Towards Digital Partnerships:

Understanding Digitalization in Kenya and Foreign Policy Implications

Dr. Anette Ruml

DIGITAL COOPERATION WITH GLOBAL PARTNERS

POLICY STUDY

Author

Dr. Anette Ruml is a Research Fellow at the GIGA, Hamburg. She holds a PhD in Economics from the University of Göttingen (2020). Her research focuses on digital innovations and policy frameworks to enhance sustainability, resilience, and adaptation in food systems, bridging science and policy for climate and biodiversity action while integrating social, economic, and technological perspectives.

About the Digital Transformation Lab (DigiTraL)

GIGA's Digital Transformation Lab (DigiTraL) is funded by the Federal Foreign Office and analyses the political drivers and real-world consequences of the digital transformation taking place around the world. The Global South in particular is an important actor in and shaper of this transformation. In the first phase (2021-2023) of the project, the focus was on digital diplomacy and on analysing the question of what new opportunities, challenges and instruments the digital transformation offers for German foreign policy. The second phase (2024-2025) concentrates on analysing the opportunities that digitalisation offers for Germany's cooperation with global partners. Central questions include: Where do individual countries and regions in the Global South stand with regards to digitalization? Where are the points of contact for (tech) partnerships with Germany? Where are new developments arising (e.g. emerging threats from digital disinformation, related reactions, and interventions in the Global South)? What cooperative relationships exist in the field of digitalization in the Global South, and how can the German government and other actors in Germany best respond to this? The current phase of DigiTraL is headed by Dr. Iris Wieczorek, Senior Research Fellow at the GIGA Institute for Asian Studies. For more information, please have a look here.

GIGA

German Institute for Global and Area Studies
Leibniz-Institut für Globale und Regionale Studien

Towards Digital Partnerships: Understanding Digitalisation in Kenya and Its Foreign Policy Implications

Anette Ruml

Abstract

Kenya's rise as a digital leader in Africa exemplifies the transformative power of digital leapfrogging in driving economic growth and innovation. This study investigates the evolution and impact of Kenya's dynamic digital ecosystem, highlighting its role in advancing various sectors. It delves into sectoral impacts, policy frameworks, and existing digital partnerships, emphasising the critical importance of regulatory alignment and robust data governance for sustainable collaboration. It highlights Kenya's strategic role as a global digital partner and outlines recommendations for enhancing data exchange, expanding digital trade, and fostering information and communications technology-related human-resource exchange. While focused on the European Union–Kenya partnership, Germany's leadership in digital cooperation with Kenya provides a platform for addressing these key issues as well.

Policy Recommendations

Enhance seamless and well-governed data exchange via:

- Pursuing an EU Adequacy Decision for Kenya. Leverage the Kenyan–German Digital Dialogue to identify regulatory gaps and facilitate their alignment, paving the way for Kenya to meet EU data-protection standards and achieve adequacy status.

- Establishing Cross-Border Mechanisms for Secure Data Transfer and Cybercrime Collaboration. Develop harmonised cybersecurity standards through joint stakeholder workshops, fostering shared guidelines for cross-border data transfers, and enhancing international collaboration on cybercrime investigations.

- Addressing Data Localisation Challenges and Promote Technical Interoperability. Tackle data-localisation requirements through bilateral agreements while advancing interoperable technical standards to simplify integration and drive innovation. This could be facilitated by establishing a task force dedicated to technical interoperability, meaning one focused on developing common data formats and protocols to enable seamless system integration.

Expand digital trade opportunities by:

- Enhancing EU-Level Trade Agreements. The EU should incorporate provisions for digital services into existing EU–African Union frameworks like the Economic Partnership Agreement to enable seamless data flows and facilitate digital trade, including software development, fintech solutions, and artificial intelligence-driven technologies, fostering a dynamic and competitive digital ecosystem.

- Leveraging Bilateral German–Kenyan Platforms. Germany can use existing dialogue platforms to facilitate partnerships between its own companies and Kenyan tech firms, promoting knowledge transfer, market access, and joint innovation in key sectors. Additionally, Germany can initiate pilot projects with Kenyan business process outsourcing (BPO) providers to showcase the mutual economic benefits of outsourcing models.

Promote ICT-related human-resource exchange through:

- Streamlining ICT Talent Mobility. Expand the EU Blue Card scheme to better accommodate Kenyan ICT professionals by recognising non-traditional qualifications and work experience, and simplify visa processes for Kenyan digital specialists.
- Strengthening Qualification Recognition and Training Pathways. Establish bilateral agreements between Kenyan and German educational institutions to recognise degrees and certifications, and create exchange programmes for STEM (science, technology, engineering, and mathematics) education and apprenticeships at German companies.
- Supporting Industry Partnerships. Incentivise German companies' recruitment of Kenyan ICT professionals by developing talent databases, job-matching platforms, and offering sponsorship support for the Blue Card scheme.

Outline

1   Introduction

Kenya is a leader in digital development within Africa, leveraging digital leapfrogging to drive progress across various sectors. Its entrepreneurial ecosystem, known as Silicon Savannah, has nurtured numerous homegrown digital solutions that address specific challenges and broader developmental needs. Key initiatives such as M-Pesa, Safaricom's groundbreaking mobile money transfer system, have revolutionised financial inclusion and set global standards for mobile banking. Multiple (homegrown) digital services and platforms have been developed since, and global innovator services, including computer programming, IT consulting, and data processing, have become important contributors to the national economy, outperforming traditional sectors. The government's active promotion of technological advancement, exemplified by the USD 14.5 billion Konza Technopolis project, aims to establish Kenya as Africa's Silicon Valley. Investments in broadband infrastructure and collaborations with global tech giants have further strengthened Kenya's digital landscape.

Kenya's leadership in digital development is highlighted by its strong performance relative to other countries. In the 2023 Network Readiness Index, Kenya ranked 70th globally, surpassing South Africa and becoming the top-ranked country in Africa. Additionally, Kenya ranked 6th among lower-middle-income countries, following Ukraine, Vietnam, India, Jordan, and the Philippines (Dutta and Lanvin, 2023). Economically, Kenya's ICT sector has shown consistent growth since 2016. It contributed 8 per cent to the national gross domestic product in 2022 (Sitas et al., 2022), for example, with projections suggesting an increase to 9.24 per cent by 2025 (ecdpm, 2023). This commitment to fostering a tech-savvy environment, supported by infrastructure development and digital education, has served to solidify Kenya's status as a digital leader on the African continent and makes it a key strategic partner for digital investment and cooperation.

The digital sphere presents unique opportunities for partnership between Germany and Kenya (as well as potential collaboration with other African and global partners), setting itself apart from traditional sectors of cooperation. One reason is that digital economic integration, such as via BPO, fundamentally differs from traditional trade. This new form of economic interaction requires regulatory compatibility, particularly regarding data-protection laws, to ensure seamless cooperation and trust between partners. Ensuring data security and privacy is essential for building robust digital economies, as it allows for the safe exchange of information and services across borders. This regulatory alignment can foster a more collaborative environment, enabling countries to leverage each other's technological strengths and market potentials more effectively.

Further, the technological gap between Kenya and Germany is narrowing, with Kenya potentially surpassing Germany in the sophistication and adoption of certain technologies, such as e-government services. Lastly, digitalisation is a multifaceted topic with significant implications for economic development across various sectors. It enhances efficiency and accessibility in the financial sector, optimises agricultural practices through data-driven techniques, and modernises industrial processes to boost productivity. Digitalisation extends to government operations, enhancing transparency and efficiency through e-government initiatives and impacts various public services such as healthcare, education, transportation, and urban planning, fostering innovation and improving service delivery for citizens.

These factors suggest that building partnerships on an equal footing can be achieved, particularly in specific domains. Given the breadth of digitalisation across various sectors, effective

partnerships will necessitate coordinated efforts to leverage synergies and prevent redundant initiatives. By aligning strategies and pooling resources, stakeholders can capitalise on shared expertise and technologies, maximising the impact of digital partnerships. This approach not only enhances efficiency but also fosters innovation and accelerates progress in advancing digital solutions across diverse fields. Furthermore, in today's global landscape, digitalisation plays a pivotal role in geopolitical competition. While countries such as the United States and China focus on extensive infrastructure projects and economic alliances, the EU and Germany prioritise digital regulation and governance. They emphasise the importance of strategic partnerships, particularly with those such as the AU and Kenya. Initiatives such as Digital for Development (D4D) underscore their commitment to local capacity-building and the harmonisation of regulatory frameworks across African economies. Despite these efforts, our report suggests that future cooperation should intensify efforts to prioritise seamless and well-governed data exchange, enhance digital trade opportunities with EU nations, and foster digital labour cooperation.

Building digital partnerships and formulating the exact components comprising them necessitates a deep understanding of the patterns and progress of digitalisation in the partner country to hand. This study thus conducts a comprehensive assessment of digitalisation in Kenya, focusing initially on the evolution, adoption, and utilisation of digital technologies across various sectors. This involves examining not only how effectively these technologies are employed but also evaluating the known impacts and implications of digitalisation. We also shed light on Kenya's existing digital partnerships, specifying the existing areas of cooperation to identify further avenues.

The report is structured as follows: Section 2 covers the adoption patterns, usage, and impacts of digital technologies and services in Kenya. Section 3 focuses on the latter's innovations in the digital-platform economy, agriculture, and industry. Section 4 discusses the key conditions and frameworks necessary for advancing digitalisation, highlighting existing challenges and opportunities within the Kenyan context. Sections 5 and 6 detail Kenya's policy plans and current partnerships, respectively, aiming to identify potential areas for future collaboration, as then outlined in section 7.

2 Digitalisation: Adoption and Use of Digital Technologies

2.1 Mobile phones and the Internet

Kenya's mobile and Internet penetration is among the highest in Africa, and it leads the East Africa region regarding ICT infrastructure, broadband connectivity, and digital services (Sitas et al., 2022). As of 2022, Kenya's 4G+ mobile coverage reached 97 per cent of the population (World Bank, 2024). With over 66 million mobile-phone subscriptions for approximately 56 million citizens, Kenya's penetration rate exceeds 100 per cent, being largely attributable to the fact that a significant portion of users own multiple mobile phones. By 2024, Internet penetration, in terms of actual usage, was estimated at 40.8 per cent (DataReportal, 2024). Notably, 97 per cent of users access the Internet via their mobile phone alone (Digital 4 Africa, 2023).

The Kenyan government has invested heavily in infrastructure development: examples include the development of the Kenya Internet Exchange Point (KIXP),[1] six submarine fibre-optic cables, and the establishment of around 9,000 kilometres of terrestrial fibre cable in recent years. Despite these advances and the significant investments made in enhancing connectivity, however, many rural areas remain excluded; in those places where the Internet is available, services are not affordable for many households. Thus, even though Kenya leads the African region on "network readiness," it ranked 4th in the Inclusive Internet Index 2022 – behind South Africa, Morocco, and Egypt, and as based on availability, affordability, relevance, and readiness (Economist Impact, 2022).

Despite impressive mobile-phone penetration, there is, as noted, a digital divide between urban and rural populations. Power-supply issues exacerbate these problems, particularly in rural areas where inconsistent and unreliable electricity further hinders connectivity efforts. In 2021, for instance, only 21 per cent of rural Kenyan households had access to electricity (Osiemo et al., 2021). Outdated infrastructure further complicates the situation, as many existing systems are unable to support the demands of modern digital applications, necessitating substantial upgrades and investments. Kenya currently lacks sufficient digital capacity and bandwidth to support the rapidly increasing use of digital technologies. The existing infrastructure is strained, unable to meet the growing demand for high-speed Internet and reliable connectivity. This insufficiency leads to frequent slowdowns and interruptions, hampering productivity and the full utilisation of digital services.

The high cost hereof remains a substantial barrier as well, particularly affecting low-income communities. Moreover, connectivity and access do not imply adoption, due to a lack of digital skills and electricity access, poor network quality, and affordability issues (Gumbi et al., 2023). In Kenya's arid and semi-arid areas (89 per cent of its land mass), several counties see less than 30 per cent mobile-phone penetration (e.g., Turkana, Samburu, West Pokot) and Internet usage remains between 0–12 per cent. Fibre-optic coverage varies strongly across counties, ranging from 2 per cent (Tana River, Isiolo, Lamu, Kwale) to 61 per cent (Kiambu) (Odera and Matiy, 2023). Further, computers, laptops, and smartphones imply high costs for households, which is illustrated by the urban–rural differences in computer usage: some 31 per cent in the capital, Nairobi, and between 5–10 per cent elsewhere in the country (Nitsche, 2019).

2.2 Mobile money and financial services

Kenya's digital transformation started in 2007 with the extensive adoption of mobile-money services such as M-Pesa (Safaricom), which revolutionised financial transactions, provided banking services to millions of unbanked citizens[2] (Ndung'u, 2019; Ngugi et al., 2010; Schelenz and Schopp, 2018), and laid the grounds for Kenya's future digital economy. Within just four

---

1 KIXP, successfully launched in 2002, is a facility that enables the exchange of Internet traffic between Internet Service Providers within Kenya. Established to enhance local connectivity, KIXP improves the speed and reliability of Internet services by reducing latency and dependence on international bandwidth.

