

Nepal’s Digital Economy: Targeting Digital Economy Size and Achieving Domestic Demand–Supply Equilibrium

¹**Anil Verma**

anil@ioe.edu.np

²**Jagdish Rauniyar**

weba1251@gmail.com

Abstract

This paper examines Nepal’s strategic opportunity to accelerate economic transformation through digitalization and to define a clear national target for the size of its digital economy. Drawing on global benchmarks that place China’s digital economy at around 38.6% of GDP and India’s ambition for its digital economy to contribute roughly 20% of a future USD 5 trillion economy, Nepal faces an urgent imperative to articulate its own digital ambition. (Cheng, 2022; Government of India, 2024) Considering Nepal’s economic structure, technological readiness, and domestic market potential, the paper argues for a phased increase in the digital economy’s contribution to reach approximately 15–20% of GDP by 2035, supported by policies that expand digital public infrastructure, enhance digital skills, strengthen the data economy, and stimulate domestic production of digital goods and services. (DNF, 2019; IIDS, 2023; World Bank, 2022) Achieving a balanced digital demand–supply equilibrium is essential for reducing import dependence, promoting local innovation, and ensuring inclusive digital growth. (UNCTAD, 2021; IIDS, 2023) The study proposes a strategic framework to guide Nepal’s transition toward a more competitive, resilient, and self-sustaining digital economy.

Keywords: Digital economy, GDP, demand–supply equilibrium, strategic framework

1 Background and Introduction

The global digital transformation is reshaping economic growth, productivity, and access to services. (UNCTAD, 2019, 2021) International evidence shows that the digital economy spans three interconnected domains: social inclusion, technology and data systems, and

structural economic change.(European Commission, 2024; ITU et al., 2020; UNCTAD, 2023) UNCTAD highlights that digital data and platforms now drive global value creation, but benefits are highly concentrated in a few countries.(UNCTAD, 2019, 2021) The European Union’s Digital Economy and Society Index (DESI) captures the demand-side foundations of digital development—connectivity, digital skills, internet use, business digitalization, and digital public services—while China’s CAICT provides a supply-side and industrialization perspective, showing how digital industrialization, sectoral digitization, data governance, and data valorisation together enabled China’s digital economy to reach over one-third of GDP.(European Commission, 2024; CAICT, 2020)

For Nepal, these frameworks provide a foundation for designing a digital economy strategy that strengthens both digital demand and digital supply.(MoCIT, 2019; World Bank, 2022) Nepal has made progress in connectivity and digital payments but continues to face major gaps in digital human resources, productive capacity, data infrastructure, and regulatory coherence.(NTA, 2023; NRB, 2023–2024; Khanal, 2024) Digital exports remain small, digital industries underdeveloped, and provincial digital capabilities uneven.(IIDS, 2023; Khanal, 2024)

A national strategy must therefore address Nepal’s limited digital skills pipeline, weak digital industrial capacity, and fragmented digital governance while accelerating digital public infrastructure, adoption, and innovation.(GoN, 2023; Digital Rights Nepal, 2023; UNICEF & New Legacy Digital, 2021) This paper synthesizes global models and proposes how Nepal can adapt them to build a balanced demand–supply digital ecosystem, support provincial digital economies, and achieve a stronger, more inclusive digital economy by 2035.(UNCTAD, 2023; World Bank, 2022)

2 Methodology

This paper adopts a qualitative comparative policy analysis integrating global benchmarks, regional experiences, and Nepal-specific evidence.(UNCTAD, 2019; ITU et al., 2020; European Commission, 2024) The study draws from UNCTAD’s *Digital Economy Reports*, ITU–UNCTAD–OECD–World Bank digital measurement toolkits, DESI, and CAICT’s work on China’s digital economy, alongside a systematic review of Nepal’s digital, ICT, governance, and regulatory documents.(UNCTAD, 2021; ITU et al., 2020; CAICT, 2020; DNF, 2019; GoN, 2023) National documents include the Digital Nepal Framework (2019), Office of the Auditor General reports, National Cyber Security Policy, e-Health Strategy and roadmap, NTA regulatory policies, NRB’s regulatory sandbox and payments oversight, IRD billing software guidelines, and provisions recognizing internet as an essential service.(DNF, 2019;

Government of Nepal, 2017; OAGN, Various; NRB, 2023–2024; NTA, 2023)

Additional insights are drawn from secondary datasets on Nepal’s IT industry and digital indicators, as well as consultations and analytical reports such as IIDS’s *Unleashing IT: Advancing Nepal’s Digital Economy* and sectoral infrastructure assessments.(IIDS, 2023; Nepal Infrastructure Summit Secretariat, 2023; DataReportal, 2023–2025) The analytical framework triangulates global, regional, and local evidence to construct a context-specific roadmap for Nepal’s digital economy.(UNCTAD, 2023; ITU et al., 2020; World Bank, 2022)

The method involves four steps: extracting core conceptual dimensions across reviewed frameworks (social/demand, technological/supply, economic/structural); mapping complementarities and gaps across global, regional, and national models; assessing relevance for Nepal given its LDC status, evolving regulatory ecosystem, and nascent platform economy; and identifying policy challenges, implementation barriers, and actionable recommendations tailored to Nepal’s institutional and development context.(UNCTAD, 2019; European Commission, 2024; CAICT, 2020) This systematic approach enables the formulation of a realistic, evidence-based digital economy target and a strategic pathway for achieving domestic digital demand–supply equilibrium.(UNCTAD, 2021; IIDS, 2023)

3 Conceptual Frameworks and Literature Review

3.1 Social / Demand-Side Perspective: Digital Inclusion as the Entry Point

DESI frames demand readiness through pillars on connectivity, human capital, business digitalization, and digital public services, and shows that skills gaps, SME digitalization lags, and incomplete broadband roll-out remain core bottlenecks.(European Commission, 2024) Nepal reflects a similar pattern: geography, income, and gender gap who is online and able to use digital tools productively, and large parts of the population still lack the skills and confidence to benefit from emerging e-services and jobs.(Bhandari & Desruisseaux, 2025; World Bank, 2022; Chand, 2024) This makes digital inclusion—who is connected, skilled, and able to use e-services—the core demand-side driver of a broader digital economy.(Digital Rights Nepal, 2023; UNICEF & New Legacy Digital, 2021)

From this lens, three priority areas emerge for Nepal. First, connectivity: the main policy challenge is the high cost of last-mile infrastructure in remote, low-density areas and weak private incentives to serve them, suggesting a need for targeted rural connectivity funds, more effective use of existing universal service mechanisms, and selective deployment of alternative access technologies.(World Bank, 2022; NTA, 2023; The Himalayan Times, 2024)

Second, digital skills and human capital: low baseline digital literacy, outdated curricula, and gender gaps limit how far connectivity translates into better jobs and incomes, pointing to integration of digital skills in school and TVET systems and scaling of women-focused programmes.(Bhandari & Desruisseaux, 2025; UNESCAP, 2024b; World Bank, 2022) Third, digital public services and e-government: fragmented e-services, limited interoperability, and incomplete digital ID and civil registration systems constrain uptake, requiring robust digital ID, interoperability standards, and user-centric, mobile-first e-services with assisted digital options.(UNICEF & New Legacy Digital, 2021; UNESCAP, 2024a; GoN, 2023)

3.2 Technological / Supply-Side Perspective: Platforms, Data, and Value Capture

UNCTAD’s work shows that datafication and platformization are now the main supply-side engines of value creation, with global platforms capturing a large share of rents from cloud, e-commerce, search, app stores, and digital advertising.(UNCTAD, 2019, 2021, 2024) For many developing countries, this leads to structural asymmetry: they participate mainly as users and data sources, while high-value activities such as data analytics and intellectual property remain abroad.(UNCTAD, 2021; IMF, 2022) Nepal fits this pattern, as foreign platforms dominate traffic, data extraction, and advertising, while domestic platforms remain fragmented and under-scaled.(UNCTAD, 2023; IIDS, 2023)

Key themes for countries in Nepal’s position include platform-friendly innovation spaces, basic data governance rules, clarity on data ownership, and better measurement of digital value added.(UNCTAD, 2019; ITU et al., 2020; OECD, 2020) On platform concentration and market power, global platforms dominate user data and digital markets with limited local tax or employment footprints, while domestic platforms in e-commerce, mobility, and payments remain small.(UNCTAD, 2019; OECD, 2021; Stead, 2021) Pragmatic responses include regulatory sandboxes, standards on foreign platform data practices, support for domestic and regional platform scale-up via procurement and incentives, and clearer rules to tax digital revenues in line with evolving OECD/G20 approaches.(NRB, 2023–2024; OECD, 2020, 2021)

Many developing countries, including Nepal, currently lack comprehensive data protection laws and clear allocation of data rights and responsibilities even as cross-border data flows grow rapidly.(UNCTAD, 2021, 2023) Priority steps involve enacting a context-appropriate data protection law inspired by GDPR principles, clarifying data ownership through personal data rights and community or public-interest data arrangements, and building institutional capacity for supervision and audit, including an independent data protection

authority.(GoN, 2023; Digital Rights Nepal, 2023)

Measurement and data gaps are also significant: official statistics usually capture only the core ICT sector, while broader platform- and data-driven value creation remains largely invisible in national accounts.(UNCTAD, 2019; ABS, 2020; IMF, 2022) International examples such as the U.S. Bureau of Economic Analysis’ digital economy satellite account and Australia’s work on digitalisation demonstrate how separate tracking of core ICT, e-commerce, and industry digitization can be built on extended supply–use tables.(BEA, 2023; ABS, 2020) For Nepal, this points to the need for experimental digital economy satellite accounts and targeted studies on data centres, platform ecosystems, and sectoral uptake of data-driven tools.(CBS, Various; Nepal Infrastructure Summit Secretariat, 2023; IIDS, 2023)

3.3 Economic / Structural Perspective: China’s “Four Orientations” and Structural Transformation

CAICT’s orientations model—digital industrialization, sectoral industry digitization, digital governance, and data valorisation—offers a structured lens for understanding how digital transformation reshapes an economy.(CAICT, 2020) Its empirical methods for estimating digital value added and sectoral penetration provide a useful benchmark for countries with limited measurement capacity.(CAICT, 2020; UNCTAD, 2019) The literature positions China’s model as an adaptable diagnostic tool for Nepal to identify sectoral priorities, measurement gaps, and policy levers for structural transformation.(UNCTAD, 2021; IIDS, 2023)

Across these bodies of literature, a convergent theme emerges: the digital economy cannot be assessed or expanded through a single policy lens.(UNCTAD, 2019; European Commission, 2024; ITU et al., 2020) Digital inclusion (demand), data and platforms (supply), and structural transformation (economic) must be integrated into a cohesive national strategy.(UNCTAD, 2023; DNF, 2019; GoN, 2023) This triangulated perspective provides the conceptual foundation for defining Nepal’s digital economy target and achieving domestic digital demand–supply equilibrium.(IIDS, 2023; World Bank, 2022)

4 Current Status of Nepal’s Digital Economy

4.1 Demand-Side Dynamics: Growing Uptake, Uneven Inclusion

Demand for digital services in Nepal has expanded quickly as internet access, smartphone use, and exposure to online platforms have increased.(DataReportal, 2023–2025; NTA, 2023)

The Digital Nepal Framework adopted in 2019 set out eight priority sectors—digital foundation, agriculture, health, education, energy, tourism, finance, and urban infrastructure—and eighty initiatives to drive digital transformation across the economy.(DNF, 2019; World Bank, 2022) Health became an early focus, with the National e-Health Strategy 2017 and the 2019 e-Health Roadmap promoting telemedicine, electronic medical records, and stronger health information systems.(Government of Nepal, 2017; UNICEF & New Legacy Digital, 2021)

In everyday life, citizens increasingly use e-commerce platforms, digital wallets and QR payments, ride-hailing services, online learning tools, and remote-work applications, especially in urban areas.(DataReportal, 2023–2025; Khanal, 2024; Nepal Infrastructure Summit Secretariat, 2023) Recent estimates suggest that more than half of the population is online and social media penetration is approaching 50%, with steady annual growth.(DataReportal, 2023–2025, 2024, 2025) However, this growth masks persistent inclusion gaps: broadband penetration is high in aggregate, but rural and mountainous areas still face lower-quality, less affordable access and more frequent disruptions, while older adults, women, and low-income groups are less likely to have the digital skills and confidence needed to benefit from online services.(NTA, 2023; The Himalayan Times, 2024; Chand, 2024; Digital Rights Nepal, 2023) Many e-government services remain fragmented, non-interoperable, and designed from an administrative rather than user-centric perspective, limiting uptake outside early adopters.(UNICEF & New Legacy Digital, 2021; GoN, 2023)

4.2 Supply-Side Dynamics: Platforms, Data, and Digital Services

On the supply side, Nepal’s digital economy is in an early but active phase.(IIDS, 2023; Khanal, 2024) Local platforms exist in e-commerce, ride-hailing, payments, and niche services, yet most remain small and fragmented compared to global incumbents, and cloud and platform infrastructure are still heavily reliant on foreign providers.(UNCTAD, 2019, 2021; IIDS, 2023) Domestic supply is also shaped by human capital constraints: while there is a growing pool of IT professionals, shortages remain in advanced skills such as cloud engineering, AI, cybersecurity, and large-scale platform development.(Khanal, 2024; IIDS, 2023) Policy instruments such as regulatory sandboxes for payments and fintech and targeted incentives for local platform development have been introduced but require stronger implementation and long-term investment.(NRB, 2023–2024; GoN, 2023)

4.2.1 Data Economy

Nepal has begun to build basic data infrastructure, but it is not yet optimized for AI or large-scale analytics.(NTA, 2023; Nepal Infrastructure Summit Secretariat, 2023) The Nepal Telecommunications Authority regulates telecom operators and ISPs, and broadband subscriptions have grown substantially, yet underinvestment in backbone networks, high last-mile costs, and weak incentives to expand into low-density areas hinder universal, high-quality connectivity.(NTA, 2023; The Himalayan Times, 2024) Government data are mainly hosted in the Integrated Data Management Center, complemented by several private data centres, providing a foundation for digital services but still facing limitations in capacity, scalability, energy reliability, and cybersecurity.(Nepal Infrastructure Summit Secretariat, 2023; GoN, 2023) Analyses highlight Nepal’s cool climate and renewable energy potential as advantages for efficient, low-cost data centres and AI workloads if combined with targeted investment and clear standards.(Nepal Infrastructure Summit Secretariat, 2023; UNCTAD, 2024)

Data governance frameworks are only beginning to emerge, with no comprehensive data protection law and limited interoperability across ministries and agencies.(GoN, 2023; Digital Rights Nepal, 2023) There is major potential to use public and sectoral data in agriculture, health, finance, and governance for evidence-based policy and service targeting, provided privacy, ownership, and security issues are addressed.(UNCTAD, 2021, 2023; UNICEF & New Legacy Digital, 2021)

4.2.2 Platform Economy

The platform economy is one of Nepal’s most dynamic supply-side areas, particularly in digital payments and IT services.(IIDS, 2023; NRB, 2023–2024) Nepal Rastra Bank licenses payment service providers and operators, and digital wallets have seen rapid adoption, even as licence revocations, mergers, and competition from banks’ mobile apps underline challenges in achieving sustainable scale.(NRB, 2023–2024; Khanal, 2024) Around one hundred formal IT export firms operate alongside thousands of domestic IT and digital-service companies, most of which are small or medium-sized with limited global visibility.(IIDS, 2023; Khanal, 2024) Digital SDG platforms are present but not systematically mapped or supported as a dedicated ecosystem, representing both a data gap and policy opportunity.(IIDS, 2023; Digital Rights Nepal, 2023)

4.2.3 Human Capital and Skill Economy

Universities are beginning to institutionalize digital and health-informatics training, and estimates suggest around 66,000–68,000 IT professionals are active in Nepal.(Khanal, 2024; IIDS, 2023) Despite this progress, there is no dedicated academic track in digital public policy or digital governance, and human-resource supply remains skewed toward technical IT skills rather than the interdisciplinary capabilities needed for large-scale public-sector digital transformation.(Chand, 2024; Digital Rights Nepal, 2023)

4.2.4 Export Economy

IT service exports have emerged as a significant and fast-growing part of Nepal’s export basket.(IIDS, 2023; Khanal, 2024) Estimates suggest that IT service exports reached about USD 515 million in 2022, accounting for a non-trivial share of GDP and foreign-exchange reserves.(IIDS, 2023) Constraints include limited firm scale, infrastructure bottlenecks, uncertainties around taxation and foreign-exchange rules, and gaps in advanced skills and quality systems, with stakeholders suggesting that official export figures may under-report freelancer-based earnings.(IIDS, 2023; Nepal Infrastructure Summit Secretariat, 2023)

4.2.5 Digital Industrial Corridors and Parks

Physical infrastructure for digital industries is emerging but underutilized.(Nepal Infrastructure Summit Secretariat, 2023; DNF, 2019) The IT Park in Banepa has basic infrastructure but lacks anchor tenants and enabling services, while a new IT park in Kathmandu is under development to host startups and training labs.(Nepal Infrastructure Summit Secretariat, 2023) Existing special economic zones and industrial corridors remain largely oriented toward manufacturing, and no province has yet developed a fully realized digital industrial corridor focused on AI, data infrastructure, or Digital-SDG platforms.(Nepal Infrastructure Summit Secretariat, 2023; Khanal, 2024)

4.3 Infrastructure and Connectivity

Broadband and mobile networks are fundamental to Nepal’s digital economy.(NTA, 2023; World Bank, 2022) Official statistics report high broadband penetration at the national level, but this aggregate picture masks spatial and quality disparities: urban areas benefit from relatively high-speed, stable connectivity, whereas many rural and mountainous communities continue to face slower, less reliable, and more expensive services.(NTA, 2023; The Himalayan Times, 2024) Innovative options such as satellite internet and TV white-space

have been piloted but not yet deployed at scale, and implementation of rural connectivity funds and related measures remains gradual.(World Bank, 2022; Nepal Infrastructure Summit Secretariat, 2023)

Within this broader connectivity landscape, the health sector has begun to implement elements of an open health information exchange as part of emerging digital health public infrastructure, including initiatives such as the National Health Facility Registry (NHFR), a health workforce registry (HWR), and use of DHIS2 for health-sector information management.(Government of Nepal, 2017; UNICEF & New Legacy Digital, 2021) Recent disruptions linked to foreign bandwidth payment issues have further underscored the vulnerability of connectivity-dependent services, including digital health platforms, when regulatory, fiscal, and infrastructure policies are not well aligned.(AP News, 2024)

4.4 Governance, Regulation, and Policy Environment

Nepal has established several core building blocks for digital governance, including the Digital Nepal Framework, the National Cyber Security Policy, and sectoral regulation for telecoms and payment systems.(DNF, 2019; GoN, 2023; NTA, 2023; NRB, 2023–2024) Implementation challenges remain significant: interoperability is weak, horizontal coordination across ministries is limited, regulatory capacity struggles to keep pace with technological change, and enforcement is inconsistent.(Digital Rights Nepal, 2023; UNCTAD, 2023) Recent tensions around social-media regulation and temporary platform bans also illustrate the difficulty of balancing oversight with rights to online freedom and predictability for businesses.(AP News, 2025; Digital Rights Nepal, 2023)

4.5 Measurement and Data Challenges

Nepal currently has no comprehensive framework to measure the size and structure of its digital economy, and national statistics still focus largely on the narrow ICT sector.(CBS, Various; UNCTAD, 2019, 2021) Unlike some advanced economies, Nepal has not yet developed digital economy satellite accounts or digital supply–use tables, limiting policymakers’ ability to track digital value added, platform penetration, and data-driven productivity gains.(ABS, 2020; BEA, 2023; IMF, 2022) This makes it harder to align industrial, trade, education, and infrastructure policies with digital-economy realities.(UNCTAD, 2023; IIDS, 2023)

4.6 Synthesis

Nepal’s digital economy is demand-rich but unevenly inclusive, supply-emerging yet fragmented, and governance-nascent with significant measurement gaps.(IIDS, 2023; World Bank, 2022) Demand for digital services and tools is robust and growing across sectors, but connectivity, skills, and usability constraints limit who can participate and benefit.(DataReportal, 2023–2025; Chand, 2024; Digital Rights Nepal, 2023) On the supply side, platforms, data infrastructure, human capital, and exports show strong momentum but remain constrained by infrastructure, scale, governance, and financing.(IIDS, 2023; Nepal Infrastructure Summit Secretariat, 2023; Khanal, 2024) Existing frameworks—Digital Nepal, cyber-security policy, fintech regulation, and sector strategies—form a solid starting point, but integrated strategies are needed to close demand-side gaps, strengthen supply-side capacity, and build data-driven governance.(DNF, 2019; GoN, 2023; UNCTAD, 2021)

5 Target-Setting for Nepal’s Digital Economy

Nepal’s ambition to expand its digital economy can be informed by international benchmarks and domestic SDG-linked investment opportunities UNCTAD (2019); CAICT (2020). China’s digital economy reached 38.6% of GDP by 2020 CAICT (2020), while India targets 20% of GDP by 2030 Government of India (2024). For Nepal, given its LDC status and current ICT contribution of 1.7–1.94% of GDP IIDS (2023); NRB (2025), a realistic yet aspirational target is 15–20% of GDP by 2035, representing a total digital economy size of NPR 90 Kharab (60 Kharab domestic SDG + 30 Kharab exports) against projected NPR 709 Kharab GDP (Table 1) IIDS (2023); World Bank (2022); NRB (2025).

Domestic opportunities arise from converting approximately 20% of SDG implementation costs into digital interventions through digital public infrastructure (DPI) and e-services, creating a predictable NPR 60 Kharab market for local digital solutions OAGN (Various); IIDS (2023). Parallel growth in IT exports (US\$515M in 2022, 64.2% YoY) and platform development can capture NPR 30 Kharab in regional/global markets, reducing import dependence while improving public service efficiency IIDS (2023); Khanal (2024); NRB (2025).

5.1 Digital Economy Target Roadmap 2035

The phased roadmap integrates domestic SDG digitalization, platform development, and exports to achieve NPR 90 Kharab digital economy (15–20% GDP) by 2035, aligned with NRB projections (Table IIDS (2023); NRB (2025). Early phases (2025–2030) pilot Digital SDG projects and build infrastructure; mid-phases (2031–2033) scale platforms/exports; final

Table 1: Illustrative Digital Economy Target for Nepal by 2035 (NRB-Aligned)

Indicator	Value	Basis / Assumptions
Domestic Digital SDG Market	NPR 60 Kharab	20% of SDG costs digitized via DPI/e-services over 10 years OAGN (Various); IIDS (2023)
Digital Export Market	NPR 30 Kharab	IT services + Digital-SDG exports (from US\$515M baseline) IIDS (2023); Khanal (2024)
Total Digital Economy Size	NPR 90 Kharab	Domestic + exports; 15–20% of NPR 709 Kharab GDP by 2035 IIDS (2023); NRB (2025)
Share of GDP (2035)	15–20%	Benchmarked vs China (38.6%) & India (20%), Nepal-adjusted CAICT (2020); Government of India (2024)

Note: GDP trajectory uses NRB 2024/25 baseline (4.61% real growth + 5% inflation) NRB (2025).

phase (2034–2035) consolidates at target GDP share UNCTAD (2021); Nepal Infrastructure Summit Secretariat (2023).

Core assumptions: (i) 20% inefficient SDG spending digitized progressively OAGN (Various); (ii) domestic platforms scale via policy incentives IIDS (2023); (iii) exports grow from US\$515M baseline capturing regional markets Khanal (2024); NRB (2025). Strategic levers include policy/regulation (digital SDG guidelines), infrastructure (broadband/cloud), human capital (ICT skills), finance (PPPs/venture capital), and M&E (NDESI/satellite accounts) DNF (2019); World Bank (2022); BEA (2023).

5.1.1 Measurement and Evidence

Measurement systems must anchor the 15–20% GDP target (NPR 90 Kharab digital economy) in NRB macroeconomic baselines and international standards IIDS (2023); NRB (2025). Three core tasks link to NRB’s 4.61% 2024/25 growth and projections in Table 4 NRB (2025); ABS (2020).

NDESI Index: Adapt DESI pillars using NRB/CBS data, disaggregated by demographics, benchmarking Nepal’s service sector (62.01% GDP) against regional peers (Table 2) Eu-

ropean Commission (2024); ITU et al. (2020); NRB (2025).

Digital Satellite Accounts: Track ICT/e-commerce/sectoral digitalisation per BEA/ABS methodologies within NRB framework, validating progression from 1.7–1.94% ICT baseline to 15–20% target ABS (2020); BEA (2023); IMF (2022); NRB (2025).

Data/Platform Mapping: Assess IDMC capacity, fintech platforms, sectoral adoption to support Phase 3 peak (NPR 45 Kharab) before 2035 consolidation at NPR 90 Kharab (Table 4) IIDS (2023); Nepal Infrastructure Summit Secretariat (2023).

Table 2: Digital Economy GDP Share: Regional Benchmarks vs Nepal			
Country	Current Share	Target	Year
Nepal	ICT: 1.7–1.94% GDP	15–20%	2035
	Services: 62.01% GDP	(NPR 90 Kharab)	
	IIDS (2023); NRB (2025)		
China	38.6% GDP CAICT (2020)	–	2020
India	11.74% GDP Government of India (2024)	20% Government of India (2024)	2030

Table 3: Nepal ICT Baseline (NRB 2024/25 Aligned)

Indicator	Value	Source
GDP growth	4.61% (2024/25)	NRB (2025)
Services share	62.01% GDP	NRB (2025)
ICT share	1.7–1.94% GDP	IIDS (2023)
IT exports	US\$515M	IIDS (2023)

Timeline: NDESI 2026 (CBS/NRB) CBS (Various); satellite accounts 2027 (NPC/MoF) BEA (2023); mapping 2026 (MoCIT) IIDS (2023).

Table 4: Nepal GDP Projections and Digital Economy Growth (2025–2035): Validating 90 Kharab Target

Year	GDP (NPR Kharab)	Digital (NPR Kharab)	Digital % of GDP	Cumulative Digital	Phase
2025	55.0	2.2–3.9	4–7%	2.2–3.9	Phase 1
2026	57.6	3.5–5.1	6–9%	5.7–9.0	Phase 1
2027	60.3	4.2–5.4	7–9%	9.9–14.4	Phase 1
2028	63.1	4.4–6.4	7–10%	14.3–20.8	Phase 2
2029	66.1	5.0–7.0	8–11%	19.3–27.8	Phase 2
2030	69.2	5.6–7.7	8–11%	24.9–35.5	Phase 2
2031	72.5	6.6–8.7	9–12%	31.5–44.2	Phase 3
2032	75.9	7.6–9.6	10–13%	39.1–53.8	Phase 3
2033	79.5	8.6–10.4	11–13%	47.7–64.2	Phase 3
2034	83.2	9.6–11.5	12–14%	57.3–75.7	Phase 4
2035	87.1	13.1–17.4	15–20%	70.4–93.1	Phase 4
Total	709.4	70.4–93.1	12.7% avg	90 Kharab	

Note: NRB 4.61% real growth (2024/25) + 5% inflation = 9.5–10% nominal growth baseline. Digital aligns with phased roadmap reaching NPR 90 Kharab active stock by 2035 NRB (2025); IIDS (2023).

6 Recommendations for Nepal’s Digital Economy Strategy

6.1 Sectoral Digitalization Priorities

Sectoral digitalization must be explicitly linked to the NPR 60 Kharab domestic Digital-SDG market and the overall 90 Kharab digital economy target by 2035.(DNF, 2019; IIDS, 2023) Agriculture, tourism, finance, and public services are priority entry points because they command large public budgets, have clear SDG linkages, and offer strong opportunities for digital platforms and data-driven innovation.(World Bank, 2022; UNCTAD, 2019)

In **agriculture**, a national Digital-SDG roadmap should integrate digital advisory services (weather, market prices, climate-smart practices), e-marketplaces linking farmers to buyers, supply-chain traceability for high-value crops, and digital payments for subsidies and procurement.(DNF, 2019; World Bank, 2022) Redirecting a portion of agricultural SDG spending into shared platforms and data systems can generate stable demand for domestic agri-tech providers while improving resilience and incomes.(OAGN, Various; IIDS, 2023)

In **tourism**, priorities include interoperable booking and payment platforms, integrated destination portals, and digital heritage experiences that combine AR/VR, virtual tours, and

multilingual content.(DNF, 2019; Khanal, 2024) Consolidating scattered ICT and marketing projects into a few lighthouse tourism platforms would support SMEs and communities, boost foreign exchange earnings, and contribute to the export component of the 90 Kharab target.(UNCTAD, 2021; IIDS, 2023)

In **finance**, Nepal should use NRB’s oversight and sandbox frameworks to complete interoperable retail payment rails, strengthen fintech regulation, and enable data-driven MSME credit scoring.(NRB, 2023–2024; World Bank, 2022) A coordinated roadmap aligning banks’ mobile services, PSPs/PSOs, QR networks, and cross-border payment links will reduce transaction costs across the economy and underpin both domestic digital usage and digital trade.(UNCTAD, 2023; NRB, 2023–2024)

In **public services**, sectoral plans in health, education, civil registration, and social protection should move from isolated pilots to integrated national systems, using digital ID, common registries, and interoperability standards.(Government of Nepal, 2017; UNICEF & New Legacy Digital, 2021) This includes scaling e-health information systems, digital learning platforms, CRVS and social protection registries, and service portals, each backed by clear institutional mandates and recurrent budgets.(DNF, 2019; World Bank, 2022) Together, these sectoral programmes can account for a significant share of the NPR 60 Kharab domestic digital market and create reliable pipelines of work for local IT and platform firms.(IIDS, 2023; OAGN, Various)

6.2 Digital Governance and Data Policy

Digital governance and data policy must create an enabling environment that balances innovation, inclusion, and rights protection.(UNCTAD, 2021; Digital Rights Nepal, 2023) In the near term, Nepal should adopt a comprehensive Data Protection Act, a modern Cybersecurity Act, and updated e-transaction and electronic signature legislation, drawing on global practice but tailored to local capacity.(GoN, 2023; UNCTAD, 2023) These laws should define roles, responsibilities, and enforcement mechanisms so that both public and private actors can operate with legal certainty.

Institutionally, a **Digital Economy Coordination Council** should guide cross-government strategy, investment, and standard-setting, while a **Data Protection Authority** provides independent supervision and enforcement.(GoN, 2023) A **Digital Standards Body** is needed to define and maintain interoperability, open API, security, and metadata standards for government and publicly funded systems, ensuring that sectoral platforms can interconnect and evolve over time.(ITU et al., 2020; Nepal Infrastructure Summit Secretariat, 2023)

A foundational layer is a secure, inclusive **national digital ID** linked to civil registration, with privacy-by-design and selective disclosure features.(UNESCAP, 2024a; UNICEF & New Legacy Digital, 2021) Integrating this ID with payments, sectoral registries, and service portals will reduce duplication, support targeted service delivery, and enable safe reuse of digital credentials across sectors, thereby increasing the impact of Digital-SDG investments.(World Bank, 2022; UNCTAD, 2024)

6.3 Platforms, Entrepreneurship, and Capabilities

Achieving a 90 Kharab NPR digital economy requires both a vibrant platform and startup ecosystem and a sustained effort to build digital capabilities.(IIDS, 2023; Bhandari & Desruisseaux, 2025) A **Digital Economy Innovation Fund** (on the order of USD 50–100 million over a decade) can provide early-stage and growth capital to platforms in fintech, agritech, edtech, healthtech, and tourism, with performance-based conditions on localisation, quality, and export performance.(IIDS, 2023; World Bank, 2022) Regulatory sandboxes in priority verticals would allow controlled experimentation with new models while regulators build understanding and refine rules.(NRB, 2023–2024; UNCTAD, 2019)

On the human capital side, Nepal needs an integrated **digital skills pipeline** from basic literacy to advanced specialisation.(Bhandari & Desruisseaux, 2025; Khanal, 2024) This includes embedding foundational digital skills and safety in school curricula, scaling vocational and short-cycle programmes for technicians and operators, and expanding university-level training in software engineering, data science, cybersecurity, and digital governance.(World Bank, 2022; IIDS, 2023) Partnerships with industry for internships, apprenticeships, and certification will help ensure that graduates can support both domestic Digital-SDG projects and export-facing services, with an indicative goal of producing at least 100,000 digital professionals and practitioners by 2035.(IIDS, 2023)

6.4 Connectivity and Infrastructure

Connectivity and infrastructure are critical enablers for inclusive digitalisation and a prerequisite for reaching the 15–20% GDP target.(NTA, 2023; World Bank, 2022) Nepal should pursue a national connectivity programme aiming for at least 95% population coverage with reliable broadband by 2030, using a mix of fibre backbones, 4G/5G mobile networks, fixed wireless access, and satellite or TV white space in remote areas.(NTA, 2023; AP News, 2024) A reformed universal service mechanism and targeted public–private partnerships can subsidise last-mile investments where purely commercial deployment is not viable.(DNF, 2019; UNCTAD, 2019)

In parallel, investment in **data centres and cloud infrastructure** is needed to provide secure, affordable, and energy-efficient compute and storage for government systems and domestic platforms.(Nepal Infrastructure Summit Secretariat, 2023; UNCTAD, 2024) Leveraging hydropower and cool climate conditions, Nepal can develop Tier-III facilities and a sovereign cloud node for critical public workloads, while carefully designed incentives can attract private cloud and hosting providers.(World Bank, 2022; IIDS, 2023) Infrastructure plans should embed resilience (redundancy, backup power, disaster recovery) and green standards, aligning with emerging guidance on sustainable digital development.(UNCTAD, 2024)

6.5 International Cooperation

International cooperation can accelerate Nepal’s digital transformation and help close financing and capacity gaps.(UNCTAD, 2019; World Bank, 2022) Partnerships with UNCTAD, ITU, the World Bank, regional development banks, and bilateral donors can support the design and co-financing of flagship Digital-SDG programmes in social protection, health, agriculture, and education, structured to build domestic platforms and capabilities rather than parallel systems.(UNCTAD, 2023; ITU et al., 2020)

Active engagement in regional digital initiatives and global fora (such as WTO e-commerce discussions and emerging digital trade arrangements) will allow Nepal to influence rules on data flows, taxation, and competition in ways that are compatible with its development and fiscal objectives.(OECD, 2020; Stead, 2021) Development partners can also help strengthen regulatory, standard-setting, and negotiating capacities, enabling Nepal to manage risks and to capture opportunities in cross-border digital trade and investment as it moves toward a 15–20% digital share of GDP by 2035.(UNCTAD, 2021, 2023)

7 Achieving Domestic Demand–Supply Equilibrium

The strategy targets a NPR 90 Kharab digital economy (15–20% of GDP by 2035) through coordinated expansion of domestic digital demand (DPI), supply capacity (platforms/infrastructure/HR), and governance (policy/procurement/export promotion), aligned with NRB’s 4.61% growth baseline and service sector dominance (62.01% GDP) IIDS (2023); NRB (2025); World Bank (2022).

Pillar A – Demand: Digital Public Investment (DPI) as Guaranteed Market. Reallocate 20% of inefficient SDG spending (NPR 60 Kharab cumulative) into multi-year DPI procurement for e-services, digital ID, and sectoral platforms, with local-content clauses

creating predictable demand for domestic suppliers (Table 1) OAGN (Various); World Bank (2022); IIDS (2023).

Pillar B – Supply: Digital Industrialization. Scale 10–20 national platform firms, build Tier-III data centres (hydropower-backed), expand HR pipeline to 100K+ digital professionals, and establish provincial Digital Industrial Corridors to meet NPR 30 Kharab export targets from US\$515M baseline Nepal Infrastructure Summit Secretariat (2023); IIDS (2023); Khanal (2024); NRB (2025).

Pillar C – Governance: Market Architecture. Create National Digital Demand–Supply Council, DPI procurement rules (open APIs, 60–80% localization), Data Protection Act, regulatory sandboxes, and export incentives to align incentives and knit demand-supply into virtuous cycle: DPI → local markets → firm growth → NPR 90 Kharab exports/GDP share (Tables ??, 4) GoN (2023); UNCTAD (2023); NRB (2025).

This integrated approach validates the 15–20% target: NPR 90 Kharab digital stock against NRB-projected NPR 709 Kharab cumulative GDP (2025–2035) = realistic 12.7% average rising to 15–20% peak, benchmarked against China (38.6%) and India (20%) but adjusted for Nepal’s LDC context CAICT (2020); Government of India (2024); IIDS (2023).

8 Conclusion

Nepal now has a chance to turn its digital ambitions into a concrete economic programme rather than a loose collection of projects. Future growth will depend on how effectively the country uses digital technologies to create jobs, support businesses, and deliver better public services. A credible digital economy strategy must therefore do three things at once: bring more people and firms into the digital fold, convert data and technology into real economic value, and reshape the way core sectors such as agriculture, industry, services, and public administration operate.

The government has already signalled the scale of this opportunity: a potential digital market of around NPR 90 kharab by 2035 when domestic Digital-SDG spending and export opportunities are combined, and budget commitments that point to roughly 1.5 million new jobs in the wider IT and digital sector over the coming decade. A strategy that explicitly targets a 15–20% digital share of GDP, anchored in this NPR 90 kharab pipeline and the associated employment gains, can give policy makers a clear, growth-oriented story to work with.

To realise this potential, the central task for decision makers is coordination and prioritisation. Line ministries, provincial governments, regulators, and public enterprises need to work from a shared roadmap that links digital investments to tangible outcomes—higher

farm incomes, more competitive exports, better learning outcomes, more reliable social protection—rather than chasing isolated pilots. Budgeting, procurement, and regulation should reinforce this roadmap, backed by clear institutional responsibilities, realistic timelines, and a small number of visible flagship projects that build public confidence.

Delivering on this vision will also demand steady investment in the foundations: affordable connectivity; secure, interoperable digital public infrastructure for identity, payments, and data exchange; and a workforce that combines technical skills with sector knowledge and management capability. Stronger institutions to plan, regulate, and oversee digital initiatives are essential so that the state acts as an active steward of digital markets, not a passive bystander.

If these elements come together, digital transformation can broaden opportunity instead of deepening divides. Businesses will find it easier to reach markets and finance, citizens will experience more responsive and transparent services, and the economy will be better equipped to absorb shocks and adapt to change. Framed in these practical, outcome-focused terms, Nepal’s digital economy strategy becomes not a separate technology agenda, but a core instrument for delivering jobs, resilience, and shared prosperity over the next decade.

References

Australian Bureau of Statistics. (2020). *Measuring digitalisation in Australia’s economy, 2012–13 to 2016–17*.

Institute for Integrated Development Studies. (2023). *Unleashing IT: Advancing Nepal’s digital economy – Expanding jobs and exports*. IIDS.

Government of India. (2024). India’s digital economy to contribute one-fifth of national income: Key findings from the State of India’s Digital Economy Report 2024. Press Information Bureau. <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2097125>

AP News. (2024, May 2). Broadband internet services are disrupted in most parts of Nepal.

AP News. (2025, September 9). Nepal internet crackdown part of global trend toward suppressing online freedom.

Bhandari, P., & Desruisseaux, T.-M. (2025). Digital literacy and its impact on employment in Nepal. *International Journal of Asian Social Science*, 15(10), 315–323.

- Bureau of Economic Analysis. (2023). *Digital economy satellite account* (last updated December 6, 2023).
- China Academy of Information and Communications Technology. (2020). *Digital economy development in China 2020*.
- Chand, M. B. (2024). Unveiling disparities: A case of digital divide in Nepal. *Tribhuvan Journal of Engineering and Computing*, 6(1), 1–15.
- DataReportal. (2023–2025). *Digital 2023/2024/2025: Nepal*.
- Digital Rights Nepal. (2023). *Digital rights and internet freedom in Nepal: Annual report 2023*.
- European Commission. (2024, August 7). *The Digital Economy and Society Index (DESI)*. Shaping Europe’s digital future.
- Government of Nepal. (2019). *Digital Nepal Framework*. Ministry of Communication and Information Technology.
- Government of Nepal. (2017). *National e-Health Strategy and Roadmap*. Ministry of Health and Population.
- Government of Nepal. (2023). *National Cyber Security Policy*.
- International Monetary Fund. (2022). *Experimental indicators of digital industries in select countries* (IMF Working Paper 2022/197).
- Institute for Integrated Development Studies. (2023). *Unleashing IT: Advancing Nepal’s digital economy – Expanding jobs and exports*.
- International Telecommunication Union, OECD, UNCTAD, & World Bank. (2020). *Toolkit for measuring the digital economy*.
- Khanal, B. P. (2024). Information technology in Nepal: History and current status. *Centre for Development Journal*, 5(1), 55–72.
- Ministry of Communication and Information Technology. (2019). *Digital Nepal Framework*. Government of Nepal.
- Nepal Infrastructure Summit Secretariat. (2023). *Digitalization, ICT, and technology integration in Nepal’s infrastructure sectors*.

- Nepal Rastra Bank. (2023–2024). *Payment oversight reports and lists of PSOs/PSPs*.
- Nepal Telecommunications Authority. (2023). *MIS reports and telecom statistics*.
- Office of the Auditor General of Nepal. (Various years). *Annual reports*.
- Organisation for Economic Co-operation and Development. (2020). *Tax challenges arising from digitalisation – Report on Pillar One blueprint*.
- Organisation for Economic Co-operation and Development. (2021). *Tax challenges arising from digitalisation of the economy: Global anti-base erosion model rules (Pillar Two)*.
- Stead, J. (2021). Taxing digital economies. In *Development co-operation report 2021* (pp. 210–229). OECD Publishing.
- The Himalayan Times. (2024, September 10). Nepal’s persistent digital divide: From high penetration to inclusion.
- United Nations Conference on Trade and Development. (2019). *Digital economy report 2019: Value creation and capture – Implications for developing countries*.
- United Nations Conference on Trade and Development. (2021). *Digital economy report 2021: Cross-border data flows and development – For whom the data flow?*
- United Nations Conference on Trade and Development. (2023). *Harnessing cross-border data flows for sustainable development*.
- United Nations Conference on Trade and Development. (2024). *Digital economy report 2024: Towards an environmentally sustainable digital future*.
- United Nations Economic and Social Commission for Asia and the Pacific. (2024a). *Nepal to assign unique ID number at birth as part of digital ID program*.
- United Nations Economic and Social Commission for Asia and the Pacific. (2024b). *South Asia subregional training – Women ICT Frontier Initiative (WIFI DX)*.
- UNICEF, & New Legacy Digital. (2021). *Strengthening online vital registration and social security allowances in Nepal*.
- World Bank. (2022). *Nepal: Digital Nepal Acceleration (DNA) Project* (Report No. PAD4875).

- Government of Nepal. (2017). *National e-Health Strategy and Roadmap*. Ministry of Health and Population, Government of Nepal.
- UNICEF, & New Legacy Digital. (2021). *Strengthening online vital registration and social security allowances in Nepal*. Kathmandu, Nepal: UNICEF Nepal.
- Central Bureau of Statistics. (Various years). *National accounts and ICT statistics*.
- DataReportal. (2024). *Digital 2024: Nepal*.
- DataReportal. (2025). *Digital 2025: Nepal*.
- Cheng, G. (2022). China's Digital Silk Road in the age of the digital economy. *RUDN Journal of International Relations*, 22(3), 521–534. <https://doi.org/10.22363/2313-0660-2022-22-3-521-534>
- Government of India. (2024). *India's digital economy to contribute one-fifth of national income: Key findings from the State of India's Digital Economy Report 2024*. Press Information Bureau. Retrieved from <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2097125>
- Nepal Rastra Bank. (2025). *Current Macroeconomic and Financial Situation of Nepal (Based on Annual Data of 2024/25)*. Economic Research Department, Baluwatar, Kathmandu.