offices to meet their obligations.

Since 2001, the United Nations has tracked the evolution of digital government and observed a clear upward trend for both OECD and emerging economies. For example, in 2018, 40 countries received a 'very high' overall rating on the United Nations' E-Government Development Index (EGDI), up from only 10 countries in 2013. Ghana and Indonesia both moved from 'medium' to 'high' (0.50–0.75) in 2016 and have remained there since. Half of the 32 'low'-rated countries graduated to 'medium' or higher. This suggests that e-government is now being adopted in countries with lower institutional capacity. The Online Service Index (OSI) indicator in the EGDI – which measures the scope and quality of online service – has recently shown its fastest ever improvement on average. On a scale of 0 to 1, the OSI's average rating rose from 0.39 to 0.57 between 2014 and 2018. This suggests that, globally, e-government and online public service provision are steadily improving. Examples of countries with 'very high' OSI ratings include Chile, Colombia, India, Malaysia, Mexico, Peru, the Philippines, and South Africa.

GRAPH OF E-GOVERNMENT DEVELOPMENT INDEX



Even among countries with low OSI ratings, online submission of PIT is one of the most commonly offered services. By 2018, there were 139 countries in which it was possible to submit income taxes online. The proliferation of mobile services and smartphones allows governments to more easily reach the poorest and most vulnerable members of the population. As a result, 74 countries offer dedicated mobile apps for online tax services and 83 are providing some form of mobile short message service (SMS), mobile app, or other similar services.[87]

Uruguay provides a notable example. The Government of Uruguay committed to the digitalization of all public services by 2020. The Office of the President tasked the Agency for eGovernment and Information Society and Knowledge (AGESIC) with coordinating these efforts. By 2017, around 600 of 1400 administrative procedures involving the national government could be started online, and 400 could be carried out entirely online.[88]

GLOBAL TREND

Rising digital literacy and connectivity enable governments to digitalize services, but also raise citizens' expectations.

Rapid growth in digital connectivity and access to technology globally represent an opportunity to expand and accelerate the digitalization of tax systems. Around 57% of the world's 7.8 billion population (or around 4.4 billion people) can now connect to the internet.[89] This figure has more than doubled over the past decade. Meanwhile, about 5.1 billion people use mobile phones.[90] In addition, internet penetration and use by SMEs are increasing, although at rates that tend to increase with the size of businesses. A 2018 study by the Federal Telecommunications Institute in Mexico showed that 81.3% of medium-sized enterprises use the internet, compared to 72.8% of small enterprises and 59.6% of micro-enterprises.[91]

Digital literacy and connectivity enable governments to capture added value from their digitalization efforts. For example, the 2015 launch of e-filing by the Zimbabwe Revenue Authority (ZIMRA) led to an increase in tax submissions and increased the ease of doing business in Zimbabwe. A study conducted in 2018 identified inadequate internet availability as the major challenge to greater take-up of e-filing. In Zimbabwe, as in several other countries, internet access is still a challenge for many taxpayers. The digital knowledge gap was identified as another major barrier to the widespread rollout and effectiveness of e-filing.[92]

In the past, citizens tended to hold governments and businesses to different digital standards. However, citizens are becoming increasingly accustomed to accessing goods, services, and information digitally through easy, one-click platforms. This has increased citizens' expectations for all digital interactions. In the 2017 Accenture Public Services Pulse Survey, respondents placed significant value on advanced functionality from digital government services, such as a personalized experience (54% of survey respondents said this was important), access to user tips and comments (47%), smartphone access (44%) and integration with social media (47%).[93] It is no longer enough to bring services online. Governments are expected to optimize all touchpoints and create a more holistic and easy-to-use experience.

2.3. PHASES OF TAX DIGITALIZATION

As global trends both facilitate and necessitate tax digitalization, governments around the world are modernizing their tax administrations to realize its potential benefits; however, progress is being made at different speeds in different countries. Outdated regulations and legacy systems combine with shortages of digital know-how and technical skills to slow digital transformations. While each country will have its own path, this report identifies three common phases based on specific elements of digitalization.

STAGES OF DIGITAL TAXATION

Phase 1 Online guidance: At this early phase, tax authorities use online platforms to share basic information that enables users to self-assess their tax obligations. Information provided digitally can offer step-by-step guidance for completing forms, laws, regulations, and processes. Clear guidance reduces the time users spend completing returns, visiting tax offices, or calling tax centers. It can also cut down on the resources tax authorities must expend on taxpayer support, and therefore lower their costs. **Digital tax payments are not yet enabled at this phase.**

Phase 2 Transactional two-way(s) interactions: In this phase, tax authorities enable two-way interactions with users, often testing new solutions with large businesses or regions before rolling them out for all relevant taxpayers. Digital services provided in this phase can include e-registration, e-filing, and e-payments. Aspects of the tax return process such as online computations are automated, but automatic transfers of data are not yet enabled. Taxpayers can begin to make payments or receive refunds digitally. However, it remains necessary in this phase to allow physical payment transactions for those with limited digital access or literacy.

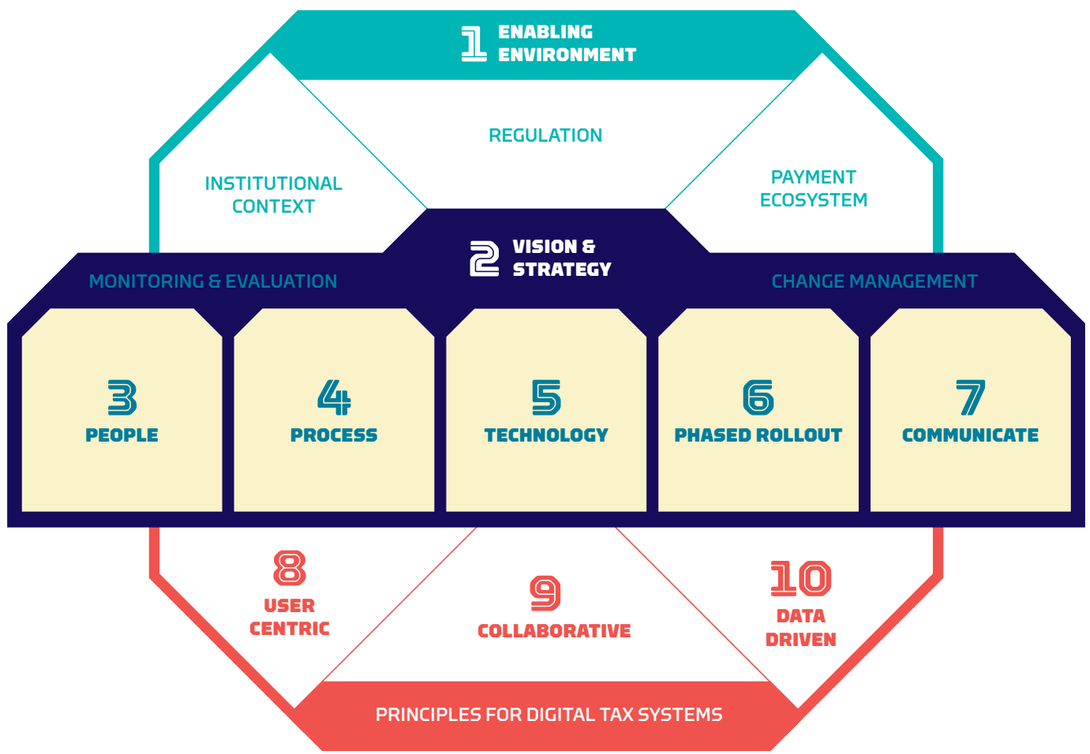
Phase 3 Two-way connectivity: In this final phase, tax authorities provide services such as e-invoicing, e-customs clearance, and e-accounting. Tax authorities use data held by other government departments or available online from, for example, social media platforms. The shared data can enable the pre-population of tax returns by automatically exporting data from accounting software. Digital payments start to become mandatory for taxpayers, accompanied by support for those with limited digital access and literacy. Such support could include training or services such as tax ATMs, which have been successfully rolled out in Indonesia. At this phase, AI and machine learning technology analyze thousands of separate data points to enable real-time verification of transactions, minimizing errors and protecting against fraud.

