TECH FOR GOOD INSTITUTE

Strengthening the Philippine Digital Innovation Ecosystem

by the Tech for Good Institute and the National Development Corporation

Executive Summary

The Philippine digital innovation ecosystem is a network of institutions, resources, and stakeholders. This ecosystem has accelerated digital transformation and contributed to significant growth through the digital economy. The ecosystem may also be leveraged to advance national development goals, as seen in financial inclusion.

However, persistent challenges remain in governance, infrastructure and digital upskilling. Current policies and complex licensing processes increase entry barriers for service providers.

Digital infrastructure is largely concentrated in urban areas, limiting access for remote communities and vulnerable populations. Digital literacy and skills gaps need urgent attention if the Philippines is to remain competitive in the global economy.

Comprehensive initiatives in policy reform, capacity-building, implementation, research, and collaboration can address these vulnerabilities. Active engagement with the private sector and broader public will support the government in strengthening a digital innovation ecosystem for growth and public good.

1. Introduction

This policy brief highlights opportunities for improving the nation's digital innovation ecosystem by identifying structural constraints to its development. The findings are based on insights from a roundtable discussion Tech For Good Institute (TFGI) co-hosted with the National Development Company with representatives from the government, digital platforms, startups, and academic institutions advancing policy and business innovation in the country. These are supplemented with findings from TFGI research programmes on key areas of the SEA digital economy.

The brief explores the **constraints limiting the development of a robust and inclusive Philippine digital innovation ecosystem, namely digital infrastructure, policies and digital skills**. These are both limiting factors and enablers of the innovation ecosystem. Policy reforms, capacity-building, research, and coordination can address vulnerabilities and build resilience.

2. Context

An innovation ecosystem is a dynamic network of individuals, organisations, institutions, and resources that collaboratively drive the development, deployment, and application of technology, business models and processes for economic growth and public benefit. The policy environment can encourage such networks, while responsive policymaking can enable further innovation by setting the context for trusted adoption.

While innovation encompasses the entire journey from technology development to commercialisation, the research and development (R&D) community and startup ecosystem are subsets of the innovation ecosystem. Taken collectively, stakeholders in the innovation ecosystem include government, civic organisations, academia, corporate innovators and venture builders, investors, entrepreneurs, scientists, engineers and other individuals. The Philippine digital innovation ecosystem has witnessed significant advancements over the past few years. A major outcome of this progress is the accelerated growth of the nation's digital economy.

The Philippine digital economy is estimated at 31 billion dollars in 2024 in terms of gross merchandise value (GMV),[1] a 20 percent growth from the previous year. The country has also witnessed rapid growth and expansion of digital services. The share of digital payments as a share of monthly retail has grown from 42.1 percent in 2022 to 52.8 percent in 2023.[2] In addition, Filipino consumers with e-wallet accounts expanded by 52.8% from 257.5 million accounts in 2022 to 393.6 million accounts in 2023.[3] This uptake reflects more of the population accessing online channels for daily transactions.

This growth has been possible due to processes of digital transformation and the widescale adoption of digital systems throughout many sectors of the economy. The Philippine Development Plan highlights digital transformation as a key driver for achieving financial inclusion, enhancing government efficiency, and increasing livelihood and educational opportunities.[4] But successful digitalisation requires more than just technological development. It must also be pursued within an ecosystem that empowers stakeholders to deploy technology responsibly and also to achieve more than economic growth.

For instance, digital platforms have played a crucial role in bridging digital divides.[5] Using their inherent attributes of speed, accessibility, scale, and agility, platforms are able to pursue initiatives towards expanding livelihood opportunities, promoting sustainable choices, and advancing environmental goals. Promoting a robust innovation ecosystem ensures that digital transformation benefits all segments of society.

3. Gaps in Digital Infrastructure

Despite meaningful progress, barriers exist that can further widen digital access gaps and inequality if left unaddressed. Expanding digital services throughout the archipelago requires the expansive rollout of both physical and network infrastructure. In his third State of the Nation address, President Marcos highlighted the imperative of improving the country's digital infrastructure to enhance connectivity and achieve sufficient bandwidth capacity by 2026.[6] The government strategy for infrastructure deployment is laid out in the National Broadband Plan (NBP) - a five phase program to improve broadband access, speed and affordability.[7] The plan is crafted by the Department of Information and Communications Technology (DICT) and has key components including the completion of a national fibre backbone to connect all three major island groups, the creation of more cable landing stations and cellular towers, fiber optic buildups to connect government agencies, and greater outlays of satellite internet to connect geographically isolated areas. Other policy frameworks by executive agencies also seek to expedite the roll out of much needed infrastructure. The DICT's common tower policy passed in 2020 governs the shared use of passive telecommunication towers and infrastructure so that these assets can be utilised more efficiently.[8] Executive orders have also been passed for streamlining of permits and requirements for the deployment of network infrastructure.