2 M-Pesa's innovation was that a telecom agent converts cash into electronic money, storing it on a SIM card while simultaneously registering it into a trust account at a commercial bank. Once this process is completed, the electronic funds on the SIM card are available for transfers or payments. After the first stage, mobile-money transfers and retail electronic payments, the platform integrated with additional banks to become also a manager of micro-deposits and savings accounts. Subsequently, M-Pesa evolved into a virtual savings account and credit-supply platform that also enabled the generation of the credit scores used for risk assessments regarding lending. Lastly, cross-border and international-remittance payments were introduced.

years of its introduction, mobile money had reached 80 per cent of Kenyan households (Suri et al., 2023); by 2014, M-Pesa in particular had been adopted by 97 per cent of them (Suri and Jack, 2016). In 2021 alone, mobile-money transactions amounted to USD 20 billion, equivalent to 65 per cent of the country's GDP, which brought in almost USD 5 billion in investments (World Bank, 2023a). In 2023, the first figure increased to almost USD 40 billion (Kenya National Bureau of Statistics, 2024). As of now, mobile-money agents (those who register users) boast an accessibility rate seven times greater than that of ATMs and bank branches (GSMA, 2019; FinAccess, 2019).

The adoption of mobile money has led to various development benefits in Kenya and other parts of sub-Saharan Africa. Examples include increased saving rates (Demombynes and Thegaya, 2012; Gürbüz, 2017; Karlan et al., 2016) and remittances (Jack et al., 2013), greater risk sharing (Jack and Suri, 2014), consumption smoothing (Apeti, 2023), and shock resilience (Yao et al., 2023), improved access to medical treatment (Lester et al., 2010) and healthcare expenditure (Ahmed and Cowan, 2021), as well as more household expenditure (Munyegera and Matsumoto, 2014). Suri and Jack (2016) further found that mobile money had already lifted almost 200,000 Kenyans out of extreme poverty in 2016 and led to mostly female household members transitioning from agriculture to business and retail.

Besides mobile-money services, digital finance – and especially credit access – have grown significantly in Kenya since. These services are primarily offered by non-bank institutions, fintech companies, and microfinance institutions enabled by mobile platforms. The Kenyan digital lending market had over 150 active providers in 2022, being valued at over USD 1 billion. The main differences between traditional and digital lending services are the access requirements and ease of use for consumers. Digital lending services usually do not require any collateral but are often granted on the basis of prior mobile-money- or mobile-banking-usage patterns, social media data, and mobile-phone metadata. Further, digital lending applications are usually faster, but only provide low credit amounts, which results in consumers re-taking loans shortly after repaying a previous one (Blackmon et al., 2021; Donovan and Park, 2022).

Such services have significantly boosted financial inclusion by expanding formal access, particularly in rural and unbanked areas. By providing banking, credit, and insurance through mobile platforms, access to financial services has increased for entrepreneurs and small and medium-sized enterprises (Gosavi, 2015). This has served to boost also entrepreneurship (Beck et al., 2018), and with it economic growth (Nan, 2019; Nyasimi, 2016). While digital credit access can be a powerful tool for financial inclusion and economic empowerment, it also carries the risk of over-indebtedness, particularly for low-income individuals who may lack the financial literacy to manage multiple loans effectively. The ease of obtaining digital credit can lead to a cycle of debt, where individuals continually take out new loans to repay existing ones, exacerbating their financial vulnerability. Further, digital lending services have raised concerns about high interest rates and inadequate consumer protection, necessitating improved regulation and education (Blackmon et al., 2021; Mazer and McKee, 2017).

In 2018, for instance, digital loans were taken on by 22 million Kenyans, constituting 91 per cent of the nation's loan volume (Donovan and Park, 2022). Addressing this issue requires a multifaceted approach, including the implementation of responsible lending practices, financial-education initiatives, and the development of regulatory frameworks to protect consumers from predatory behaviour. Additionally, it is essential to promote awareness about the risks associated with digital credit and provide resources for individuals to make informed decisions.

Efforts to enhance financial literacy can empower individuals to manage their money more effectively and avoid the pitfalls of over-indebtedness, thereby maximising the benefits of these digital services while mitigating potential risks.

While there are multiple (homegrown) mobile-money and loan providers in the Kenyan marketplace at this point, the large majority of users are registered for a few popular services. Namely, M-Pesa for mobile money (almost 100 per cent) and M-Shwari (over 60 per cent) and Fuliza (over 45 per cent) for digital lending (Blackmon et al., 2021). M-Shwari is also one of the service providers who had adopted AI by the end of 2017 to predict the likelihood of potential users defaulting (Mhlanga, 2021).

2.3 Digital government, health, and education

Kenya's digital transformation has spurred various online initiatives to enhance inclusivity nationwide, including the development of e-government services as well as ones related to health and education.

E-government services in Kenya have transformed the public administration by leveraging digital technology to enhance the efficiency, transparency, and accessibility of government services. Starting in 2002, the Kenyan government formed the e-Government Secretariat with the goal of establishing ICT across all ministries and automating state functions. This initiative gained momentum with the implementation of M-Pesa and the establishment of the eCitizen platform in 2014, which allows Kenyans to access government services online (Ndung'u, 2019; Schelenz and Schopp, 2018). Key examples include online portals for filing tax returns, business registration, permit applications, and platforms for accessing information issued by the government. The first of these portals have helped reduce the cost of tax collection, minimised bureaucracy and the involvement of intermediaries, as well as led to reduced fraud and tax evasion, resulting in substantially higher revenues. Other examples include the Integrated Financial Management Information System, which is an automated system for public financial management that has increased accountability, transparency, and efficiency across respective ministries.

The National Social Protection Secretariat has developed a single registry system for social-assistance programmes to efficiently allocate related transfers (e.g., disability and orphan programmes), collect key information on enrolment, and validate the national IDs of beneficiaries. Similarly, the Kenyan pension scheme has benefitted from digital advances. To address the non-coverage issues of workers in the informal sector, the government established the Mbao Pension Scheme, an individual pension plan that allows Kenyans to deposit small amounts therein via their mobile-phone accounts. The Electoral Commission uses digital platforms for biometric voter registration, SMS confirmation of voter details, and SMS educational alerts on election matters, leading to accurate voter identification and the timely transmission of results, thereby improving transparency (Ndung'u, 2019). In 2022, the Kenyan electoral authorities decided to digitally publish the results of polling, allowing every citizen with an Internet connection to look them up in real time (Crawford, 2022).

In 2023, the government initiated the Maisha Namba project, currently in its pilot stage, as a unique identifier system that comes with a digital personal ID number. This number will facilitate registration and verification for all governmental services and within the private sector (KICTANet Posts, 2023). However, Kenya's earlier digital ID initiative, Huduma Namba (launched in 2019), met with significant criticism and numerous legal challenges due to its

failure to adequately consider human rights implications during its development and implementation phases. Similar issues have arisen with Maisha Namba, which was temporarily halted by the Nairobi High Court last December due to the absence of a data-protection impact assessment (Macdonald, 2024). The programme resumed in February 2024, with 20,000 to 30,000 IDs having been issued to date (Burt, 2024).

While Kenya has made significant progress towards digitising government services, there is still a long way to go. A 2016 survey by the Kenyan National Bureau of Statistics (KNBS), which included 1,030 ministry and department respondents, showed that less than 50 per cent of public institutions had implemented e-government services and only 20 per cent accepted mobile payments. Nevertheless, by 2023 about 2,800 government services were already online; Kenya had a couple of years earlier been ranked among the top-15 countries in Africa by the 2020 United Nations E-Government Survey due to its investments in digital infrastructure and online services (KIPPRA, 2023). On the user side, Statista (2023) shows that 27 per cent of respondents used their mobile phones to access e-government services by 2020. Additionally, Kenya's 2022 e-Government Development Index ranked 113th out of 193 countries and 10th among African ones (DESA, no date).

ICT expansion has enabled the implementation of numerous *e-health* projects aimed at cost-effectively addressing health-system challenges on a broader scale, reaching marginalised groups and areas (Boore et al., 2017; Njoroge et al., 2017). In 2009, the National Health Insurance Fund partnered with M-Pesa to enable voluntary subscribers to make monthly insurance payments via mobile money, extending health services to informal sector workers with low and irregular incomes (Ndung'u, 2019). Subsequently, voluntary participants grew by over 500 per cent up until 2017 (Wasunna and Frydrych, 2017). In 2011, the Ministry of Health launched the first National eHealth Strategy to address rising demand and costs, as well as a lack of skilled healthcare personnel. Multiple e-health innovations have since been developed by private and public actors alike (Njoroge et al., 2017). mHealth apps, for instance, provide remote consultation and medical advice, as do phone-based or app-based information systems. The recently developed electronic Community Health Information System, linked to a digital platform via smartphone, enables the collection, analysis, and reporting of data on community-health activities and outcomes (mainly malaria). The ability to communicate with other systems has significantly improved the implementation and organisation of malaria interventions such as diagnosis, treatment, prevention, and surveillance at the local level. To date, the government has equipped approximately 95,000 community-health promoters across Kenya herewith, although not all of them have received training on how to utilise the system (Mutai et al., 2024).

While the empirical evidence underscores the potential of such e-health initiatives, with several randomised control trials showing improved health outcomes due to ICT-delivered information (Njoroge et al., 2017), the overall progress of digital health solutions has been somewhat slow. So far, only a few projects have been implemented in marginalised or less urbanised areas. The most recent health management information system was implemented nationwide to create a centralised database hereon. However, its adoption remains limited in practice. Data is still initially recorded on paper at the local level, causing delays and incompatibilities with many e-health tools. Thus, data is rarely usable for informed decision-making (Nyatuka and De La Harpe, 2022). Moreover, the sector is characterised by many fragmented apps and services that lack interoperability and data-sharing mechanisms (Boore et al., 2017), which may explain why only 5 per cent of Internet users had accessed digital health tools by 2020

(Statista, 2023). Nevertheless, usage rates have been increasing since, with approximately seven million people using e-health devices and services by 2022, generating an annual value of USD 108.8 million (at an annual growth rate of 22.3 per cent) (DataReportal, 2023). It is further anticipated that the market will continue to grow by 8.57 per cent per year until 2028 (Statista, 2024).

E-education is another popular digital service in Kenya, with a usage rate of 13 per cent among internet users in 2022 (DataReportal, 2023). Various types of e-education services have been developed. For example, e-learning platforms offer interactive materials aligned with the national curriculum for primary and secondary students. Digital-content repositories distribute online educational resources, including textbooks and teacher guides, nationwide. Mobile-based learning apps send educational content to students' smartphones, supporting early-childhood education and skills development (Ndung'u, 2019).

In summary, Kenya's leadership in mobile and Internet penetration within Africa, coupled with its advancements in ICT infrastructure and digital services, underscores its pivotal role in regional digital transformation. Despite achievements such as 97 per cent 4G+ coverage and extensive mobile-phone subscriptions, challenges persist – particularly in rural areas with access and affordability issues. The country's strategic investments in ICT infrastructure are pivotal steps towards bridging these gaps. However, enhancing inclusive access remains critical for leveraging ICT's full potential. Collaborative efforts with international partners can further accelerate Kenya's progress here, ensuring that such advancements contribute equitably to national development and regional leadership on digital innovation.

3 Digital Economy: Platforms, The Gig Economy, and Global Digital Markets

3.1 Digital service platforms

Kenyan e-commerce has experienced rapid growth in recent years, with platforms such as Wasoko, Masoko, and Jumia[3] significantly transforming the retail landscape. This has enabled businesses of all sizes to reach broader audiences at lower costs, both locally and internationally (Kithinji and Onono, 2020; Schelenz and Schopp, 2018). A collaborative study conducted in 2016 by the KNBS and the Communications Authority (CA) of Kenya revealed that 39 per cent of the enterprises polled were involved in e-commerce. Among these, 77 per cent received and 72 per cent placed orders through mobile devices.

Citizen uptake of e-commerce has been somewhat slower. In 2020, Kenya ranked 88th out of 144 countries in the United Nations Conference on Trade and Development (UNCTAD) E-Commerce Readiness Index for business-to-consumer transactions. This Index considers factors such as postal reliability and Internet penetration. While Kenya held the fifth-highest score among African countries, it fell from 82nd place in 2017 to, as noted, 88th three years later, being surpassed by Ghana. Despite this, Kenyans' use of e-commerce has steadily increased: some 13 per cent of the population so doing in 2020 (Statista, 2023), before rising to 16.3 per cent in 2022, and reaching 44.9 per cent for online bill payments. These e-commerce activities mainly involve products such as fashion, electronics, groceries, and second-hand items, ones with an estimated total value of approximately USD 3.21 billion (DataReportal, 2023). In 2022,

---

3   Note that Jumia was developed in Nigeria, and as such is not a homegrown platform.

Kenyan e-commerce generated the highest digital-market revenues with 76.1 per cent (International Trade Administration, 2023). As of 2023, Kenya ranked 3rd among African countries in e-commerce market penetration at 46.7 per cent, behind Egypt and South Africa (Business Daily Africa, 2024).

3.2 Digital labour economy

In addition to digital platforms for product sales, a digital labour economy has emerged in Kenya, potentially addressing issues of informality (Daramola and Etim, 2022; Lakemann and Lay, 2019). Kenya's extensive informal labour market, which employs approximately 15 million individuals, is increasingly a "gig economy,"[4] with a significant portion of work organised via digital platforms connecting prospective employees with clients online. Particularly among young workers, digital platforms offer accessible and flexible labour options, serving as a crucial means to mitigate unemployment in a country where youth unemployment is notably high, with 15–34 year olds accounting for roughly 84 per cent thereof (Mercy Corps, 2019; Ngene et al., 2021).