3. THE GUIDE

This guide draws on global best practices and lessons learned in the digitalization of tax administration systems. The following 10 success factors are intended to support tax administrators, financial policymakers, and private sector entities that provide tax support services as they design, implement, and integrate the various components of tax digitalization. The success factors address the enabling environment (i.e. the regulatory, institutional, and technological context in which digitalization is occurring), vision and strategy, implementation, and overarching principles of digitalization.

Each success factor highlights specific actions to be considered and includes examples of countries that have successfully used these approaches.

FIGURE 3:
THE GUIDE FRAMEWORK



SUCCESS FACTOR

1 Assess and Strengthen the Enabling Environment

The external environment in which tax digitalization is taking place can have a major impact on the speed and efficacy of digital transformation. Before defining a vision and strategy for tax digitalization, tax authorities should fully consider the broader regulatory, institutional, and technological context in which they are operating. In doing so, they should clearly identify the opportunities, and understand the challenges both within and outside of their control. The following three contextual factors often exert the greatest influence on the success of digitalization.

Institutional context: autonomy of the tax administration

Tax digitalization requires tax administrations to build strong capabilities, re-design their organizational structures, and make critical decisions in an agile way. To do so, it is important that they have a high degree of autonomy. Authorities with less autonomy should be clear about the limitations and mitigate the risks this presents. As identified in a 2018 report by the Asian Development Bank (ADB),[94] several countries such as Malaysia and Maldives have provided greater autonomy for their tax administrations through the establishment of semi-autonomous entities. Regardless of their structure, it is important that tax authorities have the autonomy to:

- **Independently define their objectives and design their plans.** When decision-making is controlled or heavily influenced by stakeholders external to the tax authority, there is a risk that the digitalization process will be slowed by competing agendas.
- **Manage their own operating and capital budgets.** A commitment to adequate long-term funding is critical for longer-term tax transformation projects. Administrations should estimate and account for the additional funding required to design (or procure) and deliver new systems and increase their capacity.
- **Design their internal structure and human resource management strategy.** Increased decision-making power can help tax authorities fast-track hiring, adjust performance management models, and introduce flexible and incentive-based remuneration policies to attract and retain staff with the necessary digital expertise.

A key objective of Indonesia's 2015–2019 strategic plan for digitalization was to transform the country's tax administration including by realigning its organizational structure. The Ministry of Finance delegated crucial human resource responsibilities that have increased the tax authority's independence, although its overall autonomy remains limited.

The organizational separation of tax policy and tax administration can also help strengthen the integrity and efficacy of a country's tax system. Doing so frees the revenue collection body to implement tax policy without being responsible for its design. Tax policy design is typically best led by dedicated experts within the Ministry of Finance. However, it is essential that the division of responsibilities is accompanied by measures that ensure strong communication between the two entities.

Regulatory framework

In many countries, tax digitalization occurs alongside broader tax reform processes. Consequently, it is important for tax authorities to assess how existing regulations could negatively impact digitalization, and how wider reforms could accelerate it.

Generally, the older the tax system, the more challenging this can be. Some regulatory challenges that frequently hinder tax digitalization include:

- Regulations that require in-person registration with the tax authority.
- Regulations that do not recognize electronic tax returns as a legal document (key for the introduction of e-filing).
- Regulations that require paper copies for particular steps in the tax cycle, such as audits.
- Regulations that prohibit access to bank information or the exchange of information between government agencies.

Modification of a legal framework can be a lengthy process but is necessary before implementations are started. As part of that, careful consideration of data protection is also critical.

The digital payments ecosystem

Digital tax payments are critical to tax digitalization. When enabled by the tax system, they can simplify, de-risk, and reduce the cost of collection for governments and taxpayers. The increased traceability of payments also makes tax filing easier for taxpayers and reduces opportunities for misreporting and tax avoidance. The relative maturity and inclusiveness of a country's digital payments ecosystem impacts the ease with which this key element of tax digitalization can be implemented.

It is well established that countries around the world are moving from cash to digital payments; however, the digital payments ecosystems vary greatly in their maturity and inclusiveness from country to country. Tax incentives have been used to incentivize the use of digital payments. For example, in South Korea, wage earners can claim tax deductions for purchases made through digital payments. Early research indicates that the reform helped increase the number of formal financial transactions and may encourage businesses to register with the national tax authority to receive these financial incentives, and meet customer demands for electronic payment receipts.[95]

Using the Better Than Cash Alliance Ecosystem Diagnostic Toolkit[96] as a basis, countries can assess their maturity against the following indicators:

- The percentage of businesses and individual taxpayers registered and actively using electronic payment services.
- The maturity of a shared digital infrastructure, including a payments infrastructure, payment systems, and identity systems.
- The number of service providers in the market with sufficient scale and reach to act as potential partners with the tax authority.
- Interoperability between public sector systems and electronic payment providers.

As noted in Success Factor 10, tax authorities can leverage their collaboration with payment providers to expand the number of channels through which payments can be made. For example, in Kenya, the revenue authority has partnered with the mobile payment platform M-Pesa to enable taxpayers to pay taxes with their mobile phones.

SUCCESS FACTOR

Design a Compelling Long-term Vision and Clear Strategy

Before launching a tax digitalization process, it is important for senior political officials to define the durable and energetic vision for the transformation on which they are embarking. A lack of political will or clear and active ownership of the transformation process will make it much harder to overcome potential opposition from those with vested interests in the status quo, or from internal staff who may be resistant to change. A compelling vision and clear strategy is vital, as the reform process is rarely linear or without setbacks, and energy and commitment can be hard to sustain over the long term, especially through changes in government.

Such a vision-aligned strategy enables tax authorities to: ensure buy-in from the highest government levels and thus adequate and sustained funding; enable effective collaboration with the private sector and other government departments; structure their organization so as to best implement the strategy; and build enthusiasm among those who are responsible for delivering changes and those affected by the changes.

Developing the vision and strategy will require a tax authority to:

- Assess the current state of the tax system, including available technology and human resource capabilities, internal processes, and organizational structure.
- Establish a clear and ambitious strategy that defines key objectives and how they will be measured. Authorities tend to use indicators related to revenue collection, time required to comply, cost of collection, and adoption of digital tools.
- Ensure the vision for tax digitalization is aligned with the broader tax reform or e-government strategy.
- Translate the vision into a strategic, actionable, and concrete implementation plan.

Assess the current state of the tax system

A comprehensive assessment of the current state of the tax system is essential for developing a strong vision and strategy. It identifies the tax administration's strengths and weaknesses, as well as existing internal and external capabilities. Tools such as the Tax Administration Diagnostic Assessment Tool (TADAT) are available to evaluate the performance of tax administrations. Developed by a consortium of international donors, the TADAT has been used by 75 countries to measure against key performance indicators (KPIs) in nine areas, including the integrity of the registered tax base, the timeliness of filing tax declarations, and the efficiency of revenue management.

Assessments help identify areas where digitalization might have a bigger impact or where key enablers might need to be developed before the digitalization of a specific process can start. They also enable stakeholders to reach a shared perspective on the current state of a system, including areas of strength and opportunity. For example, Peru's 2017 TADAT report highlighted key strengths, including that all core taxes were filed and paid electronically and that the completeness, timeliness, accessibility of information, and initiatives to reduce taxpayer compliance costs were outstanding.[97]

Establish a clear and ambitious vision which defines what success looks like

Once a tax authority has assessed the current state of the tax system, it can then define a vision for tax digitalization. The vision should be ambitious and clearly defined so that it can be easily understood by a wide range of stakeholders. It should also contain specific goals and milestones that will build and sustain enthusiasm for reform among key stakeholder groups. The goals should be measurable with clear deadlines, so it is clear when they have been achieved.

In 2017, Japan's National Tax Agency (NTA) announced the Future Vision of Tax Administration, a vision that looks a decade into the future. Under this vision, in addition to shifting tax returns and year-end adjustments from paper to digital formats, the NTA will use AI to analyze inquiries from taxpayers and provide optimal replies.[98]

Ensure the vision is aligned with the broader tax reform or e-government strategy

The vision and strategy for digitalization should be aligned with the broader policy objectives of the government – particularly in terms of e-government and tax reform – and should articulate how to advance these objectives. They should reflect the macro-fiscal context in which digitalization is taking place, in that digitalization should complement other fiscal initiatives and be compatible with the country's development plans and achieving the SDGs in particular.