Further investments in infrastructure such as cell towers, fibre coverage, data centres and energy resources are necessary to close the persistent gaps in internet access. The DICT estimates that an additional 60,000 cell towers are needed by 2031 to cover unserved and underserved areas.[9] Infrastructure for digital connectivity is needed for the continued growth of local industries. These include components spanning all parts of the network segment starting with cable landing stations to deliver internet bandwidth into the country. More cell towers, data centers, and fiber networks are needed to further distribute bandwidth, which must be facilitated by stable energy infrastructure. These network systems are needed to support the nation's business processing sector (BPO) which employs about 1.5 million Filipinos and requires consistent and reliable internet. The Philippines is also experiencing growth in the deployment of more data centres with cloud service and technology solutions providers setting up operations in the country. Accelerating growth in the data centre market requires adequate energy supply and available bandwidth to process the large volumes of data being stored.

4. Regulatory Challenges in Digital Governance

Effective governance enables innovation for bridging the digital divide. Developments in the nation's digital governance have sought to expand access to digital services while addressing key growth areas for the innovation ecosystem. Contemporary measures have been passed for ensuring quality, affordable, and accessible internet coverage for the population.

Given the nation's archipelagic geography, several remote communities are not reached by traditional broadband infrastructure. To address this constraint, alternative technologies such as satellite internet can be used to reach areas without wired connection. To this end, Executive Order 127 was issued in 2021 which promotes inclusive access to satellite internet services.[10] The order amended previous regulations that required entities to secure a congressional franchise before offering satellite internet. It simplified the licensing process which allowed the entry of more satellite providers to offer their services to remote areas. Amendments to the Public Services Act passed in 2022 is another significant economic legislation affecting the broadband sector. In particular, the law reclassified telecommunications services as a "public service" rather than a "public utility".[11] The constitution limits foreign ownership of public utilities to 40 percent, and so the reclassification has the effect of removing this limit and lessening restrictions on the entry of regional and foreign providers in the local market.

Besides access, other policies aim to increase trust within the ecosystem by increasing user protections and promoting online safety. The Internet Transactions Act (ITA) was passed in 2023 which aimed at building trust in e-Commerce by providing a regulatory framework for both consumer and merchant protection.[12] The legislation facilitates greater adoption of e-commerce through measures that guarantee safe and reliable digital transactions. The act also specifies the specific rights and obligations of e-commerce participants including digital platforms, online marketplaces, retailers, and online merchants. Other measures address the issue of online safety in light of the increasing prevalence and sophistication of fraud and scams online. The SIM Card registration act was passed in 2022 requiring all SIM cards to be registered before activation.

Lastly, policies have been issued towards the governance of particular emerging technologies. Both the Department of Science and Technology (DOST)[13] and the Department of Trade and Industry (DTI)[14] have formulated their AI strategies. Common priorities of these roadmaps include the advancement of AI policy and regulation, research and development, accelerating innovation through the strategic deployment of AI technologies, and workforce upskilling and competency building for future AI enabled work. Notably the DTI roadmap establishes the Center for AI research which will house AI experts researching on AI solutions for developmental concerns including sustainable agriculture, urban planning, and disaster resiliency. The Department of Information and Communications Technology (DICT) has also promulgated the Cloud First policy which prescribes the use of cloud-based enterprise solutions for the management of government data.[15]

Despite these advancements, several challenges still limit the ability of citizens to meaningfully participate in the innovation ecosystem. Several outdated policies exist that govern older technologies that are no longer in use today. Some policies explicitly limit competition and consolidate market control of the broadband market at the expense of consumers. Notably, the Philippines remains the only nation in the world that requires a legislative franchise for players to build a network and offer internet services.[16] Cumbersome licensing processes and overlapping requirements between national and local agencies hinder service providers from operating especially in remote areas. Despite e-government being a key priority of the current administration, several agencies still lag in automating their operations. Responsive policies can enable the growth of the nation's innovation ecosystem by attracting investments and increasing competitiveness. There is an opportunity for the country to incentivise more digital players and talent through digital governance.

5. Barriers in Digital Skills Uptake

The global economy requires today's workforce to have, at a minimum, foundational digital skills; with a significant share of jobs requiring intermediate, advanced, or specialised digital skills. For the Philippines to be competitive, it must prioritise the upskilling of its workforce to inculcate the competencies needed by industries adopting modern technologies. Demand for digital skills is increasing particularly for Philippine firms. In a survey of four Asian countries including the Philippines, 75% of employers reported a rise in demand for new highers with digital skills over the last five years.[17] A significant portion of the Filipino workforce is employed in the IT services and BPO industries. These services contribute significantly to the Philippine economy. But besides basic online services, there is a lesser supply of higher level IT professionals for managing complex digital systems. Specific jobs include IT, business and analytics management, software development, and cybersecurity. Data from JobStreet reveals that there is a shortage of 200,000 of these jobs that cannot be filed.[18] A study by USAID, DICT, and IBM also showed a shortage in the nation's cybersecurity talent pool with over 80 percent of the nation's cybersecurity experts opting to work overseas.[19]

Government initiatives have been launched to equip the nation's workforce with these needed skills. For instance, the Department of Trade and Industry (DTI) is spearheading the Philippine Skills Framework - an interagency effort which involves the development of sector-specific skills frameworks that will guide the country's workers in enhancing their skills for particular job roles.[20] The framework will also aid employers design progressive talent development plans and assist training institutions in revising their curricula. The Department of Information and Communications Technology implements the framework particularly for ICT related industries. They are also tasked to work with civic stakeholders including the Analytics Association of the Philippines (AAP) to equip the workforce with skills needed to excel in a data-driven economy.

At a more fundamental level, the nation faces challenges in addressing digital literacy gaps among the population. Data reveals that in 2019, only 2 percent of Filipino youth and adults could use basic arithmetic formulas in Excel, only 6 percent could copy and paste into a document, and 7 percent could attach a file into an email.[21] Another study found that only around 40 percent of Filipinos have at least one of the six information and communication technology skills monitored for the Sustainable Development Goals with literacy appearing to be the lowest among the young (10-14 years old) and the elderly (65 and above).[22]

6. Key Policy Considerations

Given the issues identified in digital infrastructure, digital governance and digital skills, there are key policies that the Philippines can consider to strengthen the digital ecosystem.

<u>Improving Digital Infrastructure</u>

- *Prioritise funding for programs specifically for internet access to remote areas*. Programs that bridge the digital divide require explicit funding commitments from the government. For instance, priority funding can be given to agencies such as the Department of Information and Communications Technology (DICT) to ensure effective implementation of the National Broadband Plan. The DICT can also prioritise existing programs to provide internet coverage such as the Free Wi-fi Program, and satellite internet initiatives for communities. Other agencies such as the Department of Education can push funding for projects that use digital tools to bridge educational gaps. These include providing resources for online learning and technologies to provide internet access to remote schools. Finance and economic planning agencies such as the National Economic Development Authority (NEDA), the Department of Finance (DOF), and the Department of Budget and Management (DBM) can address funding constraints for bigger ticket projects such as the rollout of the National Broadband Plan by engaging in public-private partnerships, or pursuing joint ventures with internal aid agencies and organisations.

- *Enhance local and interagency cooperation for implementation of existing infrastructure programs.* A whole-of-government approach is necessary to effectively implement digital infrastructure programs. For the national broadband plan, the DICT as primary implementor can effectively coordinate with both partner national agencies and local governments to streamline deployment permits and right of way obligations. Both the Office of the President and the DICT can enhance coordinating mechanisms such as inter-agency committees and regular consultations given that digital infrastructure deployment covers the jurisdiction of several agencies. Finally, the DICT can coordinate with partner agencies on joint monitoring and evaluation for long term projects, to collect data and findings on any bottlenecks to rollout.

- *Increase access to financing for small digital platforms and startups.* The agility of digital platforms and startups enables them to provide essential services especially where infrastructure and capacity is lacking. For instance, startups are using digital solutions to roll out fully electric fleets for logistics and paratransit systems, simultaneously addressing gaps in transport and environmental sustainability. However, smaller players still face increasing difficulty getting access to financing from both commercial and government banks in the country. Increased access to financing and greater liquidity can help these startups scale. Access to credit enables these platforms to invest in research and development for developing more business and technology innovations to their current operations. Government corporations such as the National Development Company (NDC) and the Development Bank of the Philippines (DBP) can coordinate with planning agencies such as the DOF and NEDA on increasing channels and lowering the barriers to credit for startups.

- *Engage with digital platforms and startups to troubleshoot implementation bottlenecks of priority development programs*. Digital platforms and startups are important implementors of priority government programs given their direct connection with local communities, consumers, and merchants. For instance, ride-hailing, paratransit, and electric fleet startups play a focal role in the government's Jeepney modernisation program. Part of the program involves introducing digital features to paratransit systems including cashless payments, and digital technologies for route-optimization. Platforms have perspectives on the challenges of adoption that can inform agency decisions for more effective implementation.

Enabling Responsive Digital Governance

Digital governance includes a broad range of tools and initiatives for more effective management of the innovation ecosystem. Governance includes tools such as specific policies, capacity building efforts, and cooperation towards effective program implementation. Recommendations on these initiatives include:

- *Forward policy reforms that incentivise market participation for digital service providers*. Reforms can be pursued that lower barriers to entry for market participation and promote a level playing field for offering essential internet services. The legislative branch can pass the Konektadong Pinoy bill which introduces a regulatory framework for internet services by simplifying the licensing process, promoting open access to passive infrastructure, and streamlining permits to make infrastructure deployment more efficient. Supporting Konektadong Pinoy and similar measures is a positive step towards increasing the quality of service, and allowing the entry of small players to service constituents outside of highly urbanised areas.

- *Promote corporate tax reforms to increase competitiveness and investments.* Corporate tax reforms can help increase technological investments, attract digital talent, and expand services to further boost the growth of the nation's innovation ecosystem. These measures also help realise the nations' aspirations of being a data centre hub for the region. For example, legislators can work with the Department of Finance and the National Economic Development Authority for measures such as rationalising both individual and corporate tax rates, revising taxation rules on equity compensation, and ensuring the effective processing of rebates under incentive schemes. These tax reforms can help increase the nation's profile as a digital investment destination.

- *Streamline efforts to digitalise operations of critical government agencies.* Agencies that provide crucial social services may well benefit from enhancing their digital systems, and seek to automate operations still based on less efficient and manual processes. For instance, agencies such as the Department of Social Welfare and Development which provides cash assistance can utilise platform solutions for automating digital payments that make disbursement and accounting easier to track. Agencies can also consider automating their internal systems in areas including data management, payroll, and basic office tasks. Finally, the Bureau of Internal Revenue (BIR) can further digitalize their tax collection processes through increased efficiency. Greater automation of tax collection reduces the burden of manual filing and increases revenue through improved tax administration.

- *Promote AI framework and guidelines establishing principles and guardrails.* AI roadmaps crafted by the Department of Trade and Industry (DTI) as well as the Department of Science and Technology (DOST) outline the strategic priorities of the country in terms of adopting AI technologies. However, more specific guidelines and a comprehensive framework, especially in a sectoral context, (e.g. energy, transport, banking) can help enforce concrete actions towards AI governance. A framework for instance can identify the specific mandates, roles, and responsibilities of each government agency in relation to AI. It can also identify non-negotiable principles and baselines that can guide stakeholders currently conducting research and application. Lastly, guidelines can be formulated towards developing mechanisms for fostering innovation. These include guidelines for the creation of regulatory sandboxes as a means of testing AI and other emerging technologies in a time-bound and performance-based manner.

<u>Skilling the Digital Society</u>

- *Partner with industry to design competency-based skills programs.* Government agencies implementing upskilling programs such as the Technical Education and Skills Development Authority (TESDA), the Department of Education (DepEd), and the Department of Trade and Industry (DTI) can consider engaging with industry associations, educational institutions, and digital platforms for designing their modules. Rapid innovation and technological advancements means that skills needed by firms are also constantly evolving. Initiatives including sustained dialogue and co-creation of curricula ensure that training is up-to-date and reflective of changing demands by industry. The national agencies mentioned can also actively collaborate to expand opportunities for increased knowledge transfer through internships, on-the-job training, or apprenticeship arrangements. These engagements widen opportunities for skills application and concrete practice.

- *Expand the variety of programs and certifications for digital skills.* These government agencies can also partner with educational institutions to expand career development pathways for future IT professionals. Besides expanding the number of degree programs, priority can also be given to short courses, certifications, and exchange programs that can also provide added qualifications to the work force. These agencies can also expand the number of incentives including scholarships, tenure, or financial support for IT professionals to work in the country.

- *Engage with digital platforms to further understand population usage of individual technologies.* Digital platforms have wide repositories of data from the use of their services. These can give insights on behaviour, adoption, and application of digital technologies by the population. Relevant government agencies such as the DICT, NEDA, and DTI can cooperate with platforms on secure data sharing to further understand the barriers to effective digital adoption on a granular level. These insights can enable agencies to further tailor fit their initiatives for increasing digital literacy and uptake. Platform engagement also provides opportunities to strengthen data protection measures, increasing the trust and buy in of the population by maintaining online safety.

The Philippines stands at a critical juncture in its digital transformation journey, where strategic actions can bridge existing gaps and empower a more inclusive digital future. The growth of the digital economy and expanding digital services underscore the potential of technology to enhance economic opportunities, improve service delivery, and foster social equity. Yet, without addressing the structural issues in governance, infrastructure, and digital literacy, the benefits of digitalization risk remaining inaccessible to many, particularly in underserved regions. By enacting forward-thinking policies, investing in digital infrastructure, and upskilling the workforce, the nation can fortify its digital innovation ecosystem to be more resilient and equitable. A collaborative approach that brings together government, industry, civic organisations, and academia will be essential in realising this vision. With sustained commitment and cooperation, the Philippines can transform its digital landscape into a foundation for sustainable development, inclusive growth, and global competitiveness, ensuring that all Filipinos benefit from the opportunities of a digital age. ↗

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