While the empirical evidence remains limited, it is anticipated that this trend may alleviate youth unemployment, facilitate access to job opportunities, mitigate hiring biases, and promote skills development (Donner et al., 2020; Graham et al., 2017; Ngene et al., 2021). As of 2019, Kenya's digital gig economy generated USD 109 million and employed approximately 37,000 workers, with a projected annual growth rate of 33 per cent (Fairwork, 2023). A significant segment hereof is driven by the ride-hailing sector, which alone generated USD 45 million (Mercy Corps, 2019) and is supported by 23 platform operators in Kenya (Fairwork, 2023). Services such as Uber, Bolt, and Little Cab have revolutionised urban transportation, enhanced mobility, and created new job opportunities for drivers while offering passengers reliable and efficient travel options (Melia, 2020; Sitas et al., 2022).

Moreover, the rise of the digital gig economy has also created employment opportunities in the ICT sector, including remote online freelancing (eLancing), which theoretically enables digital employment even in remote areas by removing geographical constraints (Fu et al., 2021; Graham et al., 2017). Various services such as audio transcription, data entry, digitalisation of texts, translations, and customer service can be offered online to international firms. By 2020, Nairobi's BPO centres employed around 12,000 workers, although the sector faces challenges when competing with Asian counterparts in terms of pricing and digital skills; it has experienced stagnation of late in consequence (Melia, 2020; Mann and Graham, 2018). ICT services such as computer programming, consulting, and data processing have emerged as crucial contributors to Kenya's economy as global innovators. They outperformed other service sectors between 2015 and 2019, contributing 14 per cent to national GDP and 19 per cent to national GDP growth. The value added by these services grew by 7 per cent between 2018 and 2021, surpassing the respective rates of agriculture and manufacturing (2 per cent each). Notably, these services exhibit the highest productivity (World Bank, 2023a).

While digital platforms and digitally enabled jobs are increasingly vital to Kenya's economy, regulatory challenges pose significant obstacles for workers in this sector. The absence of comprehensive labour laws and regulations leaves gig workers vulnerable to exploitation, exacerbated by high subscription and transaction fees that diminish earnings. Issues such as

---

4   The gig economy is a labour market dominated by short-term, independent, task-based work, with payment made upon task completion.

inadequate social protection, unequal employment opportunities, and poor labour standards further exacerbate their vulnerability. The competitive pressures on digital labour platforms often lead to a race to the bottom in terms of wages and working conditions (Ngene et al., 2021; The Star, 2023). Regulatory gaps leave many gig workers without legal safeguards to ensure fair treatment and adequate compensation, a situation that became particularly acute during the COVID-19 pandemic (Ngene et al., 2021; Otieno et al., 2020).

In July 2018, over 100 ride-hailing drivers protested in downtown Nairobi against their working conditions (Iazzolino, 2021). A recent report by Fairwork (2023) assessed the latter in Kenya's ride-hailing and goods-delivery sectors, revealing significant deficiencies in terms of fair pay, conditions, contracts, management, and representation. The classification of platform workers as "self-employed" or "independent contractors" undermines existing labour laws and regulations, denying them protections such as social security and insurance. Many platforms responded to regulatory changes by increasing additional charges, further reducing workers' earnings. The formation of unions and associated rights for workers in the digital space are hindered by the lack of a regulatory framework within Kenya's labour laws formally recognising and supporting digitally enabled jobs. Reports of low wages and challenging working conditions for content-classification workers, such as those employed by Facebook and OpenAI, underscore the need for urgent reform of labour law in Kenya's digital work sectors (*The Guardian*, 2023; *Time*, 2022, 2023). Thus, while these platforms offer substantial economic opportunities in Kenya, particularly in mitigating youth unemployment and enhancing economic inclusivity, addressing regulatory gaps and ensuring adequate protections for workers are critical steps towards fostering a fair and sustainable digital economy.

3.3 Agriculture

Agriculture stands as a cornerstone of the Kenyan economy, employing over 30 per cent of the workforce (World Bank, 2023a) and making substantial contributions to national GDP (21.8 per cent in 2023) and exports. Despite agriculture traditionally being one of the least digitised sectors globally, Kenya has made significant strides to that end, leveraging technology to boost productivity, efficiency, and sustainability. As of 2021, Kenya hosted 113 institutions offering digital agricultural solutions, with 64 headquartered locally (Osiemo et al., 2021). Approximately 20–30 per cent of Kenyan farmers have embraced digital technologies in their work at this point (KIPPRA, 2024).

Kenya currently counts about 8.6 million farmers (across 4.5 million households) in its ranks, with those in question predominantly residing in rural areas (Akuku et al., 2019). These farmers encounter challenges such as limited market access due to fragmented value chains, uncertainties around sales and market prices, and insufficient access to input markets, credit, and technical knowledge. These constraints hinder their ability to adopt modern farming methods and make informed decisions regarding productivity-enhancing inputs (Krell et al., 2021).

Digital platforms play a crucial role in addressing these challenges by facilitating transactions between farmers, traders, and buyers (Tsan et al., 2019). Initially designed to connect local farmers directly with buyers, these platforms have since evolved into multifunctional tools linking various value-chain actors, including input suppliers, credit providers, and logistics services. A notable example is Twiga Foods, originally founded to connect farmers with buyers but having now expanded to include storage, processing facilities, and product lines, as facilitated by the widespread adoption of mobile money in rural areas (Jumanne, 2024).

Mobile applications, drones, sensors, and data analytics are integral components of digital agricultural technologies, providing real-time information on weather, soil health, pest control, and market prices to farmers (Schelenz and Schopp, 2018). Market information systems deliver price data via ICTs, promoting agricultural input use, commercialisation, and increased income levels among Kenya's farmers (Okello et al., 2020). ICTs also facilitate extension services, critical for disseminating context-specific agricultural information given the large ratio of farmers to extension officers in Kenya (Kenya News Agency, 2023). Precision agriculture techniques, aided by technologies such as GPS mapping, drones, and satellite imagery, optimise resource management and crop monitoring. Applications such as Nuru, which employs machine learning to identify crop diseases from photos, exemplify accessible AI solutions benefitting Kenyan farmers (Mhlanga, 2021).

Key challenges here include improving connectivity, enhancing digital literacy, building capacity, and ensuring the interoperability of solutions, areas recognised by the Kenyan government. The Kenya Agricultural Data Sharing Platform, launched by the Ministry of Agriculture, exemplifies efforts to promote data sharing and integration, providing educational content to farmers (over 80 million views in 2023) and expanding fibre-optic infrastructure into rural areas (6,000 km) (Kenya News Agency, 2023).

In international trade, digitalisation enhances traceability and reduces costs. The Integrated Export and Import Certification Scheme, launched by the Kenyan government, streamlines the acquisition of trade certificates, licences, and permits for plant materials. This digital platform facilitates secure government-to-government data exchange, minimising the risk of counterfeit permits and certificates circulating (Kenya News Agency, 2024).

3.4 Industry

Key players in the Kenyan industrial landscape include food and beverages, textiles, cement, chemicals, and plastics, collectively contributing nearly 16.8 per cent to national GDP in 2023. Manufacturing, in particular, plays a pivotal role, accounting for 7.6 per cent of GDP and serving as the largest formal employment sector (KNBS, 2024).

Digitalisation holds immense promise for enhancing efficiency and productivity across Kenya's manufacturing sector. Integration of advanced technologies such as the Internet of Things (IoT), AI, and automation facilitates real-time monitoring and control of production processes, minimises downtime, and optimises resource utilisation. AI-driven analytics enable predictive maintenance and quality control, thereby reducing defects and enhancing product standards. Automation streamlines repetitive tasks, allowing humans to focus on complex, value-added activities. Additionally, digital twin technology enables the virtual simulation and testing of processes, leading to improved planning and faster time-to-market rates for new products. The Kenyan Association of Manufacturers views the widespread adoption of these technologies as critical for future-proofing businesses. They emphasise that technological integration can deliver increased efficiency, enhanced productivity, greater flexibility, cost reduction, innovation, higher revenues, and, ultimately, improved profitability (KAM, 2023). However, despite these potentials, the sector has experienced only modest increases in labour productivity and growth in recent years, indicating that technological advancements may not have been fully leveraged (World Bank, 2023a).

Empirical studies, such as the one conducted by Cirera et al. (2022), highlight the current state of technology adoption among Kenyan firms. Findings reveal that adoption rates remain

low, with significant challenges such as limited Internet access (affecting 23.4 per cent of manufacturing firms) and frequent electricity outages (99.1 per cent). Many firms still rely on traditional technologies for business planning and supply chain management, with low levels of automation observed across production processes. For instance, less than 3.4 per cent of firms utilise robotics; a mere 1.8 per cent implement big data analytics or AI. Specifically, within the food-processing industry only 8.7 per cent of firms utilise computer-controlled equipment or robotics, while 16.2 per cent still employ manual packaging methods. Many firms (48.8 per cent) rely on human-operated machinery, indicating substantial room for technological advancement.

Despite these challenges, studies indicate that in Kenya digital infrastructure enhances knowledge management (Kimaru et al., 2023), digital procurement systems reduce inventory and boost organisational performance (Ngure and Ismail, 2023), and digital inventory management systems improve supply chain efficiency (Muhalia et al., 2021). Enhancing productivity within the country's industrial sectors thus holds significant potential, particularly as regards labour (Cirera et al., 2022).

In summary, due to Kenya's rapid growth in e-commerce and the emergence of a vibrant gig economy, cooperating countries would benefit significantly from strategic partnerships herewith. Moreover, the digital labour economy, driven by platforms facilitating flexible work arrangements, addresses youth unemployment and fosters skills development. Despite regulatory challenges, these sectors offer avenues for economic cooperation, technology exchange, and capacity-building initiatives. Engaging with Kenya in digital markets can enhance bilateral trade, stimulate innovation, and support the regulatory reforms essential for sustainable economic growth and inclusive development.

4 Key Conditions and Frameworks for Digitalisation

4.1 Digital infrastructure

Kenya's digital transformation hinges on establishing a robust infrastructure that meets the economy's demands and fosters inclusive development. This entails not only extending last-mile connectivity but also upgrading existing networks. The current deficiency in necessary infrastructure impedes widespread digital literacy and inclusion, affecting sectors such as education, healthcare, and commerce. Upgrading networks is crucial to ensuring that rural and underserved areas can access high-speed Internet, thus bridging the digital divide and promoting equitable growth. Moreover, Kenya faces a substantial shortage of digital experts essential for supporting this infrastructure. Establishing additional data centres is imperative, as they provide essential infrastructure for data storage, management, and security. These facilities will bolster the efficiency and security of business operations and government services (Ministry of ICT, Innovation, and Youth Affairs, 2022).

In tandem with the National Broadband Strategy, which aims to expand digital infrastructure, Kenya is actively promoting the widespread adoption of locally assembled, low-cost smartphones. The East Africa Device Assembly Kenya plant, established through a public–private partnership, has manufactured over 490,000 4G-enabled smartphones since its inception in late 2023. Collaborating with Safaricom and Jamii Telcom, the Kenyan government

seeks to increase smartphone accessibility, promising substantial economic and societal benefits (Megwai, 2024).

4.2 Regulation: Data protection, cybersecurity, and misinformation

Kenya's regulatory approach, often referred to as a "test and learn" strategy, has facilitated significant progress in the digital realm. A prime example is the successful launch of M-Pesa, enabled by legislative frameworks such as the Central Bank of Kenya (CBK) Act of 2003 and the 2006 Communications Law. These laws permit the CBK to supervise the national payment infrastructure and recognise electronic-money units stored on SIM cards by telecom companies. The development and regulation of the financial infrastructure between M-Pesa and individual savings accounts further underscore Kenya's proactive stance (Ndung'u, 2019). Nevertheless, there remains a need for additional and more stringent regulatory measures. For example, the expansion of digital services – particularly financial ones – has given rise to concerning user-protection issues. Vulnerability to scams, misinformation, and breaches of data privacy is on the rise (Nitsche, 2019). Criminals are exploiting the expanding digital landscape, targeting both individuals and businesses (Kubilay et al., 2023; Ngene et al., 2021). According to a 2016 KNBS and CA Kenya study, 29 per cent of surveyed businesses reported having suffered a cyberattack. A more recent survey (Blackmon et al., 2021) revealed, meanwhile, that 56 per cent of those using digital financial services were contacted by scammers within the previous six months; concerningly, 90 per cent of Kenya's adult population has expressed anxiety about fraud related to digital services (Didenko, 2017; Koyama et al., 2021).

Kenya's current regulations are guided by the 2018 Computer Misuse and Cybercrimes Act's (CMCA) foundational but limited provisions. The CMCA lacks specific definitions of offences, comprehensive guidelines on data privacy, and mandates for data breaches (Sang, 2023). It also inadequately addresses the cyberthreats posed by emerging technologies such as AI and blockchain. Furthermore, the CMCA fails to provide a detailed incident-response framework, including specific timelines for reporting cyber incidents and standardised procedures for managing and mitigating them. Crucially, it falls short on provisions for international investigative cooperation, an essential component of robust cybercrime legislation (e-Governance Academy, 2022).