Effective alignment requires active engagement and participation throughout the tax administration. Tax authorities should use mechanisms such as consultative forums to capture external perspectives.

Shortly after independence in 1991, Estonia set a strong central vision to invest heavily in digital government. The clarity and ambition of this vision have been central to the country's remarkable progress in tax digitalization and advanced analytics. In 2014, VAT collection was up 21% from 2013 through a combination of high-quality taxpayer data and world-class analytics. Through a commitment to flexibility and ongoing investment, Estonia has maintained and delivered its initial vision over nearly three decades, despite changing governments.[99]

Translate the vision into a strategic, actionable, and concrete plan

The long-term vision and strategy must translate into a plan with clearly articulated benefits for key stakeholder groups, particularly taxpayers. 'Quick-win' measures that link to medium-term and longer-term efforts can help demonstrate the value of digitalization and garner support and momentum. For example, by focusing initial efforts on larger businesses – which have higher revenues and are more easily able to adopt digital processes – tax authorities can quickly demonstrate returns on investment to senior stakeholders.

As part of the strategy, KPIs must be defined for each strategic objective. These allow tax authorities to measure progress, report to senior stakeholders, identify issues, and course-correct where necessary. When setting expectations, it is essential to understand that many factors will impact on the tax authority's capacity to achieve its targets across its KPIs. Tax digitalization should not be positioned as a silver bullet and cannot be expected to achieve all of the tax authority's goals. KPIs for tax digitalization may include:

- Number of new users registering via government and other online platforms.
- Taxpayers' time saved submitting taxes.
- Tax authority's time saved processing taxes.
- Percentage increase in registered taxpayers.
- Percentage increase in tax filings and tax revenue.
- Share of payments made through digital channels.
- Reduced cost of tax collection.

SUCCESS FACTOR

Proactively Manage Organizational and Personnel Changes

Tax digitalization generates significant change to internal administrative teams, both in how they are organized and in the roles they play. Overall, technology and data-driven cultures tend to use more entrepreneurial, creative, and flexible approaches to problem-solving than traditional organizations. Digitalization can be viewed as a threat to jobs and a challenge to the skillsets of employees of tax authorities, so it is critical to effectively highlight the benefits and opportunities presented by the transformation.

More broadly, it is vital that tax authorities define a clear change management strategy to underpin their digitalization plans. Such strategies typically include staff consultations, open and timely internal communications, staff training and mentoring, and stakeholder management. Any major change in a large organization will likely result in an initial dip in staff performance, primarily because of changing roles and responsibilities. However, change management can help to optimize results, reduce disruption, and garner the internal support needed to achieve a reform's stated objectives on time and on budget.

Align the organizational structure

Digitalization requires new ways of working and new collaborations across teams. By moving away from traditional siloed structures, tax administrations can integrate the ways they meet the various needs of taxpayers and other stakeholders across the entire tax cycle. To achieve this integration – which also brings significant efficiency benefits – the organization's structure must be culturally open, dynamic, and flexible. If the change is too abrupt or is not adequately socialized and explained before being implemented, culture shock can occur, and can harden resistance to that change. Typically – the more consultation that takes place with staff about the changes, the greater the level of perceived 'ownership' of the change, and the more buy-in and support the changes will enjoy from staff who have responsibility for implementation.

In July 2018, the Ministry of Taxes in Azerbaijan modified its organizational structure with the aim of improving the efficiency of overall management, building a modern and dynamic tax administration, and improving the monitoring of tax payments. The Ministry established new entities to analyze macro- and micro-economic taxpayer activities, increase the role of the tax administration in creating a favorable business environment, and fight corruption.[100]

IMPLICATIONS OF MIGRATING FROM PHYSICAL VERIFICATION TO DIGITAL ANALYSIS

The change from physical verification to digital analysis of taxpayers' financial data has broad implications for the work of tax collectors. Direct contact with taxpayers is becoming less frequent. The skills needed in the digital era are less those of traditional 'enforcers', and more those of accountants, auditors, lawyers, researchers, information technology specialists, human resource managers, data analysts, outreach specialists, and service desk staff. These changes, together with broader changes in labor markets and in gender roles, contribute to an increasing number of women working in tax administration. In OECD countries, women typically account for around 60% of the total workforce in national tax administrations. In Africa, however, men still outnumber women in tax administration, sometimes by a large margin. In 2016, among the 24 national tax administrations that reported to the publication *African Tax Outlook*, senior managers were three times more likely on average to be male than female. However, the proportion of women in tax administration is rising, including in senior leadership positions, as seen increasingly in countries such as Uganda.[101]

Identify the skills gap and invest in the team's capabilities

Digitalization will reduce manual processing, improve the accuracy of data, and enable tax administrations to focus on higher value-adding activities. New technology can enable tax officers to develop new skills and deliver higher quality services to taxpayers, leading to greater job satisfaction. Tax authorities should proactively identify high-potential staff both internal and external to their organizations, design clear roles, offer appropriate compensation, and provide meaningful support and training.

While building skills among current staff is typically a high priority, authorities will very likely also need to recruit new staff with strong technical capabilities. Staff with the appropriate skills are particularly essential if a customized technology solution is being implemented.

Key roles and skills to support tax digitalization include:

- Digitally savvy leadership.
- User experience (UX) design.
- Data science.
- ICT analysis.
- Change management.

Tax administrations should provide staff with the necessary training to build their competence and confidence in carrying out new roles required by tax digitalization. In many countries, public entities with large workforces are investing in well-designed in-house training academies, or training programs such as the DGT in Indonesia, which includes the competences needed for eight job families. Some are also experimenting with specialist training, such as bootcamp-style courses for young graduates to prepare them for specific digital roles.

As the digital economy grows and digitalization gathers pace in organizations across both the public and private sectors, competition for hiring and retaining talent is one of the biggest challenges faced by tax administrations. Competing with higher salaries offered in the private sector makes this challenge all the more acute. One way for tax authorities to confront this challenge is through adaptable and flexible staffing models. For example, high-performance staff can be offered short-term secondments in other departments or government entities to broaden their skillsets, and typically find such opportunities attractive. Tax authorities can also work with other government departments to find new opportunities for current staff whose skills do not align with the planned digital transformation.

Focus on staff retention

While staff development is important, once staff gain specific ICT skills, they become more attractive to the private sector. This makes investing in staff retention of paramount importance. Tax authorities should ensure roles, responsibilities, and reporting lines are clear. They should build transparent and inclusive teams, and maintain open and frequent communications, especially during transition periods when levels of uncertainty are likely to be high.

Digitalization also brings changes to the ways that staff are compensated. For example, in many old analog systems, tax officers were compensated based on the amount of tax they collected. However, with digital payments, such metrics can be difficult to track meaningfully at an individual level, so tax authorities must find new ways to track and incentivize performance. For example, they could count the number of individuals a tax officer registers digitally, measure the time they take to respond to taxpayer queries, and the quality of service they provide. Another approach that merits exploration is evaluating staff performance based on functional teams rather than individuals, which tends to promote teamwork and collective ownership of team outcomes.

SUCCESS FACTOR

Develop Digitally Fit Processes

A long history of legacy regulations and systems in many countries makes tax processes complex, and difficult for authorities to administer and for taxpayers to navigate. Digitalization provides an opportunity to simplify and standardize processes, creating a much more efficient and user-friendly tax experience, with a range of flow-on benefits, including broadening of tax bases and hence government revenues.

Simplification means fewer steps and interactions for taxpayers, simpler forms, and faster responses from tax authorities. For tax authorities, simplification can enable automation, reducing time spent on laborious and error-prone manual processes, so freeing up time for staff to focus on more productive and higher value-adding activities. Mexico's Tax Administration Service (SAT) recognized the need to streamline external and internal processes before starting the digitalization process. Importantly, it conceptualized how digitalization could change and simplify its internal and external processes before making changes to support its new digital systems.

By developing standardized and efficient processes that will best support digitalization, tax authorities can:

- Automate basic processes.
- Take steps to improve the taxpayer experience, helping to increase taxpayer compliance.
- Reduce opportunities for tax officers to make self-serving tax assessments.
- Increase transparency over tax collections.
- Enact other priorities such as standardizing processes across regions or simplifying tax codes.

