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Using Digitalization to Enhance Public Finance in Kosovo

Republic of Kosovo

Carolina Bloch, Mariano Moszoro, Mona Wang, Frank van Brunschot
and Yasemin Hürçan

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Using Digitalization to Enhance Public Finance in Kosovo, Republic of Kosovo
Prepared by **Carolina Bloch, Mariano Moszoro, Mona Wang, Frank van Brunschot, and Yasemin Hürcan**

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ABSTRACT: Kosovo has embarked on a journey of digital transformation, developing digital infrastructure to provide access to households, companies, and educational institutions and modernizing its public finance system through GovTech. Digitalization and GovTech can facilitate Kosovo leapfrogging into advanced infrastructure and public service delivery. While Kosovo has achieved significant milestones—including nearly universal internet coverage and the comprehensive front-end e-Kosova portal—unconnected systems, relatively high consumer prices for digital inclusion, limited digital skills, and cybersecurity risks hinder the full realization of digital benefits.

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Prepared by Carolina Bloch, Mariano Moszoro, Mona Wang, Frank van
Brunschot, and Yasemin Hürçan¹

¹ The authors are thankful to counterparts and interlocutors from the Digital Transformation Unit, Ministries of Economy, Finance, Interior, Agriculture, Health, Education, and Social Policies and Families, Tax Administration of Kosovo, Public Procurement Agency, Agency for Information Society, Regulatory Authority of Electronic and Postal Communications, Central Bank of Kosovo, Telecom of Kosovo, and USAID.



REPUBLIC OF KOSOVO

SELECTED ISSUES

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CONTENTS

USING DIGITALIZATION TO ENHANCE PUBLIC FINANCE IN KOSOVO	2
A. Kosovo's Approach to Digital Transformation	2
B. Enablers of Digitalization in Kosovo	4
C. GovTech Solutions to Modernize Fiscal Operations of Kosovo's Public Administration	6
D. Social Dividends from Digital Transformation in Health, Education, and Social Safety Nets	11
E. Fostering Governance and Institutional Capacities to Develop the Potential of GovTech Adoption in Kosovo	13
F. Conclusions and Policy Recommendations	15
FIGURES	
1. Kosovo's Strategic Framework for Digitalization	3
2. Internet Accessibility and Affordability	5
3. Percent of Household Respondents Unable to Use Digital Tools, by Region and Gender	6
4. GovTech Maturity Index	7
5. Use of Digital Public Services in e-Kosova Platform	10
TABLE	
1. Information Management Systems Supporting PFM Processes in Kosovo	9
References	17

USING DIGITALIZATION TO ENHANCE PUBLIC FINANCE IN KOSOVO¹

Kosovo has embarked on a journey of digital transformation, developing digital infrastructure to provide access to households, companies, and educational institutions and modernizing its public finance system through GovTech.² Digitalization and GovTech can facilitate Kosovo leapfrogging into advanced infrastructure and public service delivery. While Kosovo has achieved significant milestones—including nearly universal Internet coverage and a comprehensive front-end e-Kosova portal—unconnected systems, relatively high consumer prices for digital inclusion, limited digital skills, and cybersecurity risks hinder the full realization of digital benefits. To fully reap the benefits of digitalization, Kosovo must coordinate its digital transformation efforts, modernize its tax and public financial management systems, and implement targeted digital literacy programs.

A. Kosovo's Approach to Digital Transformation

1. For over a decade, Kosovo has demonstrated a strong political will to accelerate digital transformation and leverage GovTech solutions to modernize public administration. In 2013, the country adopted its first national digital strategy, the Digital Agenda of Kosovo 2013–20 (DAK 2020), which aimed to develop digital infrastructure, promote the production and use of electronic content, and enhance citizens' digital literacy. In 2015 the government started a modernization project to build a more advanced digital administration. The commitment to this digital vision was further solidified in 2018 when Kosovo secured US\$ 20.7 million in support from the World Bank for the Kosovo Digital Economy (KODE) project (World Bank 2023a, 2023b, 2023c), aimed at improving access to high-quality, high-speed broadband services. By March 2023, the last remaining non-connected village was linked to high-speed Internet (with speeds of up to 100Mbps), achieving one of the highest Internet coverages in Europe.³ To ensure civic engagement in shaping and implementing its digital agenda, Kosovo also joined the Increasing Civic Engagement in the Digital Agenda (ICEDA) project, co-financed by the European Union, and led by the Metamorphosis Foundation.

2. Building on these foundational efforts, the government has renewed its plans for a comprehensive digital transformation through the Digital Agenda of Kosovo 2030 (DAK

¹ Prepared by Carolina Bloch, Mariano Moszoro, Mona Wang, Frank van Brunschot, and Yasemin Hurcan (all IMF Fiscal Affairs Department). The authors are thankful to counterparts and interlocutors from the Digital Transformation Unit, Ministries of Economy, Finance, Interior, Agriculture, Health, Education, and Social Policies and Families, Tax Administration of Kosovo, Public Procurement Agency, Agency for Information Society, Regulatory Authority of Electronic and Postal Communications, Central Bank of Kosovo, Telecom of Kosovo, World Bank, and USAID.

² Government Technology—or GovTech—is defined as the application of technology to improve the delivery of government services, enhance government operations, and promote citizen engagement and participation in governance.

³ Cf. <https://www.worldbank.org/en/news/press-release/2023/03/21/-every-village-in-kosovo-now-connected-to-high-speed-broadband-internet-with-world-bank-support> (accessed November 2024).