Moreover, challenges in implementation were evident during the significant cyberattacks experienced in July 2023, which disrupted Internet access, public services and transportation, as well as mobile-payment platforms.[5] These incidents underscore the urgent need for strengthened cybersecurity measures (Sambuli, 2023). In response to approximately 860 million cyberattack incidents within the space of a year (Africanews, 2023), Kenya's National Assembly approved the Computer Misuse and Cybercrime (Critical Information Infrastructure and Cybercrime Management) Regulations in April 2024, a crucial step towards enhancing the legal framework.[6] Security gaps nevertheless remain, and whether implementation is successful will only become clear in time.

---

5   A Senegalese group distributed denial-of-service attacks in response to Kenya's political engagement with their native country. These attacks coincided with the Kenyan government's expanded provision of digital public services, exacerbating the impact. Other incidents included ransomware attacks on government entities such as the Kenya Bureau of Standards, as well as disruptions to services provided by Kenya Power and Kenya Railways, affecting M-PESA mobile-money transfers and other critical operations.

6   A National Cybersecurity Operation Centre in Kenya will serve as the central hub for monitoring, detecting, preventing, responding to, investigating, and attributing cyberthreats and crimes. The Centre will collaborate

The rise of social media and digital communication channels has exacerbated the spread of misinformation and fake news, leading to confusion and potential harm. A significant example occurred during Kenya's 2017 general elections, where paid bloggers disseminated disinformation and mined personal data for micro-targeting, highlighting deficiencies in data privacy (Nitsche, 2019). With online services continuing to expand, concerns over the collection and storage of personal data have intensified. Incomplete or evolving regulatory frameworks regarding data protection leave users exposed to breaches and misuse of their information, potentially undermining trust in digital services and impeding their development (Kubilay et al., 2023). These issues are compounded by limited digital literacy among some users, making them more susceptible to deception. Furthermore, since the available information is often too technical or confusing, there is a need for better education and capacity-building to help users protect themselves against fraud and misinformation and to understand basic privacy principles (Ngene et al., 2021).

The 2019 Kenyan Data Protection Act provides a framework similar to the EU's General Data Protection Regulation (GDPR), outlining rules for data processing and protecting individual privacy (Teevan and Domingo, 2022). However, challenges persist in harmonising and contextualising data-protection regulations across legal documents (Calzati, 2022). Moreover, Kenya mandates that personal data must be stored locally. Although these regulations allow for the transfer of data copies abroad, they impose significant costs on firms seeking to provide digital services in the country. These requirements also limit access to digital services for local firms that may struggle to utilise cloud-based platforms, which typically depend on data distributed across global servers. Consequently, issues remain with reciprocal data-sharing agreements between nations, compounded by a lack of robust enforcement mechanisms to ensure compliance with local data-storage requirements (Ministry of ICR, Innovation, and Youth Affairs, 2022). Establishing a robust data-protection framework, coupled with a flexible and harmonised data-sharing regime with trade partners, would bolster Kenya's position as a leading hub for digital services in Africa (World Bank, 2023a).

In order to address government budget deficits, the introduced Finance Bill of June 2024 aimed to increase taxation, including for online content creators. It sparked widespread digital activism across Kenya, marking a new era of political engagement; however, the online nature of the protest also facilitated the rapid spread of misinformation. A pivotal moment occurred when activists compiled and distributed a list of members of parliament's phone numbers, resulting in an overwhelming influx of messages to legislators and triggering concerns over data-privacy violations. This incident underscored the influential role of digital tools in shaping contemporary political processes – including the use of AI-generated content, which has profound social and political implications (Moi, 2024; Tech in Africa, 2024).

4.3 Skills

Kenya's levels of digital literacy vary greatly across demographic, socio-economic, and geographic divides. The government's Digital Literacy Programme (DLP) distributed tablets to over 23,000 primary schools and trained more than 228,000 teachers, significantly enhancing digital

---

with incident-response teams and other cybersecurity organisations to facilitate real-time information sharing, enhancing the ability to detect and respond to threats effectively. Moreover, owners of vital information infrastructures are required to perform yearly evaluations of cyber risks and analyse their business impact, guaranteeing the implementation of proactive measures (KICTANet Posts, 2024; Public Sector Magazine, 2024).

skills nationwide (DataReportal, 2023). Despite the DLP's high implementation rates in schools, though, actual Internet usage remains low in many counties, with figures often below 10 per cent and peaking at 51 per cent (Odera and Matiy, 2023). Moreover, there exists a notable gender gap in digital literacy and technology usage, particularly evident in sectors such as agriculture (Gumbi et al., 2023; Jumanne, 2024).

This divide undermines the potential benefits of digital innovations such as e-health, e-government, and e-education, which are particularly vital for rural populations. E-commerce, for instance, registers minimal usage in rural settings, ranging from 0.8 to 4.6 per cent involvement therein (Odera and Matiy, 2023). Despite over 80 per cent of agricultural lands being located in rural and underserved areas, the impact of digital agricultural services remains limited; that notwithstanding, digitisation initiatives are gradually attracting youth participation, mitigating challenges posed by aging farmer demographics and high youth-unemployment rates (Ayamga et al., 2023). Looking ahead, it is anticipated that in the near future the majority of jobs in Kenya will require basic digital skills, posing participation barriers to marginalised groups (Odera and Matiy, 2023). Currently, digitally enabled jobs are predominantly urban-centric and present accessibility challenges for women (Mercy Corps, 2019). Addressing inequalities in digital access, affordability, and literacy is crucial for ensuring equitable participation in and benefits from the digital economy.

Beyond digital literacy, Kenya faces a shortage of the highly skilled professionals critical for sustaining its rapid growth in this field. Despite being among the world's top-ten fastest-growing digital economies, Kenya struggles with a deficit in advanced skills such as software development, data analytics, cybersecurity, and online marketing (ecdpm, 2023). This shortfall is compounded by insufficient attention and funding for initiatives that aim to enhance digital skills across sectors, hindering innovation and productivity. The tertiary education sector in Kenya, while having a higher enrolment rate (10 per cent) than the sub-Saharan average, lags behind in the highly pertinent STEM disciplines (World Bank, 2023a). Currently, 14 private and 22 public universities offer ICT-related programmes, alongside various training initiatives intended to equip youth with digital skills, such as Ajira Digital. However, the qualifications provided often do not meet the demands of global innovator service sectors, and female enrolment remains subpar (DataReportal, 2023).

To address these challenges, Kenya urgently needs to bolster its tertiary education sector, focusing on STEM-related degrees to meet the burgeoning demand for high-skilled labour in ICT sectors. Such investment will not only help enhance value-added services within these sectors but also strengthen interconnected industries reliant on ICT inputs (World Bank, 2023a). By fostering a suitably skilled workforce and bridging the aforementioned divide, Kenya can better unlock the full potential of its digital economy, promote inclusive growth, and oversee sustainable development.

In summary, Kenya's digital transformation comes with a number of foreign policy implications for those seeking strategic cooperation in Africa. The country's efforts to enhance digital infrastructure underscores opportunities for international collaboration in technology investment and capacity-building. Moreover, Kenya's proactive regulatory frameworks, despite challenges in cybersecurity and data protection, offer a foundation for mutual cooperation in strengthening digital governance and resilience against cyberthreats. Addressing digital literacy gaps and skills shortages through educational initiatives further invites partnerships striving to foster a skilled workforce capable of driving innovation and inclusive digital growth.

5 Policy Plans

5.1 National strategy

The national strategy for development, encapsulated in the Kenya Vision 2030, aims to transform the country into a middle-income, newly industrialised nation by that year. This ambition is supported by the Big Four Agenda, which prioritises key areas such as food security, affordable housing, manufacturing, and healthcare. At the core of this strategy is Kenya's drive for digital transformation, outlined in strategic frameworks such as the Digital Economy Blueprint and the National Digital Master Plan 2022–2032, which are key to realising the country's respective socio-economic objectives.

The Digital Economy Blueprint identifies Kenya's potential to leapfrog through digital technologies, emphasising the role of AI, robotics, blockchain, and software-enabled industrial platforms. Meanwhile, the National Digital Master Plan is more explicit. It outlines four key strategic pillars: digital infrastructure; digital services, products, and data management; digital skills; and, digital enterprise innovation and businesses.

The *digital infrastructure* pillar addresses challenges in digital connectivity, data centres, and cloud infrastructure, aligning with the National Broadband Strategy. Key initiatives include laying 100,000 km of high-speed fibre-optic cables, establishing 25,000 Internet hotspots, and creating 1,450 village digital hubs for digital-literacy programmes and government-service access. Other initiatives encompass developing a national physical address system to accelerate e-commerce and regional ICT hubs. As described above, expanding digital infrastructure is essential for fostering economic inclusivity and reducing the urban–rural digital divide. By focusing on broadband expansion, Kenya seeks to position itself as a leader in digital connectivity within East Africa.

The *digital services, products, and data management* pillar aims to digitise five billion government records, automate core services, and integrate state systems. It also includes initiatives such as the Maisha Namba ID system (discussed above) and a digital-content cloud infrastructure for educational purposes. The scale of this project requires not only technical capability but also strong data-governance and cybersecurity measures to ensure the protection of sensitive information. Additionally, integrating multiple government systems poses logistical and operational challenges that need to be carefully managed.

The *digital skills* pillar seeks to enable digital inclusion and the development of a high-skilled ICT workforce. In addition to expanding the DLP, the government aims to provide digital (literacy) capacity-building for 20 million citizens, 10,000 ICT professions based on high-end skills, 300,000 public servants, and 350,000 teachers. Kenya's emphasis on digital literacy and high-end ICT training reflects a forward-looking approach to the development of human capital. However, the effectiveness of these programmes will depend on the quality of the training and the ability to match skills development with labour-market demands.

The *digital enterprise innovation and businesses* pillar supports ecosystem growth through initiatives such as the establishing of software and electronic manufacturing industries, hosting an annual international ICT Expo, and creating county-level innovation hubs. The development of Konza Technopolis (KT), a futuristic technology city, is a flagship project aimed at positioning Kenya as a regional hub for technology and innovation, with a focus on ICT, biotechnology, and related fields. KT is expected to host technology companies, research institutions, residential areas, educational facilities, and recreational spaces, fostering collaboration and driving economic growth in Kenya and the broader East Africa region. KT symbolises Kenya's

ambition to become a regional technology leader. However, this vision will require continued investment, strategic partnerships, and a supportive regulatory environment to foster innovation and attract global tech companies.

The plan further underscores data protection, cyber management, and emerging technologies as cross-cutting themes. It advocates for a strengthened and harmonised legal and regulatory framework, including the Kenya AI Masterplan, which aims to promote AI capacity and international collaboration. Addressing these cross-cutting issues is fundamental to ensuring the long-term sustainability of Kenya's digital economy. As online services and data volumes increase, Kenya will need robust legal frameworks and regulatory oversight to protect against cyberthreats and ensure ethical use of emerging technologies.

Additionally, Kenya's Digital Economy Acceleration Project focuses on expanding access to high-speed Internet, enhancing education and government-service delivery, and developing skills for the regional digital economy (Phase 1: 2023–2028). Subsequently, it aims to create a data-driven and secure environment to improve digital-service delivery and foster innovation in the regional digital economy (Phase 2: 2026–2030). The World Bank Group's Board of Directors recently approved USD 390 million in financing for the first phase of this initiative. The project aims to attract approximately USD 100 million in additional private capital for broadband infrastructure development (World Bank, 2023b).

5.2 Regional strategy

As a member of the AU, Kenya is actively engaged in the Digital Transformation Strategy for Africa (2020–2030). This pivotal initiative aims to advance digitalisation throughout the continent, with the overarching goal of creating "an integrated and inclusive digital society and economy in Africa that improves the quality of life for Africans" (AU, 2021: 3). It seeks not only to foster the socio-economic development of the continent but also to empower the latter with contemporary tools for digital governance – above all, a unified digital-coordination framework across Africa (Teevan and Domingo, 2022).

The Digital Transformation Strategy builds on existing initiatives and frameworks such as the Policy and Regulatory Initiative for Digital Africa (PRIDA) and the Programme for Infrastructure Development in Africa (PIDA). Despite the challenges posed by geographic fragmentation, efforts are underway to streamline digital technologies and services across Africa, supported by initiatives such as the African Continental Free Trade Area. The intention here is to support the development of a so-called Digital Single Market (DSM), the strategic vision of the Smart Africa Initiative (AU, 2021). In this way, PRIDA addresses policy-framework requirements, focusing on harmonising and modernising regulations related to digital technologies and services to create an environment conducive to digital innovation, investment, and growth. PIDA is led by the AU Commission, AU Development Agency, and African Development Bank, and concentrates on the coordination of regional infrastructure development to ensure access to secure, reliable, and affordable Internet. It offers a unified framework to build essential ICT infrastructure, promoting more inclusive economic growth across the continent. However, despite its potential to transform access to integrated regional infrastructure networks, the initiative has been largely overlooked and inadequately funded by international partners, impeding its full implementation at this point (Bao-Guehe, 2023).

Kenya's engagement in such regional initiatives reflects its leadership role in driving digital transformation across Africa. By aligning its national goals with continental frameworks, the

country is positioning itself as a key facilitator of cross-border digital services and infrastructure development.

6 Partnerships

6.1 EU and Germany

Kenya's collaboration with the EU in the digital realm is primarily shaped by the AU–EU partnership, which aims to foster a continent-to-continent free trade agreement. In December 2018, the EU and AU jointly established the AU–EU Digital Economy Task Force (DETF) to formulate specific policy recommendations and propose actions to enhance cooperation in digital matters. The task force identified four key policy recommendations: achieving universal access to affordable broadband; ensuring essential skills; improving business environments (including financial and support services); and, accelerating the adoption of e-services (AU-EU DETF, 2019). These recommendations significantly influenced the AU's Digital Transformation Strategy and guided the development of EU and member state-funded cooperation projects in Kenya, such as the EU's D4D hub – an initiative promoting digital technologies and data-driven approaches in development cooperation (Daniels et al., 2020).

Presently, EU–AU digital collaboration is integral to the EU's Global Gateway strategy, integrating development with broader foreign policy objectives to bridge global infrastructure gaps, enhance connectivity, and advocate for sustainable and democratic values around the world. During the EU–AU Summit of February 2022, the EU and its member states committed to investing EUR 150 billion by 2027 through Team Europe initiatives, focusing on Africa's digital transition. This includes supporting digital-infrastructure projects like submarine and terrestrial fibre-optic cables linking Europe and Africa, as well as cloud and data infrastructure (European Commission, n.d.). Moreover, the EU aims to advance governance frameworks, ensure inclusion, and align digital transformation with democratic values and sustainability goals worldwide (Teevan and Domingo, 2022).

The EU emphasises sovereignty and sustainability, influencing regulatory decisions by supporting physical and digital infrastructure. It also provides country-level assistance on safeguarding personal data, enhancing cybersecurity, protecting privacy rights, promoting trustworthy AI, and fostering fair and open digital markets (Furness and Keijzer, 2022). Furthermore, the EU supports Africa's DSM strategy through its PRIDA cooperation, sharing experiences and shaping regulatory frameworks while aiding Africa's development (Council of the EU, 2023; Daniels et al., 2020).

In June 2023, the EU and Kenya agreed to an Economic Partnership Agreement designed to promote sustainable economic growth, create jobs, and facilitate an inclusive green transition, particularly in the digital, climate, energy, and transport sectors. Supported by smart, clean, and secure investments from both the public and private sectors, this partnership underscores the importance of the digital realm without specifying detailed regulations or plans here (European Commission, n.d.). Nevertheless, the EU announced a EUR 72 million cooperation package with Kenya in October 2023 to support the green, digital, and inclusive transition. The digital component includes enhancing Kenya's cybersecurity on the basis of a EUR 10 million investment therein, alongside initiatives like the Digital Economy Package that ex-

pands digital connectivity to schools and offers skills training, as supported by a EUR 9.8 million grant. This funding will leverage contributions from German and French development finance institutions and the Kenyan government to drive digital-education reforms. Additionally, the EU is collaborating with Estonia and Germany on digital initiatives involving e-government, data protection, land governance, customs, e-justice, and cybersecurity (European Commission, 2023).

The European Commission and the East African Community are jointly supporting the implementation of data-protection frameworks in the latter region. This project facilitates knowledge exchange and peer-to-peer learning through workshops, research initiatives, and study visits among countries at different stages of development vis-à-vis data-protection laws. Meanwhile, the first meeting between the EU and African Cyber and Digital Ambassadors, supported by D4D, took place in June 2024. The forum highlighted common challenges posed by geopolitical competition in cyberspace and disruptive technologies, underscoring cyber, digital, and tech diplomacy being key foreign policy priorities. Facing similar issues, both parties aim to establish a diplomatic forum to exchange views and promote global cooperation and alignment hereon (D4D Hub, 2024).

Within Team Europe, Germany plays a pivotal role in Kenya's digital-transformation efforts. For instance, the German Development Cooperation Agency (GIZ) and the Estonian Centre for International Development (ESTDEV) co-financed the Team Europe Digital Transformation Centre in Kenya. With a total investment of EUR 12.2 million (8 million thereof from GIZ), this Centre serves as the coordinating body for GIZ's digital projects in Kenya. It supports SMEs in digital transformation through training, promotes data-driven value creation, enhances job opportunities in the platform economy, and educates citizens on privacy rights while helping organisations implement robust data-protection measures (ESTDEV, 2024).

Furthermore, GIZ (2023) promotes digitalisation to enhance trade and integration within East Africa by improving the legal framework for cross-border movement of engineers, enhancing digital services, and promoting data governance and cross-border data exchange. In April 2024, the Kenyan government and GIZ initiated the development of a National AI Strategy under the EU-supported FAIR Forward – Artificial Intelligence for All project, recognising AI's potential to drive Kenya's digital transformation and contribute to sustainable development goals (Digital Watch, 2024).

Beyond GIZ, the German Federal Ministry for Digital and Transport (BMDV) actively engages in Kenya's digital transformation, too. In February this year, the BMDV and the Kenyan Ministry of Information, Communications and the Digital Economy (MICDE) co-signed the first work plan of the Kenyan–German Digital Dialogue, which will serve as the basis for their cooperation. The Digital Dialogue initially involved discussions at senior and expert levels among representatives from their respective ministries and public authorities. It includes expert stakeholders from civil society organisations, business associations, and companies, as well as technical and scientific institutions. Based on these discussions, a work plan was developed that outlines three priority topics to be addressed: (1) Internet Governance, Data Policy and Cybersecurity; (2) Digital Innovation and Sustainable Growth; and, (3) Digital Public Infrastructure and Services. Specific objectives and activities are considered for each of these topics. Examples of the activities taking place include: expert exchange on open Internet governance, alongside the identification of commonalities and differences in data-protection regulations (topic 1); expert discussions on policy and regulatory strategies to enhance the AI ecosystem and facilitate collaboration between companies and industry associations on both sides, as

well as the assessment of working conditions in the tech industry (topic 2); the work package includes provisions also for the exchange of expertise on developing and implementing digital public infrastructure and services, including government-to-citizen payment systems and national identification schemes, alongside integrating government databases (topic 3) (MICDE and BMDV, 2024).

6.2 China

China and Kenya share a long-standing relationship in infrastructure development, marked by Huawei's investments in the latter dating back to 1998. Through its partner Safaricom, Kenya's largest mobile telecommunications provider, the Chinese company played a pivotal role in launching the East African country's mobile money transfer system. This collaboration has positioned both Safaricom and Huawei as key players in Kenya's ICT sector. Currently, Huawei is overseeing phase two of Kenya's National Optic Fibre Backbone Infrastructure project, aiming to connect all 47 counties by adding 1,600 km of fibre-optic cables (Calzati, 2022).

Through its Digital Silk Road (DSR) initiative, China has invested significantly in Kenya's technology infrastructure, focusing on wireless networks, subsea cables, and satellites (Boa-Guehe, 2023). Initially driven by financial loans for physical infrastructure, China's investments have evolved towards knowledge transfer, cloud computing, AI solutions, and smart-city projects over the past decade (Calzati, 2022). Huawei's involvement extends to developing Kenya's government cloud services, housing critical data (Munga, 2024). Moreover, Huawei has provided 200 scholarships for Kenyan youth to undergo ICT training in China and supports the Presidential Digital Talent Programme, a cornerstone of Kenya's capacity-building efforts (Calzati, 2022). Bilateral trade between China and Kenya has also been strengthened through the rise of digital platforms such as Kilimall, a leading e-commerce app founded in Nairobi in 2014. Kilimall has facilitated approximately 10,000 local jobs and serves as a digital bridge between China and Africa, offering affordable Chinese goods to African consumers (Xinhua, 2023).

6.3 The US

Although US influence on Kenya's digitalisation is primarily driven by its big tech companies, it is increasingly making its mark here through significant financial investment, particularly in broadband infrastructure (Teevan and Domingo, 2022). In April 2024, for example, the U.S. Trade and Development Agency (USTDA) signed a grant agreement with Kenyan telecommunications company Wilken Group Ltd. that aimed to address Kenya's Internet-affordability gap by developing new fibre-optic and 5G infrastructure. The USTDA-funded study will evaluate the construction of an open access fibre-optic network and a series of 5G-capable towers along approximately 1,170 km of railway between Mombasa and Malaba, where future demand for connectivity is expected to exceed current capacity. USTDA's support for this project also opens up opportunities for US companies to participate in East Africa's growing digital infrastructure. USTDA (2024) is further financing the creation of a semiconductor fabrication facility that will manufacture chips for industrial, agricultural, automotive, and IoT applications.

These forms of cooperation align with the priorities of the Biden–Harris administration, including the Digital Transformation within Africa initiative,[7] which seeks to expand access across

---

7   Launched in December 2022 at the US–Africa Leaders' Summit and Business Forum, it has three pillars: (1) Digital Economy and Infrastructure; (2) Human Capital Development; and, (3) Digital Enabling Environment.

the African continent; the Prosper Africa initiative[8] meant to increase two-way trade and investment between the US and Africa; and, the Partnership for Global Infrastructure and Investment, a strategic initiative to enhance global infrastructure development, promoting sustainable and inclusive economic growth.

In May 2024, Presidents Ruto and Biden met in Washington, D.C., to discuss plans to link Silicon Valley and Silicon Savannah, as well as to advance both the US and Kenyan technology sectors. This cooperation focuses on three primary objectives: enhancing cybersecurity; improving digital connectivity; and, creating secure and resilient supply chains. Private sector involvement will be substantial, for example, with Google's Umoja undersea cable linking Africa and Australia, and Microsoft and G42's (USD 1 billion) 1 gigawatt green data centre – Kenya's single-largest private sector digital investment to date. The latter initiative includes four pillars: (1) local-language AI model development and research; (2) an East Africa Innovation Lab that includes AI digital-skills training; (3) investment in both international and local connectivity; and, (4) collaboration with the Kenyan government to support safe and secure cloud services across East Africa. In this way, G42 and Microsoft aim to enhance local skills, support secure cloud services, enhance cybersecurity, and provide Internet access to 20 million people in Kenya and 50 million in total across East Africa as a whole by the end of 2025 (Microsoft, 2024; The National, 2024). This cooperation has a strong geopolitical focus, with the Biden administration facilitating the Microsoft–G42 partnership, granting the United Arab Emirates' AI firm G42 access, while prohibiting the use of Huawei equipment – a strategic move to restrict Chinese involvement (Munga, 2024).

Additionally, the US has allocated a significant USD 250 million financial package designed to advance digital connectivity and e-mobility initiatives in Kenya. This investment, structured through a combination of loans and grants, supports several prominent Kenyan companies, including M-KOPA, BasiGo, Mogo Auto, and Roam Electric. Specifically, M-KOPA, a Nairobi-based digital-financing company focused on serving underbanked populations, secured a USD 51 million loan. This funding will enable M-KOPA to enhance nationwide digital connectivity and provide affordable smartphones to communities with limited access to financial services (Duruson, 2024).

While most of the stated cooperation endeavours target the development of digital infrastructure, Kenya and the US have further collaborated on cybersecurity. This includes via capacity-building programmes, technical assistance, and information-sharing activities. They have also sought to foster partnerships between universities and industry to advance innovation, research, and employment opportunities in STEM fields both within Kenya and globally. As part of this, the US Agency for International Development announced an investment of nearly USD 32 million into Kenya's education system. The U.S. Department of State also unveiled the Kennedy–Mboya Partnerships, a modern scholarship programme focusing on STEM fields designed to support the training of future Kenyan scientists, researchers, and engineers.

That said, most planned initiatives fall under pillar 1. The aim is to expand digital access in Africa and increase commercial engagement between US and African companies (DTA, 2023). This initiative seeks to invest over USD 350 million and secure over USD 450 million in financing for Africa, aligning with the AU's Digital Transformation Strategy and the US Strategy Toward Sub-Saharan Africa (The White House, 2022).

8   This 2018 US government-led programme strives to enhance two-way trade and investment between the US and Africa. It aims to foster economic growth, create jobs, and support business opportunities by removing trade barriers and providing necessary resources.

This initiative, backed to the tune of USD 3.3 million, underscores a commitment to nurturing Kenya's STEM talent for the future (USAID, 2024).

6.4 Other bilateral partnerships

Beyond the stated formats, Kenya has several other (future) bilateral cooperation partners lined up. For example, Kenya and *India* signed a memorandum of understanding (MoU) in December 2023, whose goal is to facilitate cooperation between the two countries in sharing successful digital solutions implemented at scale. It seeks to enhance collaboration and exchange on deploying digital technologies to drive transformational initiatives in both nations (PMIndia, 2024).

Additionally, the *UAE* and Kenya signed a significant investment MoU in March of this 2024 to advance technological and digital cooperation. This agreement outlines a framework for collaboration in digitalisation and technology, focusing on opportunities in related infrastructure and AI services in Kenya. The partnership includes developing data-centre projects and establishing a digital corridor for the secure exchange, hosting, processing, and transmission of data between the UAE and Kenya. This initiative aims to foster strong collaboration between the public and private sectors in both countries, supporting digital-infrastructure projects and encouraging relevant initiatives (Salian, 2024).

Kenya has further bolstered its digital-transformation agenda through renewed collaboration with *South Korea*, particularly focused on KT's development. As part of a third partnership phase, the Korea Trade Investment Promotion Agency is supporting KT's development with investments aimed at infrastructure stability, smart-farm initiatives, energy diversification, and enhancing information and transportation networks. The recent USD 485 million concessional development funding agreement, signed during the Korea–Africa Summit, allocates USD 238 million specifically for the Konza Digital Media City Project. President Ruto also highlighted Kenya's interest in winning South Korean support for developing its semiconductor industry (Macharia, 2024a; Republic of Kenya, 2024).

In April this year, the deputy minister of the *Czech Republic* explored new opportunities for collaboration in innovation, cybersecurity, and space technology at a meeting held in Kenya. This potential cooperation includes utilising data collection from satellites in low Earth orbit and enhancing cybersecurity (Ministry of Foreign Affairs of the Czech Republic, 2024). Additionally, Kenya is currently discussing a potential partnership with *Malaysia*, although no agreements have been reached at the time of writing (Macharia, 2024b).

7 Avenues for Cooperation

While Kenya has made significant strides regarding its digital economy, further advancements are needed in critical areas such as on infrastructure development and regulatory frameworks. To address these challenges, Kenya has actively pursued international collaboration. The intensity and forms of engagement vary significantly between partners, especially when comparing the approaches of the US and China with that of the EU.

The US and China often emphasise infrastructure development and direct investment in digital projects, leveraging their sizeable technological capabilities and financial resources. The US investment strategy in Kenya is multifaceted, yet strongly focused on enhancing digital infrastructure, trade between the two countries, and fostering innovation (including through

education programmes). Major investments include the development of broadband infrastructure, such as a fibre-optic and 5G network, and a semiconductor fabrication facility. In this way, the US has created significant private sector involvement here, exemplified by projects such as Google's undersea cable and Microsoft's green data centre. Similarly, China's own investment strategy in the country centres around infrastructure development and technology enhancement, most pronounced through the presence of Huawei in the Kenyan market. DSR investment further boosts Kenya's tech landscape as regards wireless networks, subsea cables, data services, and satellites.

In contrast, the EU's (and Germany's) approach to cooperation places significant emphasis on digital governance and advancing the UN's Sustainable Development Goals. This strategy prioritises the establishment of robust frameworks for digital regulation and governance, ensuring that technological advancements align with principles of sustainability, inclusivity, and respect for human rights. This is exemplified by the D4D initiative and Germany's involvement in Kenyan digitalization, which strongly focuses on capacity building for businesses and citizens regarding, for example, privacy rights. While the EU does invest in digital infrastructure, its core emphasis is on the field's governance and on supporting unification and regulatory harmonisation among AU member states here, with the goal of creating a continent-to-continent free trade area.

In light of these observations on the different forms and foci to the East African country's respective partnerships, we recommend future collaboration between Germany (the EU) and Kenya (the AU) focus on – or more strongly emphasise – the three following interrelated aspects: the seamless and well-governed exchange of data; the expansion of digital trade; and, digital labour.

First, the seamless and well-governed exchange of data across regions is insufficiently emphasised in current EU–AU cooperation, including with Kenya. At the EU level, this requires the harmonisation of data-protection standards to ensure consistent privacy and security measures in the context of data exchange. Kenya's current regulations hereon are inspired by the EU's GDPR, which offers a significant advantage for alignment and harmonisation efforts. Additionally, cross-border mechanisms are important to facilitate the seamless transfer of data while complying with local laws. Specifically, the EC uses the Adequacy Decision as a legal instrument that declares a given third (non-EU) country must provide a level of data protection equivalent to EU standards to be accepted as partner. This decision allows for the free flow of personal data from the EU to that third country without additional safeguards being necessary, such as standard contractual clauses or binding corporate rules. At this point, no Adequacy Decision exists either for Kenya or for any other AU member state (EC, n.d.). This may also require finding a (bilateral) agreement with Kenya regarding its aforementioned data-localisation requirements, which would pose significant costs for firms offering digital services in Kenya.

Cybersecurity standards and regulations must also be harmonised. This includes the setting of explicit guidelines for international collaborative investigations hereof and protocols for cross-border data transfers to uphold global best practice. Further, interoperability and technical standards play a crucial role in enabling seamless data exchange and collaboration across different systems and platforms. By adopting common protocols and formats, organisations can simplify data-integration and digital-communication processes. This will not only enhance efficiency by reducing manual needs and integration costs but also foster innovation

by allowing companies to focus on developing new functionalities rather than resolving compatibility issues.

While these recommendations primarily address the EU level, worthy of note here is also how Germany has taken a leading role in advancing digital cooperation with Kenya, particularly on governance issues. The Kenyan–German Digital Dialogue, involving the East African country's government and its European partner's BMDV, serves as an excellent platform to promote regulatory coherence. Through this dialogue, Kenya and Germany can align their regulations, setting a valuable precedent for harmonising such frameworks between other AU member states and the EU, too. This suggested alignment requires several steps be undertaken. First, the EU and Kenya should initiate formal dialogue to explore the possibility of an Adequacy Decision under the EU's GDPR framework, providing therewith the legal basis for the free flow of personal data between the two regions. Subsequently, Germany could leverage the Digital Dialogue to address specific regulatory gaps and negotiate bilateral agreements. To harmonise cybersecurity standards, joint stakeholder workshops could be organised to develop common guidelines for cross-border data transfers and international collaboration on the investigation of cybercrimes. Additionally, creating a task force focused on technical interoperability could help establish common data formats and protocols, facilitating seamless integration across systems.

Second, greater emphasis should be placed on digital trade between the two regions. Addressing the aforementioned aspects would not only enable the seamless flow of data but also facilitate the trade in digital services. The latter encompass a broad range of activities, including global innovator services, BPO, and other digitally enabled services. For instance, global innovator services such as software development, fintech solutions, and AI-driven technologies can thrive with regulatory harmonisation. This will enable Kenyan tech firms to offer their innovative solutions to European markets and vice versa, nurturing a more dynamic and competitive digital ecosystem in consequence. The BPO sector also stands to benefit significantly from stronger digital-trade ties. By leveraging Kenya's skilled workforce, European companies can outsource various business processes such as customer support, data entry, and IT services. This will not only reduce operational costs for said firms but also create substantial employment opportunities in Kenya, contributing to economic development and skills enhancement.

The EU could enhance trade agreements under existing EU–AU cooperation frameworks, such as the Economic Partnership Agreement, by incorporating specific provisions on digital services. This would create a regulatory environment that enables seamless data flows and fosters trade in digital services, including software development, fintech, and AI-driven technologies. At the bilateral level, Germany can leverage platforms like the Digital Dialogue to identify and develop targeted opportunities here. This includes facilitating partnerships between German companies and Kenyan tech firms, focusing on knowledge transfer, market access, and joint innovation. Additionally, Germany could initiate pilot projects with Kenyan BPO providers to demonstrate the viability and mutual benefits of outsourcing models, supporting the latter's economic growth while providing cost-effective solutions for the former's businesses.

Third, the expansion of digital trade should be complemented by strategic initiatives focused on improving ICT-related human resources and employment. Facilitating the exchange of such services and professionals will create a dynamic and adaptable workforce. This mobility would allow talent to move freely, addressing skill shortages and fostering innovation and

growth. Both Kenya and Germany currently face shortages of skilled workers, particularly in the tech sector. One potential solution lies in easing access to digital labour services and employment opportunities between the two countries. This should encompass remote work, digital freelancing (digital gig economy), and both short-term and long-term placements for digital professionals across the two countries. By facilitating the exchange of IT labour services and specialists, Kenya can meet its demand for advanced technological expertise, while Germany can fill critical skill gaps in its digital economy.

Several regulatory adjustments are necessary to these ends, such as the recognition of qualifications and certificates and (in case of on-site employment) specific visa arrangements. The EU's Blue Card scheme, designed to grant work and residence permits to highly skilled non-EU nationals, includes provisions tailored towards digital professionals. Moreover, ICT-related jobs such as software- and app developers, analysts, and service managers are classified as "bottleneck professions" in Germany, indicating significant shortages in these fields (The Federal Government, n.d.). Notably, the Blue Card is directed at professionals with either a German degree or a foreign degree comparable to a German one, with new ICT-related special exemptions for those who can prove their non-formal qualifications are equivalent to university-level ones. In this context, enhancing the recognition of Kenyan educational qualifications and professional certifications may be a crucial next step. This can be achieved through establishing bilateral agreements between educational institutions in the two countries. Additionally, adopting more flexible criteria concerning work experience and specific skills may be important, thereby acknowledging the existence of diverse spectrum of ICT expertise that may differ from traditional European standards.

Furthermore, fostering partnerships with Kenyan training institutions and hubs to establish graduate pathways through internships, apprenticeships, and exchange formats is essential, as is encouraging German companies to recruit said professionals by offering incentives and support for Blue Card sponsorship, such as establishing talent databases or job-matching platforms. To enhance awareness and participation, targeted outreach and information campaigns in Kenya may be needed. Collaborative efforts with institutions including universities could also be extended to include training opportunities across countries, such as for Kenyan students to (in part) study at German universities in STEM areas or take up apprenticeships at German companies. To enable exchange on an equal footing, harmonising digital labour laws would greatly facilitate trade and establish international standards hereon.

The recent MoU (signed September 2024) between Germany and Kenya on labour mobility and migration is a first step in this direction. This agreement provides a framework for cooperation on labour mobility, apprenticeships, student training, and employment. It also allows for long-stay residence visas for eligible Kenyans to pursue vocational training in Germany, with the possibility of extending their stay for further studies. Both countries will support the emigration of skilled workers with recognised qualifications. Furthermore, another MoU was simultaneously signed to launch a pilot BPO initiative between the Federal State of Hamburg and the Government of Kenya; it enables Kenyan youth to access both virtual and on-site job opportunities in Germany (The Africa Daily Post, 2024).

In summary, future collaboration should prioritise enabling the free flow of data, digital services, and ICT-related (digital) labour between the two regions. These objectives align well with current EU and German strategies, which already emphasise digital governance, data protection, and cybersecurity. To enhance this alignment and pave the way for digital trade, efforts should focus on harmonising data-protection and cybersecurity standards with those of the

EU. By ensuring that regulatory frameworks and technical standards are interoperable, both regions can facilitate seamless data exchange and foster a robust digital economy for each. This will not only support sustainable development but also enhance global competitiveness, while opening up new opportunities for businesses and professionals in both Africa and Europe. Ultimately, such collaboration would drive innovation, promote economic integration, and create a more diverse and inclusive digital landscape.

Bibliography

African Union. (2021). *The Digital Transformation Strategy for Africa 2020-2030*.

Africanews. (2023). *Kenya hit by record 860m cyber-attacks in a year.* Retrieved from: https://www.africanews.com/2023/10/03/kenya-hit-by-record-860m-cyber-attacks-in-a-year/ [last accessed 26.06.2024].

Ahmed, H., and Cowan, B. (2021). Mobile money and healthcare use: Evidence from East Africa. *World Development*, 141, 105392.

Akuku, B., Derksen, H., and Haaksma, G. (2019). *Digital Farming in Kenya*. Embassy of the Kingdom of the Netherlands Nairobi, Kenya.

Apeti, A. E. (2023). Household welfare in the digital age: Assessing the effect of mobile money on household consumption volatility in developing countries. *World Development*, 161, 106110.

AU-EU DETF. (2019). *New Africa-Europe Digital Economy Partnership. Accelerating the Achievement of the Sustainable Development Goals*.

Ayamga, M., Lawani, A., Akaba, S., and Birindwa, A. (2023). Developing institutions and inter-organizational synergies through digitalization and youth engagement in African agriculture: The case of "Africa Goes Digital". *Land*, *12*(1), 199.

Beck, T., Pamuk, H., Ramrattan, R., and Uras, B. R. (2018). Payment instruments, finance and development. *Journal of Development Economics*, *133*, 162-186.

Blackmon, W., Mazer, R., and Warren, S. (2021). Kenya Consumer Protection in Digital Finance Survey. *Innovations for Poverty Action*.

Boa-Guehe, P. (2023). Accelerating Africa's Digital Transformation for Mutual African and U.S. Economic Prosperity. *The Brown Capital Management Africa Forum, No. 14.*

Boore, C., James, N. M., and Iraki, X. (2017). Strategic issues in e-Health implementation in developing countries: The Kenyan healthcare sector. *Global Scientific Journals, 5*(7), 50-62.

Burt, C. (2024). *Kenya unveils ambitious digital ID, biometric passports issuance plans. Biometric Update*. Retrieved from: https://www.biometricupdate.com/202405/kenya-unveils-ambitious-digital-id-biometric-passports-issuance-plans [last accessed 26.06.2024].

Business Daily Africa. (2024). *Kenya third in Africa e-commerce rankings despite local market woes*. Retrieved from: https://www.businessdailyafrica.com/bd/corporate/technology/kenya-third-in-africa-ecommerce-rankings-local-market-woes-4624030 [last accessed 13.06.2024].

Calzati, S. (2022). 'Data sovereignty' or 'Data colonialism'? Exploring the Chinese involvement in Africa's ICTs: a document review on Kenya. *Journal of Contemporary African Studies*, *40*(2), 270-285.

Cirera, X., Comin, D., Cruz, M., Lee, K. M., Martinez, P., and Martins-Neto, A. (2022). Firm-level Adoption of Technologies in Kenya. *World Bank Working Paper.*

Council of the European Union. (2023). *Council conclusion on EU Digital Diplomacy - Council conclusions approved by the Council at its meeting on 26 June 2023.*

Crawford, A. (2022). Paper Ballots with Digital Transparency: Kenya's Pioneering Election. *GIGA Focus Afrika, 7.* Hamburg: GIGA German Institute of Global and Area Studies.

D4D Hub. (2024). *EU-Africa Dialogue on Cyber and Digital Diplomacy*. Retrieved from: https://d4dhub.eu/news/eu-africa-dialogue-on-cyber-and-digital-diplomacy [last accessed 25.06.2024].

Daniels, C., Erforth, B., Floyd, R., and Teevan, C. (2020). *Strengthening the digital partnership between Africa and Europe.* European Think Tanks Group.

Daramola, O., and Etim, E. (2022). Affordances of digital platforms in sub-Saharan Africa: An analytical review. *The Electronic Journal of Information Systems in Developing Countries*, *88*(4), e12213.

DataReportal. (2023). *Digital 2023: Kenya*. Retrieved from: https://de.slideshare.net/slideshow/digital-2023-kenya-february-2023-v01/255826734. [last accessed 13.06.2024].

DataReportal. (2024). *Digital 2024: Kenya.* Retrieved from: https://datareportal.com/reports/digital-2024-kenya. [last accessed 13.06.2024].

Demombynes, G., and Thegeya, A. (2012). Kenya's mobile revolution and the promise of mobile savings. *World Bank Policy Research Working Paper*, (5988).

Didenko, A. (2017). *Regulatory challenges underlying FinTech in Kenya and South Africa.* Bingham Centre for the Rule of Law.

Digital 4 Africa. (2023). *Digital 2023 – Kenya*. Retrieved from: https://digital4africa.com/digital-2023/ [last accessed 13.06.2024].

Digital Transformation with Africa (DTA). (2023). *White House Fact Sheet.*

Digital Watch. (2024). *Kenya launches project to develop National AI Strategy in collaboration with German and EU partners*. Retrieved from: https://dig.watch/updates/kenya-launches-project-to-develop-national-ai-strategy-in-collaboration-with-german-and-eu-partners [last accessed 25.06.2024].

Donner, J., Dean, M., Osborn, J., and Schiff, A. (2020). Platform-led Upskilling: Marketplace Platforms as a Source of Livelihoods Training. In *Proceedings of the 2020 International Conference on Information and Communication Technologies and Development*, 1-12.

Donovan, K. P., and Park, E. (2022). Algorithmic intimacy: The data economy of predatory inclusion in Kenya. *Social Anthropology/Anthropologie Sociale*, *30*(2), 120-139.

Duruson, S. (2024). *Kenya's Digital Transformation Gets $250M Boost from US Finance Corporation. Tech in Africa*. Retrieved from: https://www.techinafrica.com/kenyas-digital-transformation-gets-250m-boost-from-us-finance-corporation/ [last accessed 26.06.2024].

Dutta, S., and Lanvin, B. (2023). *The Network Readiness Index 2023.* Washington: Portulans Institute.

ecdpm. (2023). *Achilles Heel? Kenya's Growing Digital Economy*. Retrieved from: https://ecdpm.org/work/achilles-heel-kenyas-growing-digital-economy. [last accessed 13.06.2024].

Economist Impact. (2022). *Inclusive Internet Index 2022: Kenya*. Retrieved from: https://impact.economist.com/projects/inclusive-internet-index/2022/country/Kenya [last accessed 13.06.2024].

e-Governance Academy (EGA). (2022). *Kenya Digital Readiness. A journey towards human-centred digitalisation.*

ESTDEV. (2024). *Cybernetica to develop interoperability framework in Kenya*. Retrieved from: https://estdev.ee/en/articles/cybernetica-develop-interoperability-framework-kenya [last accessed 25.06.2024].

European Commission. (2023). *Global Gateway Forum: EU launches €72 Million cooperation priorities for Kenya to strengthen the green, digital and inclusive transitions*. Retrieved from: https://global-gateway-forum.ec.europa.eu/news/global-gateway-forum-eu-launches-eu72-million-cooperation-priorities-kenya-strengthen-green-digital-2023-10-25_en [last accessed 25.06.2024].

European Commission. (n.d.). *Adequacy decisions*. Retrieved from: https://commission.europa.eu/law/law-topic/data-protection/international-dimension-data-protection/adequacy-decisions_en [last accessed 11.07.2024].

European Commission. (n.d.). *EU-Africa: Global Gateway Investment Package*. Retrieved from: https://international-partnerships.ec.europa.eu/policies/global-gateway/initiatives-region/initiatives-sub-saharan-africa/eu-africa-global-gateway-investment-package_en [last accessed 25.06.2024].

European Commission. (n.d.). *EU-Kenya: Text of the agreement*. Retrieved from: https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/east-african-community-eac/eu-kenya-agreement/text-agreement_en [last accessed 25.06.2024].

Fairwork (2023). *The promise and peril of platform work in the Kenyan platform economy.* Fairwork Kenya Rankings 2023.

FinAccess. (2019). *2019 FinAccess Household Survey.* Nairobi, Kenya: FinAccess.

Fu, X., Avenyo, E., and Ghauri, P. (2021). Digital platforms and development: a survey of the literature. *Innovation and Development, 11*(2-3), 303-321.

Furness, M., and Keijzer, N. (2022). Europe's Global Gateway: A new geostrategic framework for development policy? *Briefing Paper No.1/2022.*

GIZ. (2023). *Promoting digitalisation for enhanced trade and integration in East Africa*. Retrieved from: https://www.giz.de/en/worldwide/121487.html [last accessed 25.06.2024].

Gosavi, A. (2015). *Access to Finance for Small and Medium-Sized Firms: Evidence from Eastern Sub-Saharan Africa.* Texas A&M International University.

Government of the Republic of Kenya. (2007). *Kenya Vision 2030.*

Graham, M., Hjorth, I., and Lehdonvirta, V. (2017). Digital labour and development: impacts of global digital labour platforms and the gig economy on worker livelihoods. *Transfer: European review of labour and research*, *23*(2), 135-162.

GSMA. (2019). *Harnessing the Power of Mobile Money to Achieve the SDGs.* GSM Association.

Gumbi, N., Gumbi, L., and Twinomurinzi, H. (2023). Towards sustainable digital agriculture for smallholder farmers: A systematic literature review. *Sustainability, 15*(16), 12530.

Gürbüz, A. (2017). Mobile Money and Savings in Rural Kenya. *World Bank Blog.*

Iazzolino, G. (2021). 'Going Karura': colliding subjectivities and labour struggle in Nairobi's gig economy. *Environment and Planning A: Economy and Space, 55*(5), 1114-1130.

International Trade Administration. (2023). *Kenya - eCommerce.* Retrieved from: https://www.trade.gov/country-commercial-guides/kenya-ecommerce. [last accessed 13.06.2024].

Jack, W., and Suri, T. (2014). Risk sharing and transactions costs: Evidence from Kenya's mobile money revolution. *American Economic Review, 104*(1), 183-223.

Jack, W., Ray, A., and Suri, T. (2013). Transaction networks: Evidence from mobile money in Kenya. *American Economic Review, 103*(3), 356-361.

Jumanne, A. (2024). Leveraging Digital Technologies for Sustainable Agriculture in Enhancing Social and Economic Development in Kenya. *International Journal of Agriculture, 9*(2), 13-23.

Karlan, D., McConnell, M., Mullainathan, S., and Zinman, J. (2016). Getting to the top of mind: How reminders increase saving. *Management Science, 62*(12), 3393-3411.

Kenya Association of Manufacturers (KAM). (2023). *Why Industry 4.0 is essential for our rebound strategy.* Retrieved from: https://kam.co.ke/why-industry-4-0-is-essential-for-our-rebound-strategy/. [last accessed 13.06.2024].

Kenya Institute for Public Policy Research and Analysis (KIPPRA). (2024). *Enhancing Market Access Through Digital Technologies Among Smallholder Farmers in Kenya.* Retrieved from: https://kippra.or.ke/enhancing-market-access-through-digital-technologies-among-smallholder-farmers-in-kenya/ [last accessed 13.06.2024].

Kenya Institute for Public Policy Research and Analysis (KIPPRA). (2023). *Building a Robust Digital Economy in Kenya.* Retrieved from: https://kippra.or.ke/building-a-robust-digital-economy-in-kenya/. [last accessed 13.06.2024].

Kenya National Bureau of Statistics. (2024). *Economic Survey 2024.* Retrieved from: https://www.knbs.or.ke/reports/2024-economic-survey/ [last accessed 13.06.2024].

Kenya News Agency. (2023). *New Data Sharing Platform to Boost Agricultural Sector.* Retrieved from: https://www.kenyanews.go.ke/new-data-sharing-platform-to-boost-agricultural-sector/. [last accessed 13.06.2024].

Kenya News Agency. (2024). *Digital certification system to reduce transaction costs for traders.* Retrieved from: https://www.kenyanews.go.ke/digital-certification-system-to-reduce-transaction-costs-for-traders/ [last accessed 26.06.2024].

KICTANet Posts (2024). *Approved: The Computer Misuse and Cybercrime Critical Information Infrastructure and Cybercrime Management Regulations 2024.* Retrieved from: https://posts.kictanet.or.ke/approved-the-computer-misuse-and-cybercrime-critical-information-infrastructure-and-cybercrime-management-regulations-2024/ [last accessed 13.06.2024].

KICTANet Posts. (2023). *Understanding Maisha Namba: Kenya's new digital identity system*. Retrieved from: https://www.kictanet.or.ke/understanding-maisha-namba-kenyas-new-digital-identity-system/. [last accessed 13.06.2024].

Kimaru, A. C., Misoi, M. K., and Githinji, R. (2023). Influence of ICT infrastructure on knowledge management in manufacturing firms in Uasin Gishu county, Kenya. *International Journal of Economics, Commerce and Management, 11*(8).

Kithinji, E. M., and Onono, P. A. (2020). Effect of electronic commerce on output and total factor productivity in Kenya. *Journal of Economics and Political Economy*, *7*(2), 101-130.

Koyama, N., Totapally, S., Goyal, S., Sonderegger, P., Rao, P., and Gosselt, J. (2021). *Kenya's Digital Economy: A People's Perspective.* Technical report.

Krell, N.T., Giroux, S. A., Guido, Z., Hannah, C., Lopus, S.E., Caylor, K.K., and Evans, T.P. (2021). Smallholder farmers' use of mobile phone services in central Kenya. *Climate and Development*, 13(3), 215-227.https://doi.org/10.1080/17565529.2020.1748847

Kubilay, E., Raiber, E., Spantig, L., Cahlíková, J., and Kaaria, L. (2023). Can you spot a scam? Measuring and improving scam identification ability. *Journal of Development Economics*, *165*, 103147.

Lakemann, T., and Lay, J. (2019). Digital Platforms in Africa: the "Uberisation" of Informal Work. *GIGA Focus Afrika, 7.* Hamburg: GIGA German Institute of Global and Area Studies. https://nbn-resolving.org/urn:nbn:de:0168-ssoar-65910-4

Lester, R.T., Ritvo, P., Mills, E.J., Kariri, A., Karanja, S., Chung, M.H., Jack, W., Habyarimana, J., Sadatsafavi, M., Najafzadeh, M., and Marra, C.A. (2010). Effects of a mobile phone short message service on antiretroviral treatment adherence in Kenya (WelTel Kenya1): a randomised trial. *The Lancet*, *376*(9755), 1838-1845.

Macdonald, A. (2024). *Kenya's digital ID ecosystem must respect fundamental human rights: policy advisory*. Retrieved from: https://www.biometricupdate.com/202402/kenyas-digital-id-ecosystem-must-respect-fundamental-human-rights-policy-advisory [last accessed 26.06.2024].

Macharia, M. (2024a). *Kenya, Korea rekindle digital transformation ties. IT Web*. Retrieved from: https://itweb.africa/content/PmxVE7KEnyKqQY85 [last accessed 26.06.2024].

Macharia, M. (2024b). *Kenya seeks Malaysian digital investments. ITWeb Africa*. Retrieved from: https://itweb.africa/content/dgp45vaBooX7X9l8 [last accessed 26.06.2024].

Mann, L., and Graham, M. (2018). The domestic turn: Business process outsourcing and the growing automation of Kenyan organisations. In *Globalization, Economic Inclusion and African Workers*, 68-86. Routledge.

Mazer, R., and McKee, K. (2017). Consumer protection in digital credit. *The World Bank. No. 119214.*

Megwai, S. (2024). *Affordable Smartphones Boost Kenya's Digital Economy and Financial Inclusion. Innovation Village*. Retrieved from: https://innovation-village.com/affordable-smartphones-boost-kenyas-digital-economy-and-financial-inclusion/ [last accessed 26.06.2024].

Melia, E. (2020). African jobs in the digital era: Export options with a focus on online labour (No. 3/2020). *Discussion Paper.*

Mercy Corps (2019). *Towards a digital workforce: understanding the building blocks of Kenya's gig economy.* Final report. Nairobi, Kenya.

Mhlanga, D. (2021). Artificial intelligence in the industry 4.0, and its impact on poverty, innovation, infrastructure development, and the sustainable development goals: Lessons from emerging economies?. *Sustainability*, *13*(11), 5788.

MICDE and BMDV. (2024). *Kenyan-German Digital Dialogue*. Retrieved from: file:///C:/Users/anette.ruml/Downloads/240229_Workplan%20DD_KEN-GER_en%20(Unsigned%20for%20publication).pdf [last accessed 17.07.2024].

Microsoft. (2024). *Microsoft and G42 announce $1 billion comprehensive digital ecosystem initiative for Kenya*. Retrieved from: https://news.microsoft.com/2024/05/22/microsoft-and-g42-announce-1-billion-comprehensive-digital-ecosystem-initiative-for-kenya/ [last accessed 25.06.2024].

Ministry of Foreign Affairs of the Czech Republic. (2024). *Deputy Minister Kozak's Visit to Kenya Opens Up Further Opportunities for Cooperation in East Africa*. Retrieved from: https://mzv.gov.cz/jnp/en/issues_and_press/press_releases/deputy_minister_kozak_s_visit_to_kenya.html [last accessed 26.06.2024].

Ministry of ICT, Innovation and Youth Affairs. (2022): *The Kenya National Digital Master Plan 2022-2032.*

Moi, G. (2024). Why MPs must reject Finance Bill 2024 in its entirety. *The Star*. Retrieved June 26, 2024, from https://www.the-star.co.ke/news/realtime/2024-06-20-why-mps-must-reject-finance-bill-2024-in-its-entirety-gideon-moi/ [last accessed 26.06.2024].

Muhalia, E. J., Ngugi, P. K., and Moronge, M. (2021). Inventory management systems on supply chain performance of fast-moving consumer goods manufacturers in Kenya. *International Journal of Supply Chain and Logistics*, *5*(1), 1-10.

Munga, J. (2024). *A New Chapter in U.S.-Kenya Relations Links Silicon Valley and Silicon Savannah. Emissary Commentary*. Retrieved from: https://carnegieendowment.org/emissary/2024/06/kenya-us-tech-cooperation-silicon-savannah?lang=en [last accessed 24.06.2024]

Munyegera, G. K., and Matsumoto, T. (2014). *Mobile money, remittances and rural household welfare: Panel evidence from Uganda*. Tokyo: GRIPS.

Mutai, D., Mwakala, M., and Njuguna, C. (2024). *Fighting malaria with digital health: How Kenya is transforming its community health sector. Path*. Retrieved from: https://www.path.org/our-impact/articles/fighting-malaria-with-digital-health-how-kenya-is-transforming-its-community-health-sector/ [last accessed 26.06.2024].

Nan, W. V. (2019). Mobile money and socioeconomic development: A cross-country investigation in Sub-Saharan Africa. *Journal of International Technology and Information Management*, *27*(4), 36-65.

Ndung'u, N. (2019). *Digital technology and state capacity in Kenya.* Washington, DC.

Ngene, G., Pinet, M., and Maclay, C. (2021). Strengthening youth livelihoods and enterprise innovation in Africa's digital era. *ODI Working paper.* London.

Ngugi, B., Pelowski, M., and Ogembo, J. G. (2010). M-pesa: A case study of the critical early adopters' role in the rapid adoption of mobile money banking in Kenya. *The Electronic Journal of Information Systems in Developing Countries*, *43*(1), 1-16.

Ngure, P. W., and Ismail, N. (2023). Supply chain digitalization on performance of fast-moving consumer goods manufacturers in Nairobi City County, Kenya. *International Journal of Management and Business Research*, *5*(1), 220-228.

Nitsche, L. (2019). *#speakup Barometer Kenya– Assessing Digital Participation.* DW Akademie, Germany.

Njoroge, M., Zurovac, D., Ogara, E. A., Chuma, J., and Kirigia, D. (2017). Assessing the feasibility of eHealth and mHealth: a systematic review and analysis of initiatives implemented in Kenya. *BMC research notes*, *10*, 1-11.

Nyasimi, E. W. (2016). *Effects of mobile money transfer services on economic growth in Kenya*. Doctoral dissertation, Kca University.

Nyatuka, D. R., and De La Harpe, R. (2022). Design considerations for patient-centered eHealth interventions in an underserved context: A case of health and wellbeing services within Nairobi's informal settlements in Kenya. *The Electronic Journal of Information Systems in Developing Countries*, *88*(3), e12164.

Odera, A., and Matiy, A. (2023). *Pivoting Digital Inclusion to Unlock Kenya's Arid and Semi-Arid Lands: An ICT Composite Index Approach.* Kenya Institute for Public Policy Research and Analysis.

Okello, J.J., Kirui, O. K., and Gitonga, Z.M. (2020). Participation in ICT-based market information projects, smallholder farmers' commercialisation, and agricultural income effects: findings from Kenya. *Development in Practice*, 30(8), 1043-1057. https://doi.org/10.1080/09614524.2020.1754340

Osiemo, J., Girvetz, E.H., Hasiner, E., Schroeder, K., Treguer, D., Juergenliemk, A., Horst, A., Jarvis, A., and Kropff, W. (2021). *Digital Agriculture Profile: Kenya.*

Otieno, E., Stein, M., and Anwar, M. A. (2020). Ride-hailing drivers left alone at the wheel: Reflections from South Africa and Kenya. In *COVID-19 in the Global South* (95-104). Bristol University Press.

Prime Minister's Office, Government of India. (2024). *Cabinet approves MoU between India and Kenya on cooperation in the field of sharing successful digital solutions implemented at population scale for digital transformation*. Retrieved from: https://www.pmindia.gov.in/en/news_updates/cabinet-approves-mou-between-india-and-kenya-on-cooperation-in-the-field-of-sharing-successful-digital-solutions-implemented-at-population-scale-for-digital-transformation/ [last accessed 26.06.2024].

Public Sector Magazine (2024). *Kenya: National Assembly approves Computer Misuse and Cybercrime Regulations 2024*. Retrieved from: https://publicsectormag.net/2024/04/15/kenya-national-assembly-approves-computer-misuse-and-cybercrime-regulations-2024/#:~:text=Kenya%3A%20National%20Assembly%20approves%20Computer%20Misuse%20and%20Cybercrime%20Regulations%202024,-by%20Public%20Sector&text=The%20National%20Assembly%20of%20Kenya,Cybercrime%20Management)%20Regulations%2C%202024. [Last accessed 05.06.2024]

Republic of Kenya. (2019). *Digital Economy Blueprint. Powering Kenya's Transformation.*

Republic of Kenya. (2024). *PRESIDENT RUTO: KENYA IS KEEN ON LEVERAGING KOREA TECHNOLOGY TO EXPAND OPPORTUNITIES*. Retrieved from: https://www.president.go.ke/president-ruto-kenya-is-keen-on-leveraging-korea-technology-to-expand-opportunities/ [last accessed 26.06.2024].

Salian, N. (2024). UAE, Kenya join hands to boost digital cooperation. *Gulf Business*. Retrieved from: https://gulfbusiness.com/uae-kenya-join-hands-to-boost-digital-cooperation/ [last accessed 26.06.2024].

Sambuli, N. (2023). *When the Rubber Meets the Road: Cybersecurity and Kenya's Digital Superhighway. Carnegie Endowment for International Peace*. Retrieved from: https://carnegieendowment.org/research/2023/10/when-the-rubber-meets-the-road-cybersecurity-and-kenyas-digital-superhighway?lang=en [last accessed 26.06.2024].

Sang, M. (2023). An Appraisal of Kenya's National Cybersecurity Strategy 2022: A Comparative Perspective. *Journal of Conflict Management & Sustainable Development*, 10(2).

Schelenz, L., and Schopp, K. (2018). Digitalization in Africa: Interdisciplinary perspectives on technology, development, and justice. *International Journal of Digital Society*, *9*(4), 1412-1420.

Sitas, R., Cirolia, L. R., Pollio, A., Sebarenzi, A. G., Guma, P. K., and Rajashekar, A. (2022). *Platform Politics and Silicon Savannahs: the rise of on-demand logistics and mobility in Nairobi and Kigali.* Cape Town: African Centre for Cities, University of Cape Town.

Statista. (2023) *Usage of Digital Services in Kenya as of 2021, by Type of Service*. Retrieved from: https://www.statista.com/statistics/1284615/usage-of-digital-services-in-kenya-by-type-of-service/. Last accessed [27.05.2024].

Statista. (2024). *Digital Health in Kenya*. Retrieved from: https://www.statista.com/outlook/hmo/digital-health/kenya. Last accessed [27.05.2024].

Suri, T., Aker, J., Batista, C., Callen, M., Ghani, T., Jack, W., Klapper, L., Riley, E., Schaner, S., and Sukhtankar, S. (2023). Mobile money. *VoxDevLit*, *2*(2).

Suri, T., and Jack, W. (2016). The long-run poverty and gender impacts of mobile money. *Science*, *354*(6317), 1288-1292.

Tech in Africa. (2024). *Kenya's digital revolution: Gen Z leads tech-driven protest against finance bill*. Retrieved from: https://www.techinafrica.com/kenyas-digital-revolution-gen-z-leads-tech-driven-protest-against-finance-bill/ [last accessed 26.06.2024].

Teevan, C., and Domingo, E. (2022). The Global Gateway and the EU as a digital actor in Africa (No. 332). *ECDPM Discussion Paper.*

The Africa Daily Post. (2024). *Kenya and Germany Sign MoU for BPO Pilot Project*. https://theafricadailypost.com/319186/diplomacy/kenya-and-germany-sign-mou-for-bpo-pilot-project/ [last accessed 24.09.2024].

The Federal Government. (n.d.). *EU Blue Card*. Retrieved from: https://www.make-it-in-germany.com/en/visa-residence/types/eu-blue-card. [last accessed 17.07.2024].

The Guardian. (2023). *AI chatbot training's human toll: The invisible labor of content moderation for Meta and OpenAI*. Retrieved from: https://www.theguardian.com/technology/2023/aug/02/ai-chatbot-training-human-toll-content-moderator-meta-openai [Last accessed 05.06.2024]

The National. (2024). *Abu Dhabi's G42 and Microsoft invest $1bn in Kenya's digital infrastructure*. Retrieved from: https://www.thenationalnews.com/future/technology/2024/05/22/abu-dhabis-g42-and-microsoft-invest-1bn-in-kenyas-digital-infrastructure/ [last accessed 25.06.2024].

The Star. (2023). Lack of digital work regulation exposing workers to abuse - Report. *The Star*. Retrieved from: https://www.the-star.co.ke/business/kenya/2023-12-18-lack-of-digital-work-regulation-exposing-workers-to-abuse-report/ [Last accessed 05.06.2024]

The White House. (2022). *U.S. Strategy toward Sub-Saharan Africa*. Retrieved from: https://www.whitehouse.gov/wp-content/uploads/2022/08/U.S.-Strategy-Toward-Sub-Saharan-Africa-FINAL.pdf [last accessed 24.06.2024]

Time. (2022). *Facebook's African content moderators allege pay disparity and harsh conditions*. Retrieved from: https://time.com/6147458/facebook-africa-content-moderation-employee-treatment/ [Last accessed 05.06.2024]

Time. (2023). *Exclusive: OpenAI used Kenyan workers on less than $2 per hour to make ChatGPT less toxic*. Retrieved from: https://time.com/6247678/openai-chatgpt-kenya-workers/ [Last accessed 05.06.2024]

Tsan, M., Totapally, S., Hailu, M., and Addom, B.K. (2019). *The Digitalisation of African Agriculture Report 2018–2019.* CTA. Retrieved from: https://hdl.handle.net/10568/101498 [last accessed 01.07.2024].

U.S. Trade and Development Agency (USTAD). (2024). *USTDA Supports Expanded Digital Access in Kenya*. Retrieved from: https://www.ustda.gov/ustda-supports-expanded-digital-access-in-kenya/ [last accessed 24.06.2024]

United Nations Department of Economic and Social Affairs (DESA). (n.d.). *Country Information: Kenya. United Nations E-Government Knowledgebase*. Retrieved from: https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/88-Kenya. [last accessed 13.06.2024].

USAID. (2024). *The United States Announces New Partnership with Kenya to Support STEM Education*. Retrieved from: https://www.usaid.gov/news-information/press-releases/may-21-2024-united-states-announces-new-partnership-kenya-support-stem-education [last accessed 26.06.2024].

Wasunna, N., and Frydrych, J. (2017). *Person-to-government (P2G) payment digitization: Lessons from Kenya*. Case Study, GSMA.

World Bank. (2023a). *Kenya Country Economic Memorandum: Seizing Kenya's Services Momentum*. Washington D.C.

World Bank. (2023b). *Kenya, AFE, and the World Bank Group provide a $390 million boost the digital economy*. World Bank. Retrieved from: https://www.worldbank.org/en/news/press-release/2023/04/05/kenya-afe-and-the-world-bank-group-provide-a-390-million-boost-the-digital-economy [last accessed 26.06.2024].

World Bank. (2024). *Digital Progress and Trends Report 2023.* Washington D.C.

Xinhua. (2023). *E-commerce platforms help build digital Silk Road*. Retrieved from: http://english.scio.gov.cn/m/beltandroad/2023-11/13/content_116811318.htm [last accessed 25.06.2024].

Yao, B., Shanoyan, A., Schwab, B., and Amanor-Boadu, V. (2023). The role of mobile money in household resilience: Evidence from Kenya. *World Development*, *165*, 106198.

GIGA

German Institute for Global and Area Studies
Leibniz-Institut für Globale und Regionale Studien