Simplify and standardize processes

Engaging with taxpayers and staff on the front-line of delivering tax services can help to identify opportunities to improve the tax process. This often results in identification of points in the process that add cost or time without adding value, or of opportunities to integrate previously siloed activities improving efficiency, outcomes, and taxpayer experiences. Once re-designed, it is important that new processes are documented and communicated to all relevant stakeholders to ensure consistent delivery and strong take-up.

A number of process re-design methodologies, such as Lean or Six Sigma, can be used to develop re-design principles that can then be rolled out across a tax administration. Examples of key re-design principles may include:

- **Define value:** Understand what users want from the tax system, and what they need to access it.
- **Map the value stream:** Identify all activities that contribute to value to the system and eliminate unnecessary processes that do not.
- **Create flow:** Once unnecessary processes have been removed, ensure that remaining steps flow smoothly, and mitigate risks of interruption or delay.
- **Establish pull:** Limit works in progress by ensuring that necessary information is available to the end-user when needed.
- **Make improvement core business:** Continuous process improvement should become a core element of organizational culture and staff performance metrics. Staff should be incentivized or required to constantly look for ways to streamline processes and improve the user experience.

The PaceSetter program developed by HMRC in the United Kingdom is one of the most widely used and advanced continuous improvement programs. Inspired by 'lean' approaches to business improvement, the program consists of a set of principles, supported by tools and techniques that staff can use to improve the way they work.[102] The UK's central tax authority uses PaceSetter as part of its efforts to increase efficiency, manage performance, and improve customer service.

SUCCESS FACTOR

Use the Most Appropriate Technology

Information technology is central to the effective administration of tax systems. As tax administrations become more complex, it is common to find systems composed of hundreds of different individual software applications integrated to varying levels. Over time, such systems become more expensive to maintain and harder to change. Tax authorities typically look for technology solutions that meet their specific needs while ensuring value for money; however, this is usually not easy.

Procure technology aligned with the digitalization strategy

Selecting a technology solution can be daunting, with so many options on the market, each with different capabilities as well as limitations. First and most importantly, tax authorities must be clear about what they expect from implementing technology. A 'future state' vision of how the administration will operate after implementation is very valuable; developing this vision helps to assess the gap between the current state and the desired state, and hence makes it easier to identify the best technology solution, taking into account other relevant factors such as cost and implementation timelines.

A tax authority's technology strategy should be fully aligned with its broader strategic and operational plans. Authorities often face a decision between a COTS system and one that is custom-made. Differences between the two are not always obvious. For example, it is possible to purchase a COTS solution and then make significant changes, which can potentially mean a fully customized solution would have been more appropriate and cost-effective. Typically, most desired outcomes can be achieved with 80% of a COTS solution. The remaining 20% can then be customized to meet specific requirements, although these proportions may vary significantly depending on country contexts. Before procuring a COTS solution, it is important that tax authorities – and their key stakeholders – understand the extent of the modifications, their associated costs, and how long they will take to complete. As was explored in Success Factor 4, simplifying the internal processes can reduce the need for adjustments to the COTS solution.

In the Philippines, in 2010, the Bureau of Internal Revenue (BIR), with support from the Revenue Administration and Reform Project (RARP) from the Millennium Challenge Corporation (MCC), began to develop a new electronic Tax Information System (eTIS). This system consisted of a web-based platform that should eventually encompass all of BIR's main operations and consolidate data from other BIR systems such as the electronic Filing and Payment System (eFPS) and the electronic Letter of Authority Monitoring System (eLAMS). However, implementation of eTIS occurred well behind schedule. Delays arose because of the complexity of the systems involved, a lack of appropriately skilled staff, and complications with the customization of COTS software.[103]

Choose technology partners carefully

Tax administrations usually face a choice between partnering with a technology provider that can meet all their requirements or with several specialized suppliers. Some authorities – typically those with more mature digital tax systems – have opted to use open-source solutions. These usually have the benefit of flexibility and more bespoke functionality but require a tax authority to have significant in-house ICT capabilities. Where an authority has lower in-house capabilities, a single provider may be preferable, as it will be able to provide most of the required functionality and will be easier to manage. This approach makes selecting the appropriate partner extremely important. In Rwanda, the revenue authority tested in-house built solutions at the early stages of digitalization. Recognizing its own ICT limitations, the revenue authority moved to a licensed COTS software solution. However, the software was found to be excessively rigid, and the cost of its license was considered prohibitive. As a result, the revenue authority moved to a tailored and flexible solution from another supplier that allowed its in-house ICT staff to access the source code and adapt it to changing laws and taxpayer feedback.

As was experienced in Rwanda, many suppliers have seemingly comparable technology offerings. Therefore, several non-tech factors should be considered during the partner selection process:

- The ability to deliver in full against agreed benchmarks, not just the ability to write and pitch a compelling proposal. Tax authorities should diligently check references for an honest assessment of the supplier's delivery and implementation record.
- A good cultural fit between the supplier's delivery team and the tax authority's in-house team – assessed, where possible, before entering into procurement contracts and with agreed measures to change key supplier team-members if needed.
- A clear understanding of the supplier company's long-term business strategy, to ensure it can meet the future ambitions and potential needs of the tax administration as they evolve, and not just its current needs.

In 2013, the Kampala Capital City Authority (KCCA), responsible for the operations of the capital city of Kampala in Uganda, introduced digitalization as part of a broader plan to improve service delivery through automation. This digitalized system required a substantial upfront capital investment of around UGX 9.9 billion (USD 2.75 million). KCCA opted for a system with open-source code that an in-house technical team could operate, repair, and update according to KCCA's needs. This choice reduced long-term costs because it freed KCCA from reliance on services from any one supplier, and because it eliminated the need for annual subscription fees.[104]

Ensure data privacy and security

Introducing new technology requires careful consideration of data privacy and security risks. Phishing, identity theft, and other forms of security breaches are all serious risks whenever information is transmitted and stored digitally. Given the sensitivity of the collected data, the risks and costs of security breaches are higher for tax administrations. When procuring technology, it is essential to ensure robust data privacy and security protections. Before implementation, stress tests should be performed to measure the technology's resistance to possible attacks. An incident response management plan should be put in place to help staff detect incidents quickly, reduce their impact, and return to business as soon as possible. Data privacy and security will pose ongoing challenges after implementation, with new risks constantly emerging and the types of data growing. Resources should be allocated to continuously monitoring risk levels and updating protocols. Taxpayers are likely to be concerned about the security and use of their data. To build trust, security measures should be clearly communicated to taxpayers.

SUCCESS FACTOR

Implement a Phased Rollout

Implementation plans for digitalization must balance the desire to quickly capture the benefits of digitalization with the need to minimize disruption and risk, ensuring taxpayers and administrations have enough time and support to adapt to the new system. To this end, tax administrations often employ pilot studies followed by phased rollouts before mandating the use of new digital services.

Start with pilot studies

By piloting a new tax process in a controlled environment before bringing it online across the whole tax system, tax administrations can minimize the severity and frequency of unforeseen problems and gain valuable insights to inform the rollout of future initiatives.

Pilot studies can be done within a particular region, group of businesses, or tax type, allowing systems to be tested and evaluated so improvements can be made before rollout. Pilot studies should run in parallel with the existing tax system, and taxpayer participation should be optional.

Larger businesses or regions with high-performing tax teams at the tax authority can be better at providing rapid feedback and practical support to the tax authority when the pilot reveals particular challenges. However, it should be noted that results and insights from a pilot performed with specific groups of taxpayers (such as large businesses or regions) may not be directly applicable to other taxpayer groups (such as smaller businesses). As a result, further piloting with those additional groups may be necessary before the initiative is widely rolled out.

Phase the rollout

Even after the pilot stage has been completed and improvements have been made, it is advisable to roll out the piloted initiative in a series of phases. Phased rollouts allow unanticipated challenges to be kept relatively isolated and hence addressed more quickly. They also allow authorities to spread the costs of introducing the initiative over time, rather than facing very large (and potentially prohibitive) front-end costs.

Tax authorities have rolled out digitalization in several different ways, by geography, by tax type, and by sector. However, authorities from the case studies in this report most commonly started with larger companies, then down to small businesses before making the new initiative mandatory for all relevant taxpayers. The decision to start with larger companies was related to larger companies having more resources and better capabilities to manage rapid change.