2030). This new digital agenda sets an ambitious vision to turn Kosovo into a “gigabit society”⁴ and position the country as a competitive digital economy through five strategic goals: 1) establishing an advanced secure digital infrastructure, 2) driving the digital transformation of businesses, 3) enhancing the digitalization of public services, 4) fostering a digitally skilled population and innovative R&D ecosystem, and 5) strengthening the cybersecurity framework. The DAK 2030 aims to achieve full national 5G coverage and provide gigabit connections to all households and businesses. It also seeks to bring all key public services and medical records online, attain 90 percent adoption of digital IDs among citizens, and reach 80 percent adoption of cloud computing, AI, and big data technologies among companies.

3. As a cross-sectoral agenda defining digital policy priorities for Kosovo, the DAK 2030 is the cornerstone of the country’s digitalization framework, complemented by other strategic documents outlining e-government and sector-specific measures (Figure 1). The e-Government Strategy 2023–27, adopted in October 2023 and constituting a cornerstone of the DAK 2030, sets clear goals for the next phase of digitalization of fiscal operations, emphasizing interoperability among government agencies and the digitalization of essential public services to citizens. This strategy, coupled with the Public Administration Reform Strategy, the Administrative Burden Prevention and Reduction Program, and the Cyber Security Strategy, supports Kosovo’s broader vision by prioritizing efficiency, transparency, and accessibility of public services through secure digital means. Digital transformation is also featured in other strategic documents of key public sector areas, particularly health, education, and information and communication technologies (ICT).



⁴ “Gigabit society” means any household, shop, vehicle, mobile device, etc., has access to a high-speed Internet connection above 1 Gbps.

B. Enablers of Digitalization in Kosovo

4. Kosovo has made considerable progress in establishing digital infrastructure and implementing measures to expand Internet access in the country. As of 2022, 99.8 percent of households had access⁵ to the Internet and 100 percent of enterprises had broadband connectivity—27 percent of which is fiberoptic—positioning Kosovo among the most connected countries in the region (Figure 2). Additionally, 99.5 percent of the population is covered by at least a 3G network, with 4G and 5G covering 94 percent and 65 percent of the territory, respectively.⁶ Kosovo’s Internet user costs are relatively high, at 2.3 percent and 1.4 percent of monthly GNI per capita for fixed broadband and mobile cellular data basket, respectively (Figure 2).⁷ The KODE project, initiated in 2019, has been pivotal in extending fiber optic infrastructure to rural areas. Despite the moderate affordability, the network subscription rate—a key indicator of Internet adoption—is high compared to regional peers, with 24.5 percent of the population subscribing to fixed broadband and 88 percent of the population subscribing to mobile cellular data.⁸ UNDP Digital Household Survey results show that 86 percent of the respondents had access to Internet at work, and 29 percent used free public wireless.

5. There is room to improve Internet quality by upgrading infrastructure, particularly in rural areas. The KODE Project has been instrumental in expanding broadband access to underserved areas, aiming to connect schools and public institutions. Despite the significant success in achieving universal Internet coverage, Kosovo’s telecommunications infrastructure still needs upgrades, as Telecom of Kosovo faces capacity challenges that limit further progress. Mobile Internet download speeds in Kosovo rank near the bottom of the distribution among regional peers (Figure 2). To address the Internet quality issue, the Government of Kosovo is actively implementing the National ICT Strategy, which focuses on enhancing digital infrastructure across the country.

6. Higher-income households and more educated individuals tend to engage in more productive online activities, such as pursuing education and supporting their businesses. In contrast, lower-income households and less educated individuals primarily use the Internet for social communication and casual browsing. This disparity in utilization is attributed mainly to the low digital skills among the less educated population, with a notable portion needing help to effectively use digital tools for even basic interactions (Figure 3). According to data from the Kosovo Agency of Statistics, only one-third of the population is familiar with downloading or installing software and copying or moving files on a computer. At the same time, even fewer are proficient in basic office

⁵ Internet access refers to the availability of Internet service.

⁶ Cf. <https://kosovo.mom-gmr.org/en/context/technology/> with additional inputs from officials from Telecom of Kosovo.

⁷ By ITU standards of universal and meaningful connectivity, Internet cost below 2 percent of monthly GNI per capita is considered meeting the target.

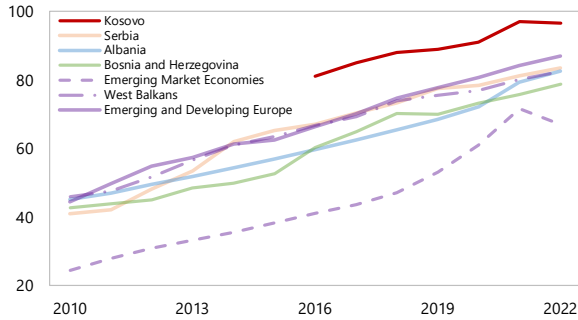
⁸ Data from CIA, 2022 estimates and latest updates from the Regulatory Authority of Electronic and Postal Communications (ARKEP). The broadband subscription rate as a share of households is above 120 percent. Since there is ca. one registered business per five households in Kosovo, all households and businesses have access to fixed broadband Internet.

software. This highlights the urgent need for targeted digital literacy initiatives to empower all population segments to leverage the Internet more effectively.

Figure 2. Kosovo: Internet Accessibility and Affordability

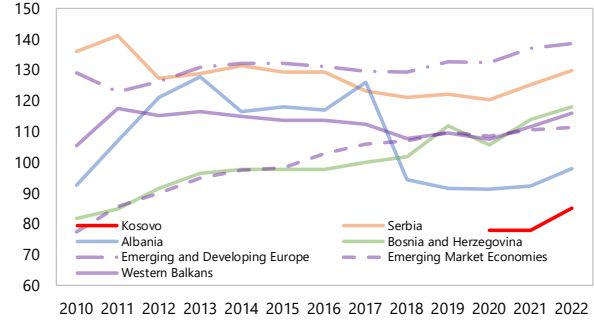
Internet Users

(Percent of population)



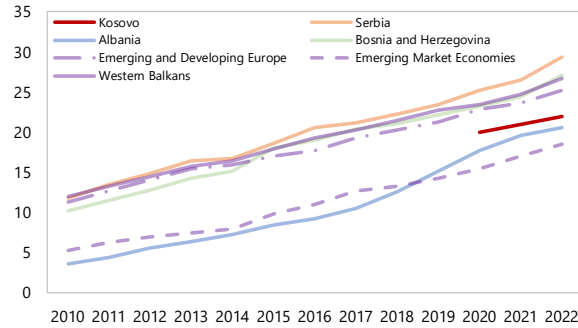
Mobile Broadband Subscription

(Per 100 habitant)



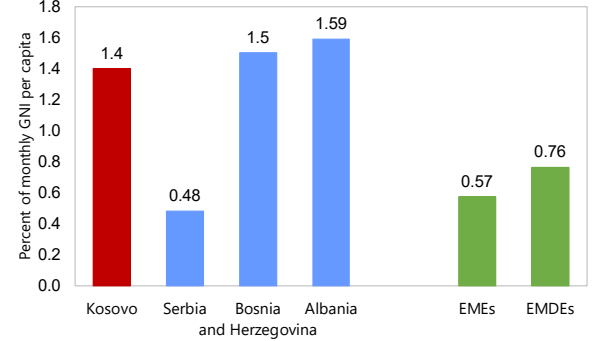
Fixed Broadband Subscription

(Per 100 habitant)



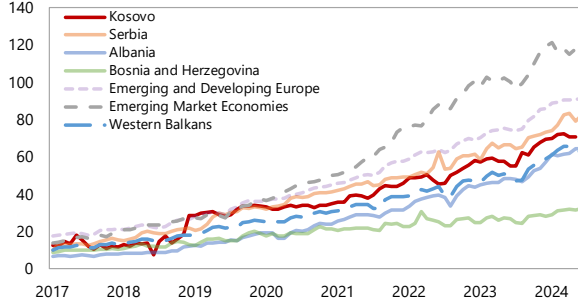
Mobile Cellular Data Package Price

(Percent of monthly GNI per capita)



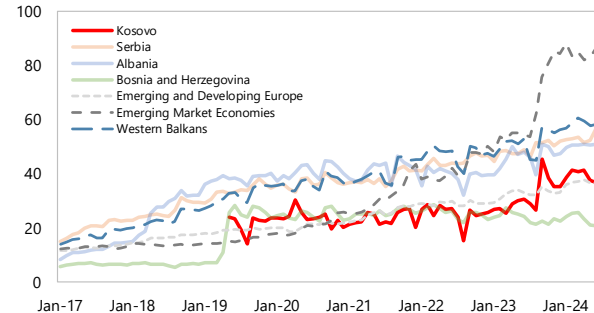
Fixed Broadband Download Speed

(Mbps)



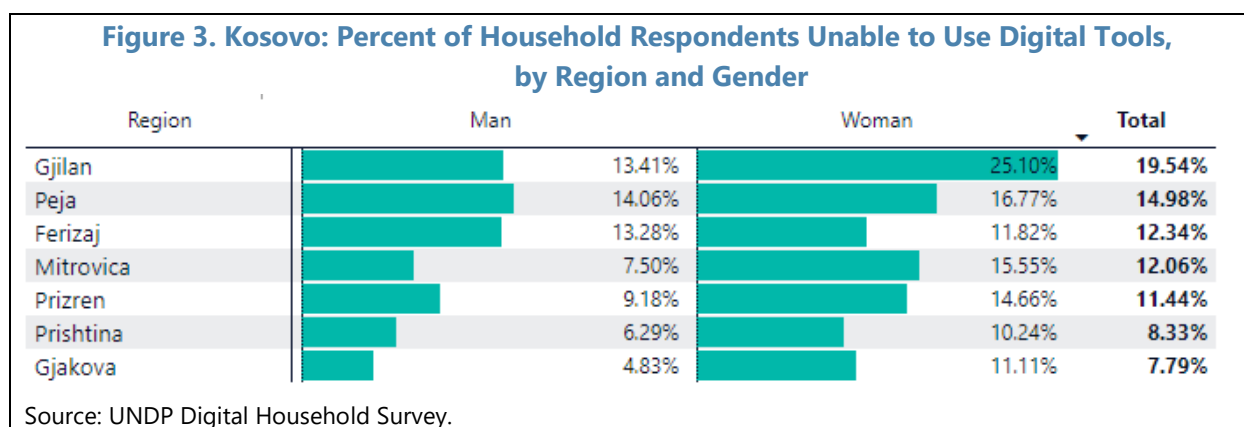
Mobile Internet Download Speed

(Mbps)



Sources: ITU, Ookla, Kosovo Internet subscription data received from ARKEP, and IMF staff calculations.

Note: Internet users reflect the proportion of individuals using the Internet among the total population or at least individuals of 5 years and older. Population-weighted averages are used for regional/group aggregates.

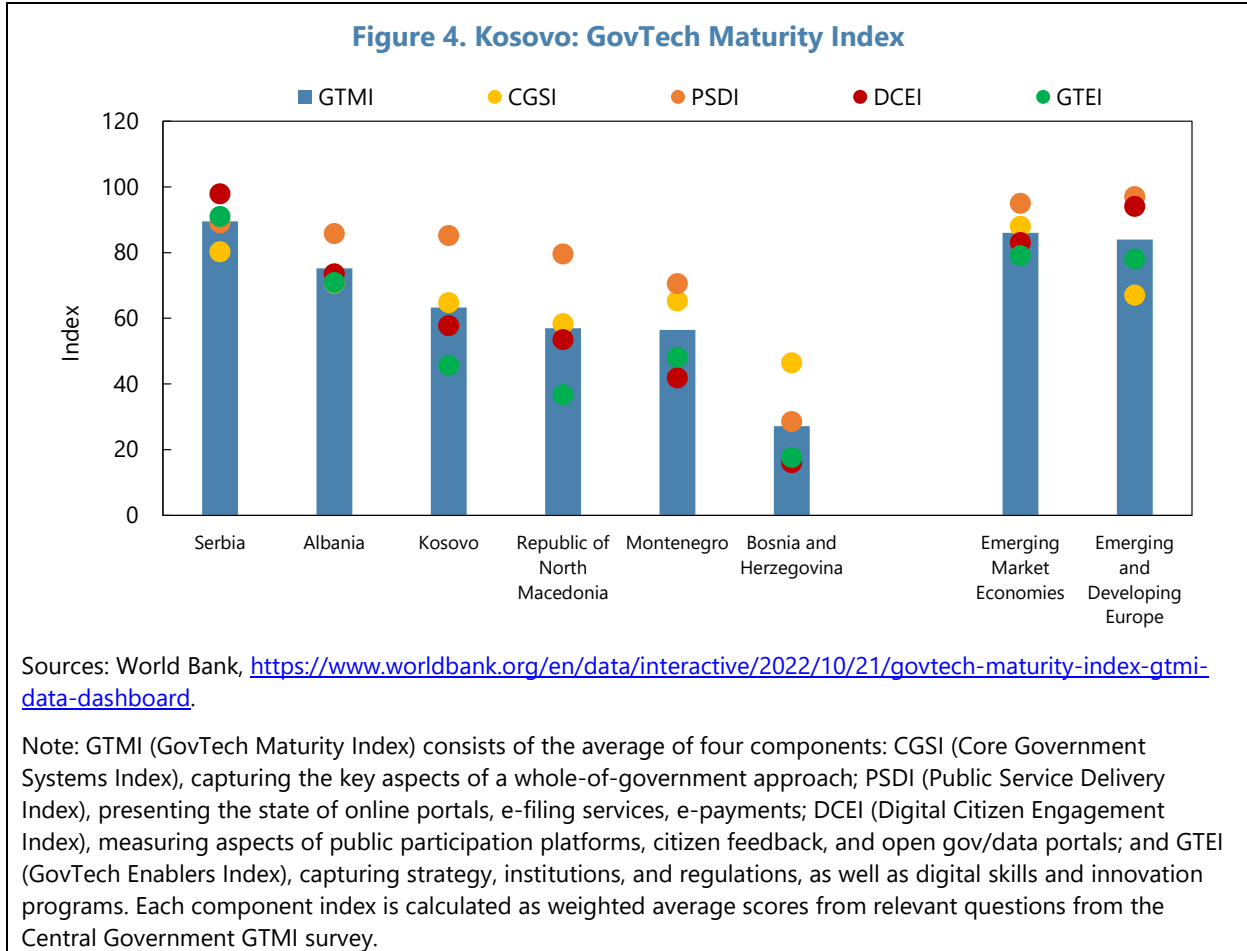


7. The e-commerce sector in Kosovo remains nascent. During the Covid-19 pandemic, more companies in Kosovo started experimenting with e-commerce, and commercial banks introduced online banking. Currently, all utilities offer online bill payment options. However, 44 percent of individuals report not knowing online banking platforms, well-known e-commerce websites—like Amazon, Aliexpress, and ASOS—only ship limited goods to Kosovo, and third-party and instant payment methods are unavailable yet in Kosovo. Securing an official, top-level domain for Kosovo will positively impact the economy, data traffic monitoring, and cybersecurity.⁹

C. GovTech Solutions to Modernize Fiscal Operations of Kosovo’s Public Administration

8. Leveraging GovTech to transform public administration is at the core of Kosovo’s digitalization strategy. Kosovo has improved its position in the World Bank’s GovTech Maturity Index, moving from group C (*Medium, some focus on GovTech*) to B (*High, significant focus on GovTech*). Kosovo scored 63 (on a scale of 0 to 100) and ranked in the middle among its Western Balkan peers (Figure 4). The country fares better in the Public Service Delivery Index. However, comparison with peers suggests that there is room for Kosovo to strengthen the implementation of its e-government strategy by strengthening GovTech enablers, including digital skills and innovation programs (GovTech Enablers Index), as well as citizen engagement through public participation platforms, citizen feedback, and open government/data portals (Digital Citizen Engagement Index).

⁹ UN Security Council Resolution 1244 assigned the unofficial country code top-level domain “.xk” to Kosovo in 1999. See: <https://www.cia.gov/the-world-factbook/countries/kosovo/#communications> (accessed November 2024). Currently, owners of Kosovo websites must compete on the international domain market to buy web addresses, and government sites are hosted under the “.org” or “.net” domains.



i) Revenue Administration

9. The Tax Administration of Kosovo (TAK) is undergoing significant digital transformation to modernize its revenue collection processes (USAID 2022a, 2022b). The introduction of mandatory e-filing and e-payment systems in 2022 was pivotal to improving the efficiency of the tax administration framework.¹⁰ The newly developed Taxpayer Portal facilitates online tax declarations, payments, and personal information updates, enhancing taxpayer engagement and compliance. In the ISORA digitalization index, Kosovo performed weakly, with a score of 55.6 out of a maximum of 100.¹¹

10. Despite these efforts, TAK faces substantial challenges related to outdated technology and data infrastructure. At end-2022, a tax IT modernization contract, signed before the Covid-19 pandemic, was canceled. The current system IT needs to be improved in scope and functionality, to

¹⁰ Since January 1, 2022, TAK only accepts electronic tax declarations. Taxpayers with no access to Internet can use computers in the regional offices. Taxes must be paid through commercial banks, and funds are electronically transferred from the bank to the Treasury account. Payment details are transmitted to TAK daily.

¹¹ For reference, in the ISORA digitalization index peer regional countries scored: Albania 64.1, Bosnia and Herzegovina 55.1, Montenegro 31.8, and Serbia 70.2.

fulfill the potential for advanced analytics and real-time tracking of tax compliance. Furthermore, the absence of a data warehouse poses barriers to effective data management and analytics, which are crucial for identifying tax evasion risks. The successful implementation hinges on addressing challenges related to insufficient funding and a limited IT workforce.

11. Ongoing efforts should focus on a step-by-step, comprehensive expansion of the current TAK functionalities to risk management, e-invoicing, and cash management. The TAK digital transformation requires enhancing human resources capacity and securing investments. Adopting a Commercial Off-The-Shelf (COTS) solution could help to align TAK's operations with best practices in digital revenue administration and improve user-friendliness and transparency. Engaging stakeholders in change management efforts and ensuring a cohesive approach will also help implement these recommendations and effectively leverage digital technologies for improved tax compliance and administration efficiency.

ii) Public Finance Management

12. Kosovo has multiple non-integrated systems that support the implementation of its Public Financial Management (PFM) processes. The current PFM landscape includes several systems: (i) the Kosovo Financial Management Information System (KFMIS), based on FreeBalance application, which primarily manages budget execution; (ii) the Public Investment Program (PIP), which captures all investment projects; (iii) the Budget Development Management System (BDMS), used for budget planning; (iv) and the e-Procurement System, which encompasses end-to-end procurement processes (Table 1). Government cash balances are consolidated at the Treasury Single Account (TSA) at the Central Bank of Kosovo (CBK). The TSA has comprehensive coverage through which all budgetary flows related to central and local governments are managed. Government tax and non-tax revenues are swept into the TSA daily without lag between the time of their collection and sweeping to the TSA. Government cash outflows from the TSA are also reconciled daily via the integration between KFMIS and the CBK payment system. Notwithstanding the current system's functionality, there is a tender process—supported by the German development agency GIZ—for a new e-Procurement platform to be delivered in Fall 2025.

13. Despite their legacy value, these information systems often operate in isolation, including specific shortcomings that impact their transparency and accountability. Currently, the reporting of invoices is manual and unreliable, relying on monthly Excel submissions from Budget Organizations (BOs) to the Treasury Department, which is seeking to automate this process to ensure timely tracking of invoices and real-time visibility of unpaid obligations. This initiative would facilitate better arrears control and management. Additionally, the systematic recording of multi-annual contracts is lacking, creating a critical gap in budget planning, as this information is necessary for assessing fiscal space and investment project progress.

Table 1. Kosovo: Information Management Systems Supporting PFM Processes in Kosovo

System	Relevance for PFM	Current Issues & Reforms
Kosovo Financial Management System (KFMS)	KFMS is the FreeBalance application for managing and executing the budget within the Treasury. The chart of accounts is embedded within the general ledger within the KFMS, facilitating budget spending, recording, and reporting. KFMS is a centralized system used by all BOs. Due to its legal mandate and the broad coverage of financial management systems in Kosovo, MoFLT has access to all financial data from BOs. The asset management module is used to record large assets above EUR 1,000 in value.	KFMS is generally effective for all budget execution, though functionality for multi-year commitments needs to be added.
Public Investment Program (PIP)	The PIP system is managed by the Budget Department and the IT Department. It comprises an IT system and SQL database into which project managers in BOs can enter data on all investment projects. The interface is easy to work with, and functionality covers the full project cycle. Supporting documents can be uploaded.	All projects are captured in the PIP database, but the information needs to be completed. Hardly any cost-benefit analyses or feasibility documents are being entered. It is more of a data capture tool to produce budget tables. The system needs to be fully utilized as a planning tool.
Budget Development Management System (BDMS)	BDMS is used for budget planning, primarily recurrent expenditures. This custom-made system has been in effect since 2004 and was updated to accommodate the three-year MTEF. BOs submit budget requests using the BDMS.	The Budget Department is working on linking the PIP system and BDMS to KFMS (managed by the Treasury Department).
E-procurement	The Kosovo Public Procurement Regulatory Commission is responsible for implementing the system. It is a centralized and unified information system. It covers end-to-end procurement processes, starting from procurement planning to payments. It can handle three types of contracts: works, supply, and consultancy services.	Use of the e-procurement system is mandatory for all Contracting Authorities. The Treasury is working on linking KFMS with the e-procurement system to improve access to information on multi-annual contracts by KFMS. By linking e-procurement, Treasury is also trying to automate invoice capturing in KFMS.

Source: 2023 PIMA Update CPIMA report and Stone et al. (2023).

14. The comprehensive reengineering of business processes and the adoption of e-signatures will be critical for the digitalization of PFM. Priorities include adopting a "capture data only once" policy and establishing robust data governance to ensure data quality. Cleaning the PIP data, implementing validation checks, and excluding non-compliant projects from the Medium-Term Expenditure Framework (MTEF) pipeline are essential to improve data integrity (Flynn et al., 2022). A long-term approach to automating the invoicing process is needed, involving business process reengineering and embedding necessary changes during the review of the Law on Public Financial Management and Accountability. Once e-signatures are enabled in Kosovo, the Treasury can begin to eliminate paper-based processing with an ongoing training program for all system users.

iii) Provision of Digital Public Services

15. In 2021, the Government launched e-Kosova, a national public service portal designed to centralize public services and improve accessibility. With nearly a million registered users, the

e-Kosova portal initially focused on facilitating vaccine appointments to respond to the immediate demands of the COVID-19 pandemic. The numbers of public participation indicate that the initial take-up was underwhelming. According to Kosovo’s statistical agency, only 14.1 percent of citizens used the Internet to access information related to public services, and even fewer (5.3 percent) submitted forms through e-government platforms. Among the 2021 UNDP Digital Household Survey respondents who reported using the e-Kosova platform, most only used it during COVID for vaccination appointments and obtaining vaccination records. Tax services were the second most used in e-Kosova, but only 5 percent of the respondents declared having done it.

16. Recently, e-Kosova’s usage has expanded into other core areas of public service, reflecting its potential to serve as a comprehensive digital resource for citizens (Figure 5). The platform offers 200 online services (to be expanded to 230 online services by end-2024) to citizens, businesses, and institutions, including emission of civil status documents, utility payments, property taxes, judiciary services, police clearances, and pension benefit administration. The government has recently started implementing the life event approach to service delivery; a pilot is underway to reengineer childbirth-related services by clustering related services from different institutions and reducing parents’ interactions with those institutions. There has also been progress in implementing the new National System for Electronic Identification (eID), with a target of 90 percent of the population using digital identities by 2030.



17. The consolidation of digital systems used in Kosovo’s public administration presents an opportunity for improved coordination of fiscal operations and the provision of government services. Different agencies have developed their ICT and data systems without aligning their efforts with the Agency for Information Society (AIS, within the Ministry of Internal Affairs), which has historically been responsible for coordinating the government’s digital transformation initiatives. This uncoordinated approach means that citizens often face cumbersome processes that require multiple forms of identification, leading to frustration and reduced trust in government services. An interoperability platform, the Government Gateway (GG), was launched in 2017 to facilitate data exchange among agencies but was slow to gain traction due to technological and coordination limitations. The usage of the interoperability platform accelerated in the last 3 years, with 50 central and local institutions and 48 information systems now connected. Further integrating public services into centralized platforms such as e-Kosova (for service delivery) and GG (for data exchange) will be vital to streamlining processes, enhancing user experience, and encouraging citizens to engage more fully with available digital resources.

D. Social Dividends from Digital Transformation in Health, Education, and Social Safety Nets

18. Digital transformation in Kosovo represents an opportunity to generate social dividends across multiple sectors, including social safety nets, education, employment, and health. The integration of digital tools is expected to facilitate better resource targeting and enhance transparency in service delivery. This section outlines the key policy insights related to these areas, focusing on the benefits and challenges of current digital interventions in social sectors in Kosovo, and reflecting on the necessary steps for sustained progress.

i) Social Safety Nets: Expansion of digital payments and development of management information systems

19. Kosovo is in the early stages of digitizing its social programs through digital governance initiatives. Approximately 600,000 beneficiaries are included in the social registry, with inclusion facilitated via e-Kosova or through social workers. Beneficiaries are verified by social workers and cross-referenced with other datasets to determine eligibility based on income, assets, and proxy means tests. The country has implemented electronic payments in many social welfare programs, including pensions, disability benefits, and the Social Assistance Scheme (SAS). These payments are processed through the Kosovo Pension Savings Trust and other government bodies that have transitioned from manual to digital bank transfers, with funds transferred through the Treasury. This shift has paved the way for a new social assistance payment system, supported by introducing basic accounts in private banks for SAS beneficiaries. Recent efforts have focused on investing in management information systems (MIS) with support from the World Bank. However, these initiatives remain in the early stages. As of May 2024, the pilot MIS for the SAS was partially developed, and the two management systems—the Social Registry Management System (SRMS) and the Social Welfare Information System (SWIS)—had not yet been initiated.

20. Digital inclusion and data security challenges need to be addressed to realize the potential of digitalized social programs. Challenges in fully digitalizing payment systems for social protection stem mainly from the digital divide, as some rural populations still rely on cash payments due to limited access to banking services or digital literacy. The application process to SAS and other programs still depends on in-person contact, as no online or phone systems are available to support this service. Data security and privacy concerns also pose risks, mainly as digital platforms handle sensitive personal information for program eligibility and payments. Strengthening data protection measures and ensuring that beneficiaries' information is securely managed are ongoing priorities for Kosovo's government.

ii) Education: Initiatives to develop digital learning and IT skills starting at early levels of schooling

21. The government has made significant strides in digitalizing education, particularly following the approval of the Kosovo Education Strategic Plan 2022–26. This strategy has five main pillars, one of which is integrating digital technology to enhance both the quality and accessibility of education. Key initiatives include expanding the availability of digital tools in classrooms and improving digital literacy among educators and students. This effort aligns with one of the objectives of DAK 2030, which is to include basic IT skills and advanced competencies in areas like coding, data analysis, and cybersecurity. Another priority of DAK 2030 is ensuring that all schools across Kosovo have access to high-speed Internet and modern digital tools, which could help address access and quality issues, particularly in remote areas with limited educational resources. Currently, all 750 and about 400 ancillary establishments are in some way connected to the Internet, but most have poor quality or partial coverage. Under the World Bank KODE Project,¹² 100 schools are connected to high-speed Internet. Under a follow-up project, high-speed Internet will be extended to 120 additional schools by the end of 2024.

22. Kosovo is actively pursuing the development of workforce digital skills through comprehensive initiatives outlined in the e-Government Strategy and the DAK 2030. The fourth strategic objective of the DAK 2030 emphasizes creating a "digital skilled population and innovative R&D ecosystem," supported by five specific objectives and 19 indicative activities aimed at enhancing digital competencies among citizens. Key initiatives include providing free online training for e-commerce and e-government services, revising ICT programs in universities to focus on innovative technologies, stimulating projects aiming at high inclusion of women in ICT and online work, and investing in professional practice programs on IT skills for students at vocational schools.¹³ Additionally, scholarships have been provided, particularly to encourage female students to enter STEM fields.

¹² See: World Bank (2023a) and <https://projects.worldbank.org/en/projects-operations/project-detail/P164188> (accessed November 2024).

¹³ See, e.g., vocational ICT activities sponsored by the Central Bank of Kosovo aimed at increasing digital financial literacy: <https://bqk-kos.org/edu/en/summary-of-activities-for-gmw-2024/>.

iii) Health: Integrating information systems to inform policy decisions and the enhance efficiency of service delivery

23. Kosovo's health information system needs to be more cohesive, with different independent systems that do not effectively communicate with each other. The Basic Health Information System (BHIS), used in some primary healthcare (PHC) centers, has limited functionality, and needs to be uniformly implemented across all facilities. According to the World Bank (2024), as of March 2024, only a third of PHC facilities were estimated to have a fully functional BHIS, with less than 12 percent of visits registered in the system. While it has evolved from a basic patient registration tool to include some tracking of medical history, its lack of integration with other critical systems (such as the e-prescription service, laboratory information systems, and the Health Insurance Fund information system) prevents the seamless flow of medical records across different levels of care. The Kosovo eHealth Feasibility Study highlights that only a few systems communicate with the BHIS, such as the public health surveillance system¹⁴ and pharmaceutical stock management system. This fragmentation makes it difficult to track patient diagnoses, procedures, and outcomes, leading to inefficiencies in care coordination and limited data for assessing the quality of care. Significant gaps remain, particularly at the hospital level, where the absence of integrated hospital management systems further complicates the collection and analysis of patient-level data. This lack of real-time, comprehensive health data severely restricts Kosovo's ability to monitor health outcomes, respond to public health crises, and ensure high-quality healthcare delivery.

24. Significant investments are planned to support digital transformation in the health sector, aiming to improve health service delivery, support clinical decision-making, and enhance health system management and policy formulation. Currently, all 38 large primary and ca. 60 percent of district (medium-size) healthcare centers are connected to the BHIS; however, 475 health ambulatories remain to be connected to the BHIS. The system aims at an integrated health information system based on Gigabit connectivity, targeting generalized access to e-records by citizens by 2030. The World Bank's KOMPAS project will help roll out the IHIS and expand the coverage and functionalities of systems like BHIS, including e-referrals and appointments. The project also plans to introduce a Hospital Management Information System for all regional hospitals and improve data analytics at the National Institute of Public Health by developing a central data warehouse.

E. Fostering Governance and Institutional Capacities to Develop the Potential of GovTech Adoption in Kosovo

25. Higher-level coordination of national digitalization policies is crucial, with the Ministry of Interior responsible for developing interoperability frameworks and data governance policies. Empowering the AIS provides an opportunity to reevaluate core ICT systems. At the same time, DAK 2030 emphasizes the need for enhanced e-government services, digital skills

¹⁴ The health surveillance system monitors the spread of diseases and infections, e.g., in the case of public health emergencies (<https://www.who.int/emergencies/surveillance>).

development, and public-private partnerships to promote comprehensive digital transformation. A central component of these initiatives is the development of a comprehensive National Interoperability Framework, supported by the expansion of the Government Gateway platform to facilitate seamless data sharing between various government organizations. Developing national interoperability standards in line with the e-Government Strategy 2023–2027 and the European Interoperability Framework is essential for creating a cohesive digital ecosystem in the public sector. These standards will facilitate seamless data exchange between government entities, enabling integrated service delivery through platforms like the e-Kosova portal.

26. As Kosovo advances its digital transformation agenda, implementing strong cybersecurity measures will be essential in mitigating risks and enabling the success of e-government initiatives. With the growing use of digital platforms, the country is increasingly exposed to cyber threats. Only a few key agencies have adopted effective practices after identifying cyber threats. The national cyber-incident response unit suffers from severe personnel shortages and low incident report volumes, suggesting a lack of capacity to detect issues. Kosovo has begun to address this issue with its National Cyber Security Strategy (2023–2027), which includes creating a cybersecurity agency and enhancing cyber incident response capabilities. The strategy outlines a comprehensive framework to strengthen the resilience of digital infrastructures against various cyber threats, including internal attacks and organized cybercrime. This strategy aligns with the e-Government Strategy and the DAK 2030, both of which emphasize the need for secure digital environments to facilitate efficient governance, safeguard sensitive information, and protect the integrity of financial transactions.

27. Kosovo's commitment to digitalization is reinforced through collaboration with international organizations. For instance, the World Bank's Kosovo Strengthening Digital Governance for Service Delivery project aims to improve the efficiency and accessibility of government services by modernizing digital infrastructure and enhancing data management practices. The European Union ensures Kosovo's digital initiatives comply with EU regulations, facilitating access to best practices and technologies. Similarly, USAID enhances the skills of public officials through capacity-building programs, fostering an environment conducive to innovation and effective governance. The World Bank also assists in establishing core management information systems in key sectors like healthcare and social safety nets. In the specific case of the IMF, it supports the authorities in improving fiscal operations by designing a data warehouse for TAK and assessing the readiness of PFM systems to move closer toward digitalization of invoicing processes and integrating other technologies. Moreover, by actively participating in initiatives such as the Horizon Europe program and collaborating with organizations like UNICEF, Kosovo aims to adopt best practices and globally competitive digital policies.

28. Kosovo's e-Government Strategy 2023–2027 and DAK 2030 also highlight the importance of strategic partnerships with the private sector to drive digital transformation and enhance public service delivery. Collaborations with local and international tech companies are essential for integrating innovative technologies into government operations. For instance, partnerships with local IT firms aim to develop customized e-government solutions that streamline

service delivery and enhance user experiences through platforms such as e-Kosova. The government is also exploring public-private partnerships to invest in digital infrastructure, particularly expanding broadband access and improving cybersecurity measures. DAK 2030 emphasizes fostering an entrepreneurial ecosystem by collaborating with private sector stakeholders to promote research and development in innovative technologies. Initiatives such as hackathons and innovation challenges are being organized in collaboration with private companies to encourage young entrepreneurs and developers to contribute to digital solutions for public services.

F. Conclusions and Policy Recommendations

29. Kosovo's digital transformation initiatives have made substantial progress in reshaping fiscal operations and enhancing service delivery. Implementing the e-Government Strategy 2023–2027 reflects a strong commitment to improving digital infrastructure and increasing citizen engagement. However, challenges such as digital usage, poorly coordinated development, outdated and fragmented platforms, operational processes based on manual interactions, and cybersecurity risks hinder the full potential of these initiatives. To accelerate digital adoption and maximize its benefits, Kosovo should prioritize the following policies:

- **Invest in underserved areas:** The KODE project has been vital in expanding access to high-speed broadband in rural areas, and the government is also collaborating with the World Bank to assess Internet penetration and service quality metrics. Regularly monitoring connectivity indicators is crucial to ensuring that underserved regions receive adequate infrastructure.
- **Ensure a coordinated approach to digital transformation:** The e-Government Strategy 2023–2027 outlines a framework for digital governance, focusing on integrating services across government agencies. The e-government strategy emphasizes the need for a “whole-of-government” approach to improve the interoperability of digital systems used in public administration. Entrusting DTU and AIS with a clear mandate and resources and implementing the National Interoperability Framework will ensure alignment with broader governance goals. Concurrently, securing a top-level domain for Kosovo remains a priority because it will positively impact the economy, improve data traffic monitoring, and enhance cybersecurity.
- **Modernize tax and PFM systems to promote efficiency, compliance, and transparency:** The development of e-filing and e-payment systems has been key to taxpayer engagement, yet challenges persist due to outdated technology and the lack of a data warehouse. Streamlining business processes and addressing data integrity and isolation in PFM systems are also critical.
- **Establish robust cybersecurity measures and protocols to protect sensitive data and build public trust in digital platforms:** Kosovo has developed a National Cybersecurity Strategy to address potential cyber threats. Regular cybersecurity assessments and training programs for public servants will enhance their cyber-risks mitigating capabilities.
- **Implement targeted digital literacy programs:** By launching initiatives to boost digital skills, especially for vulnerable groups, citizens will be better equipped to utilize e-government

services, leading to greater participation and engagement. Expanding digital training initiatives and vocational training IT programs and ensuring they align with labor market needs will prepare a workforce equipped for the demands of an increasingly digitalized economy.

- **Consider Internet subsidies to increase mobile subscription rates:** Assuming a price elasticity of minus 1, increasing the mobile data subscription rate from 88 to 100 percent would require targeted subsidies equal to 0.02 percent of GDP,¹⁵ which is accommodable within the existing fiscal space. Internet subsidies could be transferred to the supply side (i.e., carriers and operators) or the demand side (i.e., users), through direct transfers or indirect benefits, e.g., lower fees and taxes (Amaglobeli et al., 2023).
- **Trace and publish regularly key performance indicators (KPIs):** Evaluating the effectiveness of digitalization initiatives in Kosovo requires selecting KPIs that accurately reflect progress, impact, and areas needing improvement.

¹⁵ A price elasticity (ϵ) of minus 1 means that for each percentage point decrease in price, the subscription rate increases by 1 percent. The targeted subsidies for mobile data are calculated as the targeted population (i.e., the gap between the current and the total aimed population with paid subscriptions, ΔQ) times the price drop (ΔP) required to increase the total aimed subscription rate, where $\Delta P = \Delta Q/Q \times P/\epsilon$. I.e., the targeted subsidies equal:

$$\text{Mobile data targeted subsidies} = (1 - .88) \times (1 - .88)/.88 \times .014 \text{ GNI}/(-1) = .00023 \text{ GNI}$$

Given that the average GNP/GDP ratio for the past 15 years equals 1.019, the targeted subsidies for mobile data equal to 0.02 percent of GDP.

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