

Policy review

Timor-Leste

eTrade Readiness Assessment



United Nations

Geneva, 2025

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Foreword

The UNCTAD-led eTrade for all initiative, launched at the fourteenth session of the United Nations Conference on Trade and Development (UNCTAD XIV) in July 2016, is a practical example of how to harness the digital economy in support of the 2030 Agenda for Sustainable Development.

The initiative seeks to raise awareness, enhance synergies and increase the scale of existing and new efforts by the development community to strengthen the ability of developing countries to engage in and benefit from e-commerce, by addressing seven relevant policy areas:

- E-commerce readiness assessment and strategy formulation
- ICT infrastructure and services
- Trade logistics and trade facilitation
- Payment solutions
- Legal and regulatory frameworks
- E-commerce skills development
- Access to financing.

UNCTAD works with governments of developing countries and key stakeholders to improve their digital economy capabilities through eTrade Readiness Assessments. The assessments analyse the digital and e-commerce ecosystems of partner countries and provide policy recommendations based on the challenges and opportunities for e-commerce development identified across the seven policy areas. To operationalize those recommendations, UNCTAD established an Implementation Support Mechanism in 2020 to increase in-country coordination support and build the national capacities needed to ensure efficient and effective implementation of e-commerce policies and initiatives.

The eTrade Readiness Assessment of Timor-Leste is the thirty-eighth such assessment conducted by UNCTAD. It emphasizes the government's dedication to fostering digital transformation. By pinpointing key challenges and opportunities, the assessment lays the groundwork for an effective National E-commerce Strategy that will enhance digital capabilities, foster economic growth and facilitate the country's integration into the regional and global digital landscape with vital support from development partners.

Looking ahead, I believe that the insights gained will not only guide the development of the National E-commerce Strategy but also inspire collaborative efforts that harness the full potential of digital technologies, ultimately creating a more resilient and inclusive economy for all Timorese citizens.

Torbjörn Fredriksson

Head, E-commerce and Digital Economy Branch
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Abbreviations

ADB	Asian Development Bank
AEC	ASEAN Economic Community
ANC	National Communications Authority of Timor-Leste
ANZ Bank	Australia and New Zealand Banking Group
ASEAN	Association of Southeast Asian Nations
ATM	automated teller machine
ASYCUDA	Automated System for Customs Data
BCTL	Central Bank of Timor-Leste
BNCTL	National Commercial Bank of Timor-Leste
BNU	Banco Nacional Ultramarino
CGS	Credit Guarantee Scheme
CPLP	Community of Portuguese Language Countries
CTL	Postal Service of Timor-Leste
DFAT	Department of Foreign Affairs and Trade of Australia
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
GDP	gross domestic product
GNI	gross national income
ICT	information and communications technology
IP	intellectual property
ISP	Internet service provider
IT	information technology
ITU	International Telecommunication Union
IXP	Internet exchange point
ODTI	other deposit-taking institution
OECD	Organisation for Economic Co-operation and Development
MCAE	Coordinating Minister of Economic Affairs
MCI	Ministry of Commerce and Industry
MoU	Memorandum of Understanding
MSME	micro, small and medium-sized enterprise
MTC	Ministry of Transport and Communications
NECS	National E-commerce Strategy
P24	National Payment System
PCIC	Scientific and Criminal Investigation Police
SIDS	Small Island Developing States



SME	small and medium-sized enterprise
TLREN	Timor-Leste Research and Education Network
TLSSC	Timor-Leste South Submarine Cable
TIC TIMOR	ICT Agency of Timor-Leste
TileSW	Timor-Leste Electronic Single Window
TVET	technical and vocational education and training
UNCDF	United Nations Capital Development Fund
UNCITRAL	United Nations Commission on International Trade Law
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UPU	Universal Postal Union
WB	World Bank
WTO	World Trade Organization
YEES	Youth Employment and Entrepreneurship Skills



Note

Within the UNCTAD Division on Technology and Logistics, the E-commerce and Digital Economy Branch carries out policy-oriented analytical work on the development implications of information and communication technologies (ICTs), e-commerce and the digital economy. It is responsible for the preparation of the Digital Economy Report as well as thematic studies on ICT for Development.

The Branch promotes international dialogue on issues related to ICTs for development, and contributes to building developing countries' capacities to measure the digital economy and to design and implement relevant policies and legal frameworks. It also monitors the global status of e-commerce legislation (UNCTAD Cyberlaw Tracker). Since 2016, the Branch has coordinated a multi-stakeholder initiative entitled eTrade for all (etradeforall.org), which aims to improve the ability of developing countries, particularly least developed countries, to use and benefit from e-commerce. This initiative is also behind the UNCTAD eTrade for Women programme, launched in 2019, which aims to promote a more inclusive digital economy through its network of Advocates. These female digital entrepreneurs are active in all developing regions and contribute to capacity-building, mentoring and awareness-raising activities for more inclusive gender policies.

When the United Kingdom is mentioned, reference is made to the United Kingdom of Great Britain and Northern Ireland.

Reference to companies and their activities should not be construed as an endorsement by UNCTAD of those companies or their activities.

The following symbols may have been used in tables:

- Two dots (..) indicate that data are not available or are not separately reported. Rows in tables have been omitted in those cases where no data are available for any of the elements in the row.
- A dash (—) indicates that the item is equal to zero or its value is negligible.
- Use of an en dash (–) between dates representing years signifies the full period involved, including the beginning and end years.

The term 'dollars' (\$) refers to United States of America dollars, unless otherwise indicated.



Executive Summary

Introduction

This assessment aims to explore how to enable e-commerce to become a driver of economic growth amid current macroeconomic challenges in Timor-Leste. By harnessing e-commerce, the country has the potential to stimulate domestic economic activity, and create new opportunities for job creation and exports, thereby fostering a more resilient and sustainable economy. To fully leverage this potential, however, existing challenges must be addressed through cohesive policy implementation, capacity-building and strategic partnerships. As the first comprehensive review of Timor-Leste's nascent e-commerce ecosystem, this assessment serves as a road map for implementing necessary policy and technical actions, with a National E-commerce Strategy (NECS) to be developed in 2024.

E-commerce readiness assessment and strategy formulation

E-commerce is emerging as a key component of Timor-Leste's development agenda, especially as the country seeks greater integration with regional markets, particularly the Association of Southeast Asian Nations (ASEAN). Regulatory alignment with ASEAN, which has shown strong activity in e-commerce, will be crucial in facilitating Timor-Leste's integration into the regional economy. Harmonizing regulations and enabling digital trade are essential steps in the country's pursuit of full ASEAN membership.

While e-commerce in the country is still in its early stages, with limited platforms like HaloDili and Jaymall dominating the local market, the sector is poised for growth. Only 14 per cent of adults in Timor-Leste report having made an online purchase, indicating significant room for expansion as Internet access improves and trust in electronic transactions increases.

Initiatives such as Timor Digital 2032 and the forthcoming NECS, supported by UNCTAD, highlight the government's commitment to economic diversification through digital innovation, fostering digital literacy, improving payment infrastructure and enhancing connectivity. Digital trade has the potential to significantly enhance priority sectors like tourism, agriculture (particularly coffee), light manufacturing and services, all of which are vital for the growth of micro, small and medium-sized enterprises (MSMEs). Furthermore, ASEAN integration will unlock additional trade opportunities and support business expansion.

The NECS, scheduled for implementation between 2025 and 2029, will build on the foundational efforts of Timor Digital 2032 and focus on strengthening policies to help Timor-Leste better integrate into regional and global digital trade. This assessment, a precursor to the NECS, identifies priority areas such as the need for enhanced interministerial cooperation and the establishment of effective data-collection mechanisms to monitor e-commerce activities. It serves as a key input for strategic planning, offering actionable recommendations to ensure that Timor-Leste is well-positioned to harness the full potential of e-commerce and the digital economy in the years to come.



ICT infrastructure and services

In Timor-Leste, Internet speed and affordability are the largest barriers to the development and uptake of e-commerce and other digital solutions, significantly impacting the telecommunications sector's growth potential. Despite achieving 96 per cent 3G mobile broadband and 45 per cent 4G coverage, high costs and limited Internet access continue to hinder broader digital adoption. Mobile cellular subscriptions stand at 110 per 100 people, on par with the Asia-Pacific region. However, only 41 per cent of Timor-Leste's population used the Internet in the last three months of 2022, compared with 64 per cent in the Asia-Pacific region. Limited information suggests that only a small share of the population currently shop online.

The Timor-Leste South Submarine Cable (TLSSC) is one of the most anticipated and critical infrastructural developments in the country, second only to the Tibar Bay Port project. It aims to connect Timor-Leste to international submarine telecommunications cables, promising significant improvements in Internet bandwidth and speed. The TLSSC is expected to provide an initial bandwidth of 800 gigabits per second, with the capacity to scale up to 27 terabits per second. This should offer significant potential to boost e-commerce uptake.

In addition, the planned implementation of an Internet exchange point (IXP) could foster local content development, unlocking new opportunities for Timor-Leste's e-commerce ecosystem and ICT sector. However, to fully leverage this new capacity, upgrades to local network providers will be essential. The establishment of a robust governance structure and expansion of the national backbone network will be critical to ensure that the benefits of this infrastructure, including affordable pricing, reach end users.

As connectivity improves, cybersecurity will become a growing concern. Therefore, adopting the draft cybersecurity strategy and strengthening the cybersecurity response infrastructure will be vital to safeguarding the digital economy and ensuring sustainable growth.

Trade logistics and trade facilitation

Timor-Leste is prioritizing strengthening its trade logistics ecosystem, crucial for e-commerce and economic growth. The government has placed significant focus on developing the national transportation infrastructure, and is developing a national transportation master plan. The aim is to improve links to bolster economic and social development in rural and urban areas, strengthen the tourism sector and facilitate trade in goods and services.

The country's road network, critical for freight and passenger movement, is largely in poor condition, with significant portions needing rehabilitation or upgrading. The Tibar Bay Port project represents a significant public-private partnership initiative aiming to enhance maritime trade capabilities. Air transport improvements are also under way, including capacity development and the expansion of Presidente Nicolau Lobato International Airport, to meet rising passenger and cargo demands.

Logistics challenges related to e-commerce include last-mile delivery services and warehousing, with a lack of adequate facilities and services for efficient parcel distribution. The absence of a comprehensive postal code system and the predominance of a cash economy also limit efficient e-commerce operations, particularly outside the capital.

Timor-Leste is in the early stages of developing a legal and regulatory framework to facilitate electronic transactions and cross-border paperless trade, with an eye to closer regional integration, particularly with ASEAN. The country has adopted the Automated System for Customs Data (ASYCUDA) World computer system to implement the Timor-Leste Electronic Single Window (TileSW), enhancing trade facilitation. Efforts are under way to implement digital



trade facilitation measures to lower trade costs, including the development of a trade information portal and electronic exchange of trade-related data with regional partners.

The TileSW system is designed to enhance trade facilitation by linking the Customs Authority with various regulatory agencies, streamlining the movement of goods and services. It supports a range of applications from import authorization to exporter registration, and interfaces with key systems for tax and cargo clearance, aimed at simplifying Customs processes and promoting efficient trade.

Payment solutions

Effective payment solutions are key to fostering a robust ecosystem for e-commerce and digital trade, though significant challenges remain in ensuring their use for e-commerce. The financial services landscape in Timor-Leste has experienced strong growth, with financial services access points increasing by 32 per cent between 2020 and 2022. This growth is underscored by a rise in bank services of 43 per cent and digital wallet services of 32 per cent. The introduction of the digital wallet solutions TPay and Mosan has been essential in enhancing financial inclusion, contributing to a 200 per cent increase in financial services access points and ensuring services are available in every subdistrict. Financial inclusion figures have notably improved, with 64 per cent of adults now having an account with a formal financial institution. Dili leads the way with bank account penetration among the adult population at 94 per cent (Central Bank of Timor-Leste (BCTL), 2023).

The payment system's landscape is characterized by increased interoperability, thanks in part to the Real-Time Transfer Network system and National Payment System (P24) platform, which facilitate electronic payments and enrich the mobile money ecosystem. The uptake of digital wallets surpasses traditional banking services, offering greater access in remote areas and positioning these wallets as crucial for advancing digital financial inclusion and supporting the future of e-commerce. Digital wallet services have the widest network among financial services, reaching 82 per cent of *sucos*, showcasing their potential to enhance digital financial inclusion.¹

Despite this, cash remains the primary mode of payment for most transactions, including e-commerce, particularly in rural areas where financial and digital literacy remain challenges. Maximizing the potential of digital wallets requires addressing the key challenges that limit their use for everyday transactions and e-commerce. Although one-quarter of adults have access to digital wallets, most do not use them for essential purchases. Additionally, data from United Nations Capital Development Fund (UNCDF) surveys suggest that only 14 per cent of Timorese engage in online shopping, and a vast majority do not take precautions to ensure website security. This indicates that trust and digital literacy are critical barriers to wider adoption. Digital wallets can play a role in supporting the growth of e-commerce but greater efforts are needed to build awareness and trust in their use for online purchases.

¹ In Timor-Leste, there are 13 districts or municipalities, 67 administrative posts, 442 *sucos*, and more than 2,000 *aldeias*. A *suco* is the equivalent of a village or small community within a subdistrict, while an *aldeia* is the equivalent of a hamlet.



Legal and regulatory frameworks

Timor-Leste faces several key challenges in the legal and regulatory framework for e-commerce. These include the need to strengthen institutional capacities and to ensure that existing laws are updated to align with the realities of electronic transactions. There is also a need to raise awareness among consumers and businesses to fully harness the potential benefits and risks of e-commerce. The enactment of Decree-Law 12/2024 in Timor-Leste in February 2024 marks a significant milestone in establishing the legal foundations of e-commerce within the country, creating a trust-based environment for e-commerce and paperless trade. This law closely aligns with United Nations Commission on International Trade Law (UNCITRAL) Model Laws and ensures legal equivalence for online transactions and the recognition of electronic documents and signatures.

The current legal landscape also includes the Customs Code, which governs electronic transactions mainly within the TileSW framework. While e-signatures are recognized, they are not fully implemented. While specific taxation discussions for e-commerce have not yet commenced, the draft cybercrime bill and the Consumer Protection Law of 2016 address online crime and consumer rights, respectively, indicating steps towards a comprehensive legal framework.

A draft data protection law is under review, aiming to address gaps in privacy and data protection. This legislation is part of efforts to enhance safeguards around customer data, including with emerging technologies and e-commerce platforms.

Timor-Leste is actively revising its intellectual property (IP) framework and has initiated drafting of an industrial property code. This will encompass trademarks, patents and additional IP rights, signifying a comprehensive approach to protecting literary, scientific and artistic works. The government's plan to establish an IP office, with the assistance of the World Intellectual Property Organization, reflects a commitment to align with global standards and foster an environment conducive to innovation and creativity.

Timor-Leste is seeking mutual agreements for electronic data exchange with other countries, potentially focusing first on Indonesia, with a longer-term intention to engage with ASEAN and the Community of Portuguese Language Countries (CPLP). Another consideration is to ensure legal certainty in cross-border exchanges to ensure the efficiency of TileSW and other paperless trade systems.

E-commerce skills development

The underdeveloped ICT skills infrastructure and digital entrepreneurship ecosystem in Timor-Leste pose significant challenges for the growth of e-commerce. Limited access to affordable, high-speed Internet hampers the population's ability to engage online, while low digital literacy levels further constrain the adoption of digital technologies. Although young Timorese are increasingly comfortable with absorbing online content, a skills mismatch between what the information technology (IT) sector requires and what is currently available represents a barrier. This gap, if not addressed, could affect future development of e-commerce firms unless steps are taken to encourage meaningful industry-academia partnerships, particularly at the tertiary education level. Compounding these challenges is the limited availability of online content in Tetum and weak English proficiency, which hinders the uptake of digital content and services.

Moreover, with 80 per cent of formal employment concentrated in the public sector, there is a pressing need to develop digital skills among government employees and organize training programmes and fellowships for policymakers to lead the country's digital transformation efforts. In line with the Timor Digital 2032 enabling pillar on digital and ICT skills, the government is committed to equipping the workforce with advanced skills in areas such as digital transformation,



systems development, cybersecurity and cloud management. These efforts aim to support the digitization of the government and create a robust digital foundation that fosters innovation across all sectors.

In addition to these capacity-building measures, digital entrepreneurship is slowly gaining traction in Timor-Leste, thanks largely to the efforts of development partners and a few IT firms that are leading the development of a nascent innovation ecosystem.

Access to financing

The financial landscape is characterized by a banking system, with limited lending activities to businesses and individuals. This includes five commercial banks – four international plus the National Commercial Bank of Timor-Leste (BNCTL), which, despite its extensive reach, encounters challenges in expanding credit. Other deposit-taking institutions (ODTIs) demonstrate more active engagement in the credit market compared with banks.

Several challenges impede small and medium-sized enterprises' (SMEs), including digital entrepreneurs, from accessing credit and financing. These challenges include regulatory hurdles, such as an incomplete land registry, and the absence of a movable collateral registry. Additionally, the lack of alternative financing mechanisms such as invoice financing or crowdfunding further limits options for digital and e-commerce ventures. The Credit Guarantee Scheme (CGS), designed to encourage bank lending to SMEs, has experienced limited uptake, highlighting the need for enhanced engagement and utilization. Development partner-supported programmes, like the Youth Employment and Entrepreneurship Skills (YEES) initiative, offer some support through start-up competitions and loan guarantee programmes, aiming to foster entrepreneurship and boost the digital economy.

Stakeholders' assessment of e-commerce ecosystem maturity

Feedback from public and private sector representatives during UNCTAD consultations provides indications of the degree of maturity of several items, in line with the development of e-commerce (see Figure 1). Overall, ecosystem maturity is relatively weak, which is borne out by the qualitative consultations held as part of the assessment.

Internet connectivity and connection costs are perceived as the least mature, with only 25.8 per cent considering them mature or very mature, and 32 per cent considering this as the least mature segment, highlighting significant challenges in access and affordability of Internet services, which are crucial for e-commerce.

Stakeholders are divided regarding the maturity of the trade logistics and cross-border facilitation area. On the one hand, a combined 28 per cent of respondents viewed it as mature or very mature. In contrast, 54 per cent of respondents were neutral or did not have an opinion – suggesting that the area of trade facilitation is relatively unfamiliar to many stakeholders. This may change as Timor-Leste moves towards ratification of the World Trade Organization (WTO) Trade Facilitation Agreement, and trade facilitation initiatives ramp up.

Payment systems is the most mature segment, based on the recent deployment and good uptake of digital wallets (Mosan and TPay) as well as use cases developed around the P24 system, the electronic interbank system launched in 2021.

Responses related to high-level political support and a legal framework conducive to e-commerce also indicate relatively low maturity levels, indicating a need for enhanced coordination at the public-sector level.

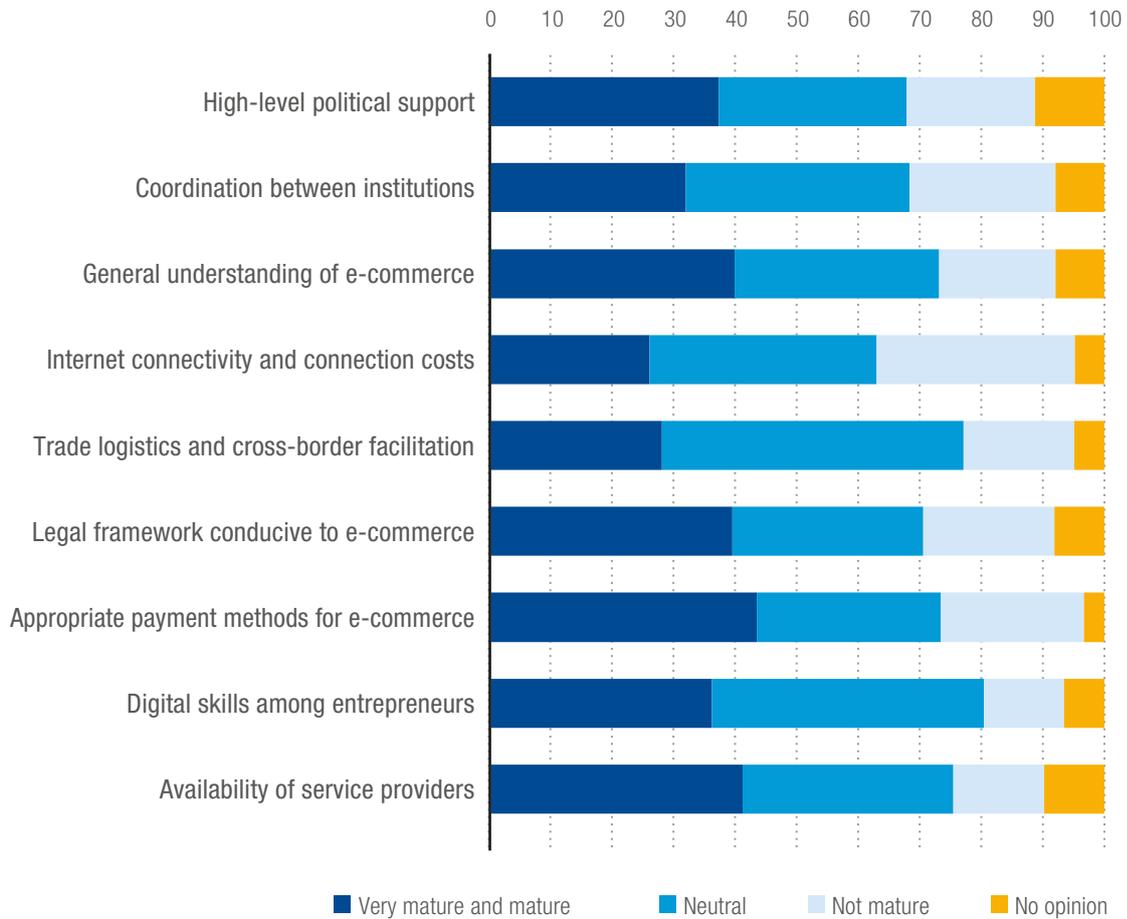




Figure 1
Enabling factors for e-commerce development in Timor-Leste

(Percentage of survey respondents)

Please evaluate the following factors related to e-commerce development based on their maturity. (Public and private sector respondents, 63 responses).



Source: UNCTAD, based on Timor-Leste eTrade Readiness Assessment Online Survey, 2024.



Methodology

The eTrade Readiness Assessment of Timor-Leste was conducted to identify the main barriers to and opportunities for e-commerce development in the seven eTrade for all policy areas by providing a detailed diagnostic of the digital ecosystem and identifying key policy actions for which support can be mobilized.

It used a five-phase methodology developed by UNCTAD for the project to: (a) ensure a high level of participation and engagement of key stakeholders in the overall assessment process; (b) raise awareness of the opportunities offered by e-commerce (through capacity-building and knowledge-sharing); (c) strengthen public-private sector dialogue and enhance interministerial coordination and policy coherence in the field of e-commerce; and, (d) mobilize support from development partners to accelerate the country's digital transformation.

Phase 1. Initial consultations, May 2023

Initial consultations and outreach were conducted with the Government of Timor-Leste. The eTrade for all community, the European Union (funding partner) and the United Nations Resident Coordinator's Office were informed of the project.

Phase 2. Institutional setting and mapping, June to October 2023

A comprehensive mapping of national stakeholders and resident development partners engaged in e-commerce and digital development in Timor-Leste was undertaken. This included a thorough desktop research exercise. Establishment of an eT Ready steering committee was recommended, composed of designated focal points in relevant ministries, agencies, chambers of commerce, banks and other institutions.

Phase 3. Data collection, July 2023 to February 2024

- A comprehensive desk review was conducted to analyse secondary data, including national and sector-specific strategies, and relevant programme and policy documents; as well as compile statistics and digital-related indicators.
- Two questionnaires, adapted to the national context for public and private sector stakeholders, were disseminated online from 7 November 2023 to 29 February 2024. A total of 26 valid responses were received from the private sector and 44 from the public sector, which were analysed as part of the assessment.
- Between 6 and 17 November 2023, a series of national multi-stakeholder consultations were held in Dili, Timor-Leste. These included bilateral meetings, interviews and focus group discussions with relevant experts and stakeholders across seven key policy areas. A dedicated session focused on e-commerce start-ups and incubators. These consultations provided an opportunity for representatives of key e-commerce players and public institutions to express their needs, share information on ongoing e-commerce initiatives, and discuss priority areas and actions.



Phase 4. Report drafting, February – May 2024

Between February and May 2024, the report drafting process included the first draft of the assessment covering the seven key policy areas and the eT Ready Action Matrix. A midterm review of the project during this period presented preliminary results to ensure its effective continuation. There was also an initial review conducted internally and externally by UNCTAD and eTrade for all partners.

Phase 5. Finalization of the report, June to November 2024

Between June and November 2024, efforts were concentrated on finalizing the report. This period included a national workshop scheduled from 15 to 19 July 2024, where national stakeholders reviewed and validated the findings of the eT Ready Assessment and Action Matrix. Following this, the final draft of the report was prepared, accompanied by editing, layout and printing. In accordance with the eT Ready methodology, the assessment utilized the seven eTrade for all policy areas as key entry points.

The information provided in this report is based on qualitative and quantitative data collected from: i) desk research; ii) responses from the two online surveys (public and private sectors); iii) the results of the national multi-stakeholder and bilateral consultations; and iv) specific contributions made by eTrade for all and development partners.

Additionally, wherever relevant, this assessment integrates cross-cutting themes such as gender mainstreaming and environmental sustainability, and addresses the lack of reliable statistics related to e-commerce. These dimensions are considered crucial to ensuring that the digital economy fosters inclusive growth and sustainable development.

While the primary focus of the report is on e-commerce, it also underscores the significance of digital trade (defined as all trade that is digitally ordered and/or delivered). The bottlenecks identified in e-commerce often overlap with those in broader digital trade, highlighting common challenges such as infrastructure gaps, regulatory barriers and skills shortages that affect both sectors. Thus, solutions proposed within this framework are intended to facilitate not only e-commerce development but also digital trade more broadly.



Summary of Key Findings and Recommendations

Main Findings	Main Recommendations
E-commerce Readiness Assessment and Strategy Formulation	
<ul style="list-style-type: none"> E-commerce activity is at an early stage of development in Timor-Leste. The government has taken significant steps toward digital transformation, particularly through Timor Digital 2032. This strategic plan outlines the country's vision for digital and ICT development, aiming to leverage these technologies to drive human and economic progress. By fostering innovation, enhancing digital skills, and promoting e-commerce, Timor Digital 2032 seeks to position the country as a more competitive player in the regional and global digital economy. Reference is made to the development of an e-commerce strategy. Only 14 per cent of adults report having made an online purchase, signalling significant potential for growth as Internet access and trust in electronic transactions improve. Effective governance mechanisms and a public-private engagement framework are needed to steer and coordinate e-commerce development initiatives and policy dialogue. Institutional mandates need to be clarified between the National Communications Authority of Timor-Leste (ANC), Information and Communication Technology Agency of Timor-Leste (TIC TIMOR) and Ministry of Transport and Communications (MTC). Regional integration with ASEAN member states is a key focus for the government of Timor-Leste, particularly in advancing e-commerce and digital trade. Data-driven oversight of e-commerce market developments is lacking. There is currently no system to record e-commerce activities and collect statistics. 	<ul style="list-style-type: none"> Develop a NECS accompanied by an implementation management and governance framework to support the implementation of eT Ready recommendations, the NECS strategic implementation plan and broader e-commerce development. Set up a governance structure to ensure high-level coordination among ministries and relevant institutions, with a framework to engage the private sector for public-private dialogue. Clarify the mandate and demarcation of duties between ANC, TIC TIMOR and the National Directorate of ICT, which have overlapping mandates to some degree. Support capacity development for key agencies, particularly TIC TIMOR. Participate in regional e-commerce initiatives and knowledge-sharing platforms. Develop capacities of trade negotiators and relevant government officials on multilateral and regional e-commerce initiatives including WTO agreements, the ASEAN Economic Community (AEC) Blueprint 2025, ASEAN Agreement on Electronic Commerce and ASEAN Work Programme on Electronic Commerce. Establish a statistics collection, analysis and dissemination mechanism for e-commerce statistics, involving key agencies. Build capacities of the National Institute of Statistics of Timor-Leste and agencies involved in domestic and cross-border e-commerce trade.
ICT Infrastructure and Services	
<ul style="list-style-type: none"> Internet speed and affordability remain the largest barriers to e-commerce development, with high costs and limited access impacting the telecommunications sector's growth. Despite achieving 96 per cent 3G mobile broadband and 45 per cent 4G coverage, the update of digital services is still constrained by these factors. Mobile cellular subscriptions are on par with the Asia-Pacific region. However, only 41 per cent of the population used the Internet in the last three months of 2022, compared with 64 per cent in the region, indicating limited online engagement. While an IXP was established in Dili in 2016, it does not appear to be operational. This has limited the ability of Internet service providers (ISPs) to directly exchange local traffic, leading to higher costs and latency for digital services, including e-commerce. A new IXP is expected in 2024. 	<ul style="list-style-type: none"> Establish a state-owned enterprise that will manage long-term cable operations, including wholesale pricing structure, with due consideration to recent lessons learned from similar initiatives in the region. Ensure ISPs, mobile network operators and other service providers shore up their infrastructure to accommodate the additional capacities from the TLSSC. Expand the national backbone from the current 12 municipalities that are connected to all 13 municipalities. Continue expansion of the 4G network across the country and explore 5G as a forward-looking technology made feasible due to TLSSC enhancements. Develop a digital authentication infrastructure that facilitates unique identification for certifying and authenticating identities.



Main Findings	Main Recommendations
ICT Infrastructure and Services	
<ul style="list-style-type: none"> • The TLSSC is expected to arrive in Timor-Leste in late 2024. Pending effective governance mechanisms and infrastructural upgrades, the cable offers significant potential to boost Timor-Leste's digital economy segments such as e-health, e-education and e-commerce. • Local ISPs require upgrades to leverage the capacity of the submarine cable efficiently. Establishing a robust governance structure and expanding the national backbone network are essential to ensure that the infrastructure benefits are felt across the country. • Cybersecurity is becoming a growing concern as connectivity improves, making the adoption of the draft cybersecurity strategy and the strengthening of response infrastructure vital to protect the digital economy. 	<ul style="list-style-type: none"> • Adopt the national cybersecurity strategy for Timor-Leste, after successful review by the Interministerial Working Group on Cybersecurity. • Conduct a feasibility study involving key government agencies, along with Internet operators and private sector representatives, on identifying use cases arising from the expected improvements in Internet connectivity. • Introduce standardization in terms of data storage and data exchange at key government agencies, based on international standards. • Establish IXPs and ensure their upkeep. • Establish a national agency for cybersecurity, and proper resourcing of the Timor-Leste Computer Security Incident Response Team.
Trade Logistics and Trade Facilitation	
<ul style="list-style-type: none"> • The government dedicates around 30 per cent of annual spending to enhance critical infrastructure – including roads, ports, airports and electricity – with the stated aim of improving urban links to rural and agricultural economies, strengthening the tourism sector and facilitating movement of people and trade in goods. A national transport master plan is under development. • There are no postcodes or zip codes in Timor-Leste, creating a barrier to last-mile delivery. • Timor-Leste has negotiated a transition period for ratifying the WTO Trade Facilitation Agreement, after accession to the WTO. Improved trade facilitation is crucial for the growth of e-commerce, as it reduces barriers to cross-border trade, enhances logistics efficiency, and creates a more accessible environment for digital entrepreneurs and businesses in Timor-Leste. • The TileSW system is operated by ASYCUDA and integrates various governmental bodies, facilitating Customs and trade processes including electronic data exchange. • There is a strong policy focus on digital trade facilitation, with an emphasis on paperless trading in cross-border transactions. 	<ul style="list-style-type: none"> • Formalize the working arrangements between the various agencies engaged in TileSW. • Expand the functionality of TileSW, particularly in paperless trade. Launch pilot initiatives for exchanging documents and data with partners. • Engage in regional and bilateral efforts to accelerate alignment of cross-border paperless trade tools and processes in Timor-Leste with good practices, particularly with ASEAN member countries. This participation is crucial to prepare Timor-Leste for its accession to ASEAN and integration into the ASEAN Single Window. • Adopt and implement a national transport sector master plan. • Accelerate development of a national addressing system, including postcodes / zip codes and street addresses. In the interim period, pilot alternate addressing systems such as geo-located addresses. • Enhance the capacities of the Postal Service of Timor-Leste (CTL) via development of a medium-term strategy and active engagement in Universal Postal Union (UPU) initiatives supporting operational, digital and payment readiness. • Proactively study and implement cross-border paperless trade applications and procedures in connection with the Timor-Leste-Indonesia-Asian Development Bank (ADB) Memorandum of Understanding (MoU) Regarding Cross-Border Trade and Cooperation Technical Assistance.



Main Findings	Main Recommendations
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Payment Solutions

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| <ul style="list-style-type: none"> • The period from 2020 to 2022 witnessed a 43 per cent increase in banking access points, significantly improving financial inclusion. This growth has been supported by uptake of digital wallet solutions as well as use cases implemented by P24, facilitating live payments across banks and digital wallets. With most banks being P24 members, consumers can seamlessly use automated teller machines (ATMs) across various banks for cash withdrawals and bill payments. This expanded digital financial infrastructure is critical for the development of e-commerce, as it enables smoother online transactions, enhances consumer trust, and facilitates the growth of digital entrepreneurs, thereby laying the groundwork for a more robust e-commerce ecosystem in the country. • Despite these advancements, challenges remain, including the need for improved digital literacy, trust in digital payments, and enhancements to both physical and Internet infrastructure to sustain the growth of digital financial services. • Digital financial literacy is high on the agenda for the government as well as development partners, via initiatives such as the Digital Village Programme. | <ul style="list-style-type: none"> • Expand the connectivity of P24 to international payments systems such as Mastercard, Visa and Union Pay to facilitate online shopping and cross-border trade for local businesses and consumers. • Expand digital financial inclusion initiatives to service the unbanked population. • Using digital wallet solutions as an anchor, implement use cases that address select consumer pain points. • Develop a national payment gateway via which e-shops can accept digital payments from consumers. • Review the licensing regime for new fintech services and assess the viability of introducing a national sandbox mechanism or special licensing schemes for introduction of fintech services in the country. • Develop a national QR code standard in the country. • Introduce digital payments acceptance for a prioritized list of e-services and services related to paperless trade, in addition to the Customs duty functionality that already exists. Allow users to pay online in addition to using P24-affiliated ATMs. |
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Legal and Regulatory Framework

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| <ul style="list-style-type: none"> • An e-commerce law (General Legal Framework for Electronic Commerce and Electronic Signatures) was recently enacted (November 2023) and is based on UNCITRAL Model Laws. • A Consumer Protection Law has existed since 2016 but there is a need to review the regulation to ensure its fit with transactions occurring digitally. • Legislative gaps include data protection and cybercrime. Draft cybercrime legislation is currently being reviewed and is undergoing stakeholder consultations. Efforts to enhance IP rights are ongoing. • Institutional capacities for monitoring and enforcement are weak. • Timor-Leste is seeking mutual agreements for electronic data exchange with other countries, potentially focusing first on Indonesia, with the broader intention to engage ASEAN member states. | <ul style="list-style-type: none"> • Address existing gaps in Timor-Leste's legal framework for e-commerce, including finalization and passage of draft data protection and cybercrime laws; a review of the Consumer Protection Law (to ensure alignment with digital transactions); reviewing regulations complementary to e-commerce law, such as on electronic signatures (including digital signatures), online payment and payments, and electronic records retention. • Raise awareness of businesses and consumers on key legislation related to the recently passed E-Commerce Law (legal issues related to cross-border paperless trade), including chambers of commerce, the trade community and the legal profession. • Evaluate the potential benefits of introducing targeted tax incentives to foster the growth of e-commerce for firms operating in the e-commerce space. • Establish enforcement institutions for monitoring and enforcement of key cyberlaws, including a data protection agency and IP office. |
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Main Findings	Main Recommendations
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E-commerce Skills Development

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| <ul style="list-style-type: none"> • Timor-Leste is experiencing a demographic transition, characterized by a fast-growing younger generation that possesses distinct skills, knowledge and a greater enthusiasm for technology that could be harnessed for digital entrepreneurship and e-commerce. • The challenges related to accessibility and affordability of the Internet continue to impact digital skills and the broader entrepreneurial ecosystem, which in turn hinders e-commerce development in Timor-Leste. Low digital literacy and limited entrepreneurial capacity constrain the ability of individuals and businesses to leverage online platforms and digital tools for e-commerce activities. Moreover, the significant skills mismatch in the IT sector will likely affect future e-commerce firms unless steps are taken to encourage meaningful industry-academia discussions at the tertiary level. • Development partners and select IT firms have taken the lead in developing the nascent innovation ecosystem builder community, essential for supporting digital entrepreneurship and e-commerce. These efforts include fostering digital literacy, encouraging innovation, and providing capacity-building programmes that will strengthen the e-commerce landscape in Timor-Leste. | <ul style="list-style-type: none"> • Following TLSSC roll-out, intensify development of online and blended learning platforms for all teachers and students. • Support the development of private-sector-based certificate-level training institutions as well as business development services. Ensure proper accreditation. • Revise the curricula of primary and secondary schools, and bridge hardware / software resourcing needs. • Support efforts by private sector players to develop Comoro Valley as an innovation hub in Dili. • Leverage the Timor-Leste Research and Education Network (TLREN) for e-learning, research and innovation once the TLSSC is deployed. • Launch a value chain initiative targeting a productive sector – such as agriculture, light manufacturing, or tourism – that has significant export potential. The pilot would link e-shops, logistics firms and mobile wallets to incentivize MSME onboarding to the e-shops and consumer spending via mobile wallets. The pilot would also test / encourage partnerships between delivery providers, e-shops and mobile wallets. |
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Access to Financing

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| <ul style="list-style-type: none"> • Timor-Leste's financial services ecosystem comprises commercial banks, microfinance institutions and credit unions, with a strong presence of foreign banks including the Australia and New Zealand Banking Group (ANZ Bank), <i>Banco Nacional Ultramarino</i> (BNU), Bank Mandiri (Indonesia) and Bank Rakyat Indonesia. The local bank, BNCTL, has the largest lending portfolio and significant outreach, although its support for e-commerce remains limited due to general constraints on credit to SMEs. • Access to credit remains a major challenge for e-commerce and digital start-ups. Private-sector credit stands at only 13.5 per cent of gross domestic product (GDP), with limited financing options for entrepreneurs. Despite high liquidity within commercial banks, lending to the private sector, especially digital and e-commerce ventures, is minimal. Challenges include low financial literacy among entrepreneurs, limited innovation in financial products, a very nascent venture capital space, and regulatory hurdles such as incomplete land and movable asset registries, which affect collateral-based lending. • Efforts to improve access to finance include credit moratorium programmes and the CGS but uptake remains low, highlighting the need for more targeted efforts to bridge the financing gap for e-commerce ventures. • Development-partner-led initiatives are trying to plug the gap. The United Nations Development Programme (UNDP) YEES project and BNCTL's soft-loan facilities are notable efforts to support MSMEs, yet a more robust ecosystem is needed to foster e-commerce and digital economy firms. | <ul style="list-style-type: none"> • Reactivate the CGS based on lessons learned from COVID-19-era implementation. Consider prioritizing MSMEs seeking funding for initiatives related to digital entrepreneurship. • Expedite implementation of the 2022 Land Registry Law. • Enhance the lending environment and promote access to finance to digital start-ups by establishing clear regulations for using movable assets, like equipment or vehicles, as collateral for loans. Also, create a formal registry where information about these movable assets can be registered, making it easier for lenders to verify collateral. • Adopt crowdfunding legislation and support development of platforms facilitating start-up fundraising from private citizens and companies. Review regional passporting / licensing options. • Expand the existing grant-based pool of funding, and/or introduce a new one, to support start-ups in the ICT sector via a competitive process. • Encourage development of a diaspora-led venture capital / angel investment network in support of digital start-ups. • Establish a credit bureau that can be used by lending institutions to assess the creditworthiness of individuals and companies seeking loans, which is essential for supporting digital entrepreneurs. |
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BEM-VINDO A WELCOME TO
TIMOR LESTE



Findings Under the Seven eTrade for All Policy Areas

1. E-commerce Readiness Assessment and Strategy Formulation

Digital policies in Timor-Leste are in the early stages of development. The Timor Digital 2032 Plan highlights the government's commitment to leveraging the digital economy and emphasizes e-commerce, which has gained prominence on the government's agenda following the country's recent WTO accession and observer status in ASEAN. As Timor-Leste seeks deeper integration with ASEAN, aligning with ongoing regional e-commerce initiatives will not only enhance the policy and regulatory framework for e-commerce but also create opportunities for MSMEs, ultimately contributing to the country's overall growth.

The Ninth Constitutional Government of Timor-Leste has set an ambitious growth agenda. However, the country must overcome significant challenges, including an entrenched dependency on extractive sectors, highly concentrated exports and an underperforming productive sector base. To drive the country's growth trajectory, development of MSMEs in the digital space is crucial. Empowering these enterprises with digital tools and resources will enable them to increase their productivity, expand their market reach, and foster innovation, thus playing a vital role in diversifying the economy and reducing reliance on traditional sectors.

1.1. Recent developments in the country's economy

Timor-Leste's economy (GDP) is expected to grow at 3 per cent in 2024 and 3.1 per cent 2025, following a slower growth rate of 2.3 per cent in 2023 (Table 1). This slowdown in 2023 is primarily attributed to a decrease in domestic economic activity, linked to temporary halts in government spending during the political transition (World Bank (WB), 2024).

The government has set a goal of creating 50,000 jobs over the next five years,

coupled with a GDP growth rate of 5 per cent per annum. However, the private sector's success relies on policies that create an environment conducive to growth and dynamism. Formidable risks stand in the way of achieving these goals – the dependency on extractive sector revenues is unsustainable and the