Mandate use or create incentives to drive adoption

After a phased rollout, it is common to make the use of a new digital service mandatory. This approach comes with benefits and risks. Through mandates, a tax authority can quickly compel taxpayers to use the new service and move taxpayers into broader use of digital tax processes. This makes the tax process easier for tax authorities to manage, enables better data collection, improves efficiency and accuracy, and reduces costs. However, some smaller businesses or individuals may not have the skills, resources, or time to learn how to use the new service, leading to frustration and hampering take-up of the service. By providing training and support, authorities can help users reduce the time and costs involved in using the new service. While this training and support requires investment by tax authorities, many have been able to lower the costs of this investment by redeploying staff whose time has been freed up by digitalization. The Australian Taxation Office estimates that 70% of users can transition to online-only services with no support, a further 25% can do so with some support, and 5% require significant support and/or non-digital alternatives.[105] These percentages might vary in economies with greater informality or lower financial and digital literacy.

In Mexico, SAT first piloted e-invoicing in the early 2000s with 45 member companies of the Mexican Association of Standards for Electronic Commerce. SAT made e-invoicing mandatory for large taxpayers in 2011 and for medium-sized taxpayers in 2014. This approach allowed SAT to learn and adapt e-invoicing to best suit the needs of various taxpayer groups.

Instead of mandating uptake, some authorities have opted to use incentives to promote adoption. Examples include offering rebates for e-filing, delayed filing deadlines, or introducing digital tax receipt lotteries. Slovakia has been running a receipt lottery since 2013, which has helped encourage taxpayers to ask for transactions to be made digitally, leading to modest additional revenues of USD 11 million annually. In Brazil, individuals who provide their taxpayer numbers when making a purchase digitally receive a rebate equal to 30% of the sales tax paid and a chance to win a prize.[106] While incentives have proven successful in some contexts, they can unfairly benefit those who are younger, wealthier, better educated, and more tech-savvy.

SUCCESS FACTOR

7 Communicate Well with Taxpayers

As tax administrations roll out tax digitalization, it is critical that they communicate openly and frequently with taxpayers. Key messages depend on the type of digitalization being rolled out, but usually should include messages around the importance of paying taxes, the work of the tax authority and its benefits for taxpayers, progress the tax authority is making in this work, and practical information about changes in the process or requirements for taxpayers. The information should reach as many users as possible to increase voluntary compliance, taxpayer satisfaction, and trust in the overall tax system and tax authority. Communication should be timely, concise, and targeted. Digitalization can offer more effective communications, through email and SMS, that typically deliver strong impact at low cost and low risk.

Keep communication simple and personalized

Taxpayers can become overwhelmed with information, such that important messages are not adequately understood. Some tax authorities have found it effective to focus less on why the changes are being made and more on the outcomes. Examples of this approach include messages along the lines of: 'you will now need to use this particular form,' or 'all taxes will now need to be submitted through this website.' Authorities should keep the number of messages to a minimum and make it clear where taxpayers can get more information.

As with all aspects of a digitalization strategy, communications must recognize the diversity of audiences that need to be reached. Effective communication addresses target groups with key specific messages.

Many tax authorities use data analytics to personalize messages. Data can be used to improve the consistency of messaging and ensure all communications are relevant. Personalized messages can help increase taxpayers' comprehension of changes, levels of adoption, and satisfaction with the tax authority and the process of change. In Madagascar, a World Bank team jointly conducted a field experiment with the Directorate General for Taxation to test whether simple text message reminders could increase compliance among late tax filers, re-purposing a technique that has been effective in improving the timely repayment of micro-credit. In the control group (which did not receive the text message reminders), only 7.2% of late filers filed tax returns by the extended deadline. This increased to 9.8% in the treatment groups that received the text message reminders. The intervention was found to be highly cost-effective. For every USD 1 the tax authority spent sending text message reminders, it collected USD 329 in additional revenue.[107]

Use multiple channels

It is important to communicate through frequently used channels so that taxpayers do not have to access additional systems to receive the information. For example, taxpayers have proven unlikely to log in to a portal to access information. Instead, information more effectively reaches its intended audiences when conveyed through channels commonly used by the audiences, such as WhatsApp, text, email, or social media. Indonesia designated 2015 as a year to coach taxpayers. As part of these efforts, the tax authority conducted a widespread awareness campaign through social media. The objective was to educate individuals and businesses about how to register for a tax identification number and how to comply with tax obligations in full. It is important to note that communication does not always need to be digital. Field staff can be highly effective, for example, by holding group training at roadshows or setting up stalls in public areas. It is also important to measure both the reach and effectiveness of different channels and activities. Monitoring will help to design and deliver future campaigns in a way that achieves maximum impact.

In addition to proactively delivering information, tax administrations need to have the skills and infrastructure in place to respond effectively to taxpayer questions. Many tax authorities provide support via telephone, webchat, or chatbot to ensure that taxpayers receive prompt responses to any questions, containing helpful and practical information. Again, it is important to measure the success and return on investment for each of these services to help inform future activities.

Be transparent

Digitalization allows tax administrations to be more transparent. By sharing information about how taxes are collected, administrations can demonstrate to taxpayers and other key stakeholders the rigor and fairness of the tax collection system. Agencies can also use digital processes to keep taxpayers informed of where their return or rebate is in the system at any given time. Such measures increase taxpayers' confidence with the tax authority and the broader tax and government services system, and reduce the time and expense of meeting their obligations.

It is now common practice among OECD countries to provide personalized data to taxpayers about how their taxes are spent. The aim here is to increase compliance by giving taxpayers confidence that their money is being used to deliver public services of value to them.

SUCCESS FACTOR
Be User-Centric

User-centric design is an approach to developing new solutions that start with identifying user needs and end with processes, products, and services tailored to those needs. Rather than designing solutions from the tax administration's point of view, user-centric design focuses on understanding taxpayers and designing from their perspectives.

In other words, a user-centric approach entails a paradigm shift from government-centricity, which prioritizes outcomes for governments, to user-centricity, which prioritizes outcomes for users – in this instance, taxpayers. Traditionally, governments invested in technology to maximize internal efficiency and effectiveness, while impacts on users were indirect and often hidden. Today, the trend is – and needs increasingly to be – towards technology as a tool to improve service delivery primarily to the benefit of taxpayers, although, of course, tax administrations and other key stakeholders also reap significant benefits.

Understand the diversity of taxpayers and design for all

Putting users (i.e. taxpayers) at the center of tax digitalization reforms requires carefully segmenting the taxpayer base, not only by type but also by behavior pattern. An understanding of behavior patterns can help authorities predict which taxpayers are most likely to use to certain solutions, and determine how to address barriers, encourage uptake, communicate effectively, and drive compliance. To create an inclusive digital tax system, it is important to design and implement with all taxpayers in mind. Some segments require special attention, such as:

- MSEs that often have less access to or familiarity with technology.
- Women, rural and lower-income users that are often digitally excluded and might face additional barriers to complying with their tax obligations.
- Young citizens who are the taxpayers of tomorrow, and the fastest-growing consumer demographic in most countries.
- Tax intermediaries, such as accountants, financial advisors, and tax planners.

Women make up a disproportionate percentage of workers in the informal sector. In South Asia, over 80% of women in non-agricultural jobs are informally employed. In SSA, 74% are informally employed, and in Latin America and the Caribbean, 54% are informally employed.[108] Over 1.2 billion women in low and middle-income countries do not use mobile internet, and women are, on average, 26% less likely to use mobile internet than men.[109] These factors make it harder for women to access new digital tax services, which can mean they end up paying higher taxes than men. Some government incentives to use digital tax services (such as tax breaks or rebates) can also have the unintended consequence that individuals who are unable to pay tax digitally end up unfairly paying higher taxes. It is, therefore, vital to plan a mixture of digital and non-digital support services and incentives with diversity in mind, and which cater to groups who may be digitally excluded. Activities might include community informational events or one-on-one assistance.

Apply a user-centric lens to the entire taxpayer experience

When taking a user-centric approach to digitalizing tax systems, it is important to take a holistic view of taxpayers' experiences. The key aspects that should be taken into consideration are:

- **The taxpayer journey:** The steps that taxpayers must take to comply with their tax obligations are simplified by automatic delivery of services when and where they are required, and by integration of such services into systems that taxpayers use for other government services.
- **Digital interfaces:** Disarticulated services, complex processes, and confusing steps all increase the burden on taxpayers, leading to more mistakes in tax filings and other compliance steps required by taxpayers. The United Kingdom loses GBP 8 billion (USD 11.4 billion) a year in tax from avoidable taxpayer errors.[110] Designing more user-centric tax systems can help reduce such errors, increasing efficiency, compliance, and revenues for governments.
- **Communication strategy:** As discussed in Success Factor 6, communication channels are evolving; people are becoming increasingly accustomed to shorter and faster forms of communication channels such as text messages and emails, and outreach by phone.

Benchmark against all digital providers

As taxpayers and individuals use the internet for more activities in their daily lives, their expectations are raised by the one-click functions of private sector platforms and more advanced public sector platforms. To enjoy taxpayers' confidence and strong uptake, tax authorities should benchmark their digitally available products, services, and processes against a range of high-performing digital providers. Tax authorities improve their performance – and ease the burden for taxpayers of meeting their obligations – by learning from best practices among other digital providers and adopting the relevant principles where appropriate.

SUCCESS FACTOR
Collaborate

In an increasingly connected world, it is important that the tax system is integrated into digital and non-digital ecosystems. Tax administrations should engage with their private sector networks to explore and - where appropriate - deliver innovations and seek opportunities to integrate systems with other government departments.

Collaborate at the design stage

The most effective way to collaborate with other players is to involve them in the initial design process. Tax authorities can start by sharing objectives with potential partners and minimizing prescriptive functional requirements. This is particularly effective when working with technology partners to implement new digital tax systems. Many such partners are smaller and more nimble companies that understand the local context and can adapt their technology as tax processes and requirements evolve.

Align with other government services

With more digital services and improved system integration, the digital interface can significantly impact user experience and allow tax departments to deliver more with less. Initiatives such as unique identification numbers have helped tax administrations increase the ease of doing business for taxpayers, while also providing access to other government services and benefits, such as housing subsidies and social security. Sharing data can help tax administrations increase tax compliance and reduce the burden to citizens, for example by providing pre-populated forms to taxpayers. Closer collaboration and integration can also help government departments learn from one another, for example through flexible working arrangements such as secondments that broaden employees' skills and help to share expertise between departments.

The tax authority in Indonesia collaborated with other public sector stakeholders during the design and implementation of Kartin1 – a card that combines access to government services and products in one multiplatform. In addition to providing an individual with a record of their Tax Identification Number (TIN), Kartin1 also integrates their ID, social security number, and driving license. In the future, the card is also expected to double as a credit or debit card, with pilots already under way.

Harness the strengths of the private sector

Tax collection is nearly always costly, but this is especially so in countries like Indonesia where taxpayers are spread across large areas and multiple islands. Rather than spending significant amounts of money building networks and infrastructure, tax administrations should explore collaborations with private sector partners who already have networks and infrastructure in place. Partners could include national banks that have widely dispersed branches or mobile payment companies that have the functionality for users to make bill payments. Collaborating with such companies can reduce upfront costs and improve taxpayer experience by enabling the facility to make payments through channels they already use.

Collaboration with the private sector may take a number of forms, including:

- **Knowledge-sharing:** the private sector often has more experience with technologies and business models that are less familiar – and hence more challenging – for tax administrations, such as advanced analytics, cloud computing, artificial intelligence, and asset-sharing platforms.
- **Financial resources:** in emerging economies, the tax authority may lack the financial resources required to develop additional systems and tools to provide value-added services to taxpayers. Private sector players may be better positioned to invest in developing such tools or providing such services to taxpayers.
- **Service provision:** in many countries the private sector already provides services directly to taxpayers, such as replacing legacy technology platforms for tax administrations that do not have the in-house capabilities to do so.
- **Cooperative compliance:** large corporate taxpayers in some countries agree to make voluntary disclosures and notify tax authorities of possible tax risks early and openly in return for timely advice. Such arrangements are usually of mutual benefit; most arrangements of this type have shown that cooperative compliance builds trust.

To effectively collaborate, tax authorities often need to take into account internal rules or legislation designed to prevent conflicts of interest. Some tax authorities have found there is a lack of discussion and engagement fora through which different actors can engage in tax issues. Low trust and real or perceived risk of corruption may also deter the private sector from working with governments more closely. While these and other hurdles are not insignificant, they can be overcome with appropriate safeguards.[111]

10

SUCCESS FACTOR
Be Data-Driven

Data, usually in abundance, form one of the most powerful assets available to tax agencies. If collected and used effectively, data can transform a tax administration and deliver vast benefits for all stakeholders. Data help administrations to identify new opportunities to improve efficiency, and to focus their efforts in areas of higher potential return. This allows the administrations to understand taxpayer needs as they emerge and continuously improve services. When accompanied by integration with other government departments and international entities, data can help tax administrations to quickly identify irregularities in tax payments and, thus, select and perform audits more efficiently. In an age of growing budget constraints - worsened by COVID-19 - and increased scrutiny, well-managed data can support tax authorities in their efforts to do more with less.

The importance of taxpayer confidentiality should not be underestimated. Tax authorities need to reconcile two conflicting objectives when sharing data. On the one hand, they should share data to support public transparency, debate, and improved policy design. On the other hand, authorities must protect taxpayer confidentiality as required by law. In a conflict between these two objectives, confidentiality must prevail.

Develop an integrated data strategy

Through digitalization, tax authorities collect more data than previous systems could provide, and frequently, more than the authority can fully use. It is important to develop a strategy for the collection, storage, use, and removal of data. Investing time and resources can ensure data management is standardized, making it easier to extract the most possible benefit from that data, and minimize data risks. Several considerations should be taken into account when developing a data strategy:

- Tax administration priorities: identify which data will most boost efficiency, improve services, and increase compliance and revenue.
- Other government priorities: define which data will be shared, with whom, and in what format, to enable the most safe and effective integration with external sources.
- International governments: as countries confront tax evasion, they are required to abide by the CRS for the AEOI initiative.

Big data architecture (the logical and/or physical layout/structure of how big data are stored, accessed and managed within a big data or IT environment) should support real-time or near real-time collaboration with taxpayers and include: fully automated compliance and service processes, data analysis and discovery tools, performance projection mechanisms, tax audit planning tools, guidance for tax officials in relation to risk assessments, and overall administrative support.[112]

Audit efficiently through risk-based compliance to help increase revenue

The growing sophistication of data analytics and data mining can help to identify compliance risks and thus increase tax collections, while also improving efficiency and lowering audit costs for a tax authority. Specifically, tax administrations can employ risk analysis to more accurately target non-compliant taxpayers with audits, and subject fewer compliant taxpayers to unnecessary audits. Big data enable such tax reviews that identify who to audit to be largely automated. Tax administrations can also mine data from social media, banks, or open data sources to aid in audit selection and performance processes, although taxpayer confidentiality considerations must remain of paramount importance.

Automated compliance tools can help encourage individual taxpayers to improve their compliance. One such tool involves sending letters to taxpayers that highlight discrepancies between the data available to tax authorities and the data submitted by the taxpayer in their tax returns. By offering support rather than demanding payments or threatening sanctions, tax officers can develop more collaborative relationships with taxpayers while making them aware of the information authorities have available.

Some tax authorities are using real-time or near real-time data analytics engines to validate or identify discrepancies in invoices, verify sales and purchase declarations, verify payroll and withholding declarations, and compare taxpayer data across jurisdictions.

Since 2015, the Federal Tax Service of Russia has used big data technologies to monitor VAT compliance. Data from VAT tax returns are cross-matched, and potential fraud cases are identified automatically. The implementation of this system increased VAT collection by 12.2% in its first year.[113]

The Directorate General for Internal Taxes (DGII) in El Salvador has partnered with USAID since 2004 to build a more modern tax service with a web-based IT infrastructure that enables improved taxpayer services, more robust auditing, and better fraud and corruption control. In 2010, DGII rolled out an audit selection and management system (CSMS) that automates the assigning of audits. In the CSMS's first six months of full operation in 2010, DGII completed more than 300 audits, detecting more than USD 100 million in underreported taxes compared to just USD 50 million detected for all of 2009.[114]

Use data for continuous improvement

Data allow tax authorities to continually track revenue collection, identify challenges, measure user satisfaction, and assess staff performance, among many other value functions. Tax administrations can develop dashboards providing senior managers such information, enabling them to identify problems and opportunities, and act on them promptly and effectively. Over time, this capability helps build an organizational culture in which it is commonplace to review data frequently, and pivot activities to quickly resolve issues and improve services.

The Kenya Revenue Authority automated and digitized several of its functions to improve the efficiency of service delivery, enforce compliance, reconcile tax collections, promote transparency, and improve accountability. Digitization of its VAT operations helped identify data inconsistencies and raised VAT collections by more than KES 106.75 billion (USD 1 billion) between 2016 and 2017.[115]

Use new data to improve policymaking across government

The wealth of new data provided by digitalization brings opportunities to shape and improve policymaking both inside and outside the tax authority. Tax data can be used to build a more sophisticated understanding of the national economy, often in real time, and help government departments make policy decisions in a range of other ways. This can also help tax administrations measure how new regulations are impacting individuals and businesses.

Tax data can focus on almost any taxpayer cohort while retaining a sufficient sample size for robust analysis. The growing availability of data has increased the use of simulation methods to assess the impact of policy reforms. To do this, authorities establish a baseline scenario for each taxpayer (that is, what would happen with no policy change) and compare it with reform scenarios wherein a set of observed variables is applied to reflect a potential policy change. Simulations can estimate the impacts of a new policy or initiative without the cost or risk of a national rollout.[116]

Improve data-sharing with governments around the world

Data can provide clear insights into a country's overall tax picture and identify those who are not fully meeting their tax obligations, including multinational companies operating in multiple jurisdictions, often with deliberately complex tax arrangements in place to minimize or avoid tax liabilities. As digital tax systems mature, countries can join the AEOI initiative to reduce the prevalence of tax evasion and ensure tax policies are fully and fairly enforced against all taxpayers.

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Acronym list

AAAA	Addis Ababa Action Agenda
AEOI	Automatic Exchange of Information
AGESIC	Agency for eGovernment and Information and Knowledge Society
AI	Artificial Intelligence
AMECE	Asociación Mexicana de Estánderes para el Comercio Electrónico (Mexican Association of Standards for Electronic Commerce)
APA	Advanced Pricing Agreement
API	Application Programming Interface
ASP	Application Service Providers
ASYCUD	Automated System for Customs Data
ATAF	African Tax Administration Forum
ATI	Addis Tax Initiative
ATM	Automatic Teller Machine
B2G	Business to Government
BEPS	Base Erosion and Profit Shifting
BIR	Bureau of Internal Revenue (Philippines)
BKF	Badan Kebijakan Fiskal - Fiscal Policy Agency (Indonesia)
BMGF	Bill and Melinda Gates Foundation
BPJS	Employees Social Security System
BSC	Balanced Score Card
CAGR	Compound Annual Growth Rate
CIT	Corporate Income Tax
COMESA	East African Community and the Common Market of Eastern and Southern Africa
COTS	Commercial-Off-The-Shelf
CRS	Common Reporting Standard
CSMS	Case Selection and Management System
DGII	Directorate General for Internal Taxes (El Salvador)
DGT	Tax Directorate General (Indonesia)
DJBC	Directorate General of Customs and Excise (Indonesia)
DPIDG	Division for Public Institutions and Digital Government
DRM	Domestic Resource Mobilization
DST	Digital Service Tax
EAPS	East African Payment System
EBM	Electronic Billing Machine
ECLAC	Economic Commission for Latin America and the Caribbean
EDC	Electronic Data Capture
EFD	Electronic Fiscal Devices
EGDI	E-Government Development Index
ERP	Enterprise Resource Planning
eTIS	electronic Tax Information System
FAQ	Frequently Asked Questions
FATCA	Foreign Account Tax Compliance Act
FBR	Federal Board of Revenue
FDI	Foreign Direct Investment
FIMPE	Fideicomiso para extender a la sociedad los beneficios de la Infraestructura de los Medios de Pago Electrónico
FMP	Multiple Payment Forms
FY	Fiscal Year
GDP	Gross Domestic Product
GoR	Government of Rwanda
HMRC	Her Majesty's Revenue and Customs
ICAEW	Institute of Chartered Accountants in England and Wales
ICT	Information and Communications Technology
ICTD	International Centre for Tax Development
IDR	Indonesian Rupiah
IMF	International Monetary Fund
ISO	International Organization for Standardization
IT	Information Technology
ITU	International Telecommunication Union
IWAPI	Indonesian Business Women Association
KCCA	Kampala Capital City Authority (Uganda)
KPI	Key Performance Indicators
KPP	Tax Service Offices (Indonesia)
LAC	Latin America and the Caribbean

LC	Capture Lines
LIRS	Lagos State Internal Revenue Service
LMIC	Lower-Middle Income Country
MCC	Millennium Challenge Corporation
ME&L	Monitoring Education and Learning
MNC	Multinational Company
MoF	Ministry of Finance
MSE	Medium Sized Enterprises
MSME	Micro, Small & Medium Enterprise
MXN	Mexican Peso
NF-e	Nota Fiscal eletrônica
NTA	National Tax Agency (Japan)
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
OSI	Online Service Index
P2G	Person-to-government
PAC	Authorized Certification Provider
PAN	Personal Account Number
PAYE	Pay-As-You-Earn
PCT	Platform for Collaboration on Tax
PIT	Personal Income Tax
PoS	Point of Sales
PPP	Public-Private Partnership
RAG	Revenue Analytics Group (Ireland)
RARP	Revenue Administration and Reform Project
RDB	Rwanda Development Board
RIPPS	Rwanda Integrated Payments Processing System
REPSS	Regional Payment and Settlement System
ROPL	Rwanda Online Platform Limited
RRA	Rwanda Revenue Authority
RSSB	Rwanda Social Security Board
RURA	Rwanda Utilities Regulatory Agency
RWF	Rwandan Franc
SAT	Tax Administration Service (Mexico)
SDG	Sustainable Development Goal
SHCP	Secretaría de Hacienda y Crédito Público (Secretariat of Finance and Public Credit—Mexico)
SMS	Short Message Service
SOE	State-owned Enterprise
SPEI	Sistema de Pagos Electrónicos Interbancario (Inter-Banking Electronic Payment System—Mexico)
SSA	Sub-Saharan Africa
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TA	Tax Administration
TADAT	Tax Administration Diagnostic Assessment Tool
TIN	Tax Identification Number
UGX	Ugandan Shilling
UMIC	Upper-Middle Income Country
UN	United Nations
UN DESA	United Nations Department of Economic and Social Affairs
UNISCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNIPOG	United Nations Project Office on Governance
USAID	United States Agency for International Development
USD	United States Dollar
USSD	Unstructured Supplementary Service Data
VAT	Value-Added Tax
WEF	World Economic Forum
XML	extensible markup language
ZIRMA	Zimbabwe Revenue Authority

Glossary

Automatic Exchange of Information (AEOI) is an international standard that governs how tax authorities in participating countries exchange data relating to the bank accounts and safekeeping accounts of taxpayers.

Big data is a field that focuses on ways to analyze, extract information from, or otherwise use datasets that are too large or complex for traditional data-processing application software.

Change management is a collective term for all approaches to preparing for and executing organizational change and supporting of individuals, teams, and organizations through that change.

Common reporting standard is an information standard for the Automatic Exchange of Information (AEOI). It outlines what financial account information is to be exchanged, which financial institutions are required to report, the different types of accounts and taxpayers covered, and common due diligence procedures to be followed by financial bodies.

Digital government is the production and delivery of information and services within government and between government and the public using a range of information and communication technologies (ICT).

Digitization is the process of changing from analog to digital formats.

Digitalization is the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business.

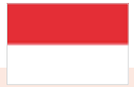
Phishing is the fraudulent attempt to obtain sensitive or valuable information such as usernames, passwords, and credit card details, by dishonestly presenting as a trustworthy entity in an electronic communication.

Tax expenditure is the revenue a government forgoes through the provisions of tax laws that allow (1) deductions, exclusions, exemptions, or credits on taxpayers' taxable expenditures, income, or investments, (2) deferral of tax liability, or (3) preferential tax rates.

Time poverty is a state in which individuals do not have enough time for rest and leisure after taking into account the time spent working, whether in the labor market, for domestic work, or in other activities required to maintain their livelihoods.

UX design is the process that design teams use to create products that provide meaningful and relevant experiences to users.

Comparative case study countries


COUNTRY CONTEXT	RWANDA	INDONESIA	MEXICO
Population	12 million	268 million	124 million
Adult population	7 million	186 million	90 million
Country income category	Low-income	Lower-middle income	Upper-middle income
Annual growth rate of the economy (Real GDP)	7.5% (2008–2018)	5.5% (2008–2018)	2.1% (2000–2018)
% employment in the formal economy	10%	30%	40%
Gender Gap Index	0.822 (rank 4/144)	0.691 (rank 84/144)	0.691 (rank 81/144)
% adult financial account	68%	49%	37%
% adult internet users	80%	76%	82%
TAX LANDSCAPE			
Entity studied	Rwanda Revenue Authority (RRA)	Directorate General Taxes (Direktorat Jenderal Pajak, DGT)	Tax Administration Service (Servicio de Administración Tributaria, SAT)
Revenues collected by entity	All taxes	VAT, CIT, PIT, and stamp duties	VAT, CIT, PIT, and special taxes
Degree of autonomy	Semi-autonomous from MoF	Part of the MoF	Semi-autonomous from SHCP
Tax-to-GDP	16.6%	12%	16%
DIGITALIZATION OF TAX SYSTEM			
Digitalization efforts started in	2004	2001	1995
Registration digitalized	No	Yes	Partial
E-invoicing	Yes	Yes	Yes
E-accounting	No	No	Yes
Electronic filing of tax returns	Yes	Yes	Yes
Digital payment of taxes	Yes	Partial	Partial
Specific electronic interaction with TA	Yes	No	Yes
General electronic interaction with TA	Yes	Yes	Yes

Interviewee list

CATEGORY	NAME	ORGANIZATION
Global	**Alexander Kitain**	DAI
	Andrew Zeitlin	Georgetown University
	Anne Brockmeyer	World Bank
	Beatriz Marulanda	Marulanda & Consultores
	Daniel Alvarez	World Bank
	Greg De Paepe	Independent consultant
	Jonathan Weigel	London School of Economics
	Mazhar Waseem	University of Manchester
	Pierre Bachas	World Bank
	Rex Arendsen	OECD
	Victor Thuronyi	Ex-IMF
	Vishal Gujadhur	Bill and Melinda Gates Foundation
Indonesia	**Adria Widyatmoko**	Gojek
	Agus Rachmadi	Bank Rakyat Indonesia
	Ari Irfano	HIS Consulting
	Azalea Ayuningtyas	Du'Anyam Social Enterprise
	Bawono Kristiaji	DDTC
	Bernand Manurung	Syngenta
	Bram Kristofer	Pixel Indie
	Brigitta Aryanti	Gojek
	Brooke Patterson	Bill and Melinda Gates Foundation
	Budi Kuncoro	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) Tax Unit
	Charles Guinot	Online Pajak
	Christoforus Pakadang	Good Hope
	Chusnul Savitri	Indonesia Business Women Association (IWAPI)
	Danny Septriadi	DDTC
	Denny Vissaro	DDTC
	Fajar Kusuma Nuguraha	Bank Negara Indonesia
	Fitri Damayanti	Syarif Hidayatullah State Islamic University
	Hermawati Setyorinny	Indonesian Association of MSMEs
	Imam Machdi	Ministry of Administrative and Bureaucratic Reform
	Iwan Djuniardi	Directorate General Taxes (DGT)
	Jaffar Al Rikabi	World Bank
	James Castle	Castle Asia
	Joe Sitorus	Coordinating Ministry of Economic Affairs
	Mei Ling	Emas Indonesia Dauribu
	Mercy Simorangkir	Fintech
	Mr. Sumedi	Bank Mandiri

CATEGORY	NAME	ORGANIZATION
Indonesia (continued)	**Muhammad Fadlillah Fauzukhaq**	Syarif Hidayatullah State Islamic University
	Olfriady Letunggamu	Indonesia Chamber of Commerce and Industry (KADIN)
	Richard Highfield	Asian Development Bank
	Robert Pakpahan	Directorate General Taxes (DGT)
	Rubino Sugana	Prospera
	Satya Dharma	Mahaka Media
	Shinto Nugroho	Gojek
	Suahasil Nazara	Fiscal Policy Agency
	Thea Wiroreno	Freelance copy-editor and writer
	Uthie Mintiarto	Dewi Sambia Butik
	Widharmika Agung	Iwan Tirta Homa
	Will Ongkowidjaja	Alpha JWC Ventures
	Yasushi Suzuki	Asian Development Bank
	Yuana Sutyowati	Ministry of SMEs
	Yuristyarni Puspasari	Bank Negara Indonesia
	Zidni Agni Apriya	Regional Tax and Fees Agency (BPRD)
Mexico	**Andrea Acosta Sandoval**	Office supply store
	Arturo Luna	Visa
	Carolina Pastrana	Civico
	Daniel Padilla	Cura Deuda
	Diana Muñoz Flor	Secretaria de Economía
	Eugenio	Cigarra
	Herbert Bettinger	Bettinger Asesores
	Iván de Jesús González Pineda	Tidok
	Javier Allard	Mexican Association of Information Technology Industry (AMITI)
	Jorge Lopez Mendoza	Cementos Moctezuma
	Jorge Siegrist	Tax Administrator
	Jose Besil Bardawil	Besil Bardawil Fiscal Advisory
	José Carlos Pueblita	Pondera Lab
	Jose Rodríguez Pineda	La Fille
	Juan Bañuls	Tax Innovation
	Juan Carlos Reyes Vale	Distribuidora Dimas
	Juan Pablo de Button	Servicio de Administración Tributaria (SAT)
	Juana Aguilar	Vegetable stall owner
	Lizandro Núñez	Tax Innovation
	Lourdes X	Podologist
	Luis Cartas Paredes	SAT
	Luis Rodrigo Salinas Olvera	Prodecon
	Marcos Saules	Sigsa

CATEGORY	NAME	ORGANIZATION
Mexico (continued)	**Maria Eugenia Romero Torres**	Secretaria de Hacienda y Crédito Público (SHCP)
	Marisela Corres Santana	Bettinger Asesores
	Natalia Willis	ProMujer
	Osvaldo Santín	Ex SAT
	Paola Malda Arozarena	Banco de Ahorro Nacional y Servicios Financieros (Bansefi)
	Raúl Solís García	Inmobiliaria Ejidal San Francisco Tepojaco
	Salvador Gómez	Mexican Association of Authorized Certification Providers (AMEXIPAC)
Rwanda	**Fiacre Mushimire**	Rwanda Utility Regulatory Authority
	Amina Rwakunda	MINECOFIN
	Angelo Igitego	Angelo Igitego
	Antoinette Uwimana	Women for Women
	Ayanda Mngadi	One Acre Fund
	Brolin Bahizi	Blue Oceans
	Daniel Munyangeri	Earth Enable
	Denis Mukama	Rwanda Revenue Authority
	Eric Kubwumucunguzi	iTroupe Ltd
	Felix Nkundimana	Jali Partners
	Francis Bazatsinda	Volkswagen
	Fred Karara	Rwanda Revenue Authority
	Frederick Niyonzima	Bralirwa
	Gloria Mutoni	African Collection Limited
	Harriet Hakiza	AC Group
	Helle Dahl Rasmussen	Inkomoko
	Hope Abaganwa	Promota Creations
	Jean Louis Kaliningondo	RRA
	Jean Paul	MTN
	Lionel Maniraho	Babyl
	Alex Ntale	Private Sector Federation (ICT Chamber)
	Paul Frobisher Mugambwa	PwC
	Philip Gasaatura	Rwanda Development Board
	Philip Kakuru	Airtel Money
	Pierre Kayitana	Irembo
	Richard Dada	Rwanda Revenue Authority
	Sharon Umunyana	AC Group
	Yves Ndejuru	Awesomity Lab

Notes

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The Better Than Cash Alliance

The Better Than Cash Alliance is a global partnership of governments, companies, and international organizations that accelerates the transition from cash to digital payments in order to advance the Sustainable Development Goals. Based at the United Nations Capital Development Fund (UNCDF), the Alliance has 75 members, works closely with other global organizations, and is an implementing partner for the G20 Global Partnership for Financial Inclusion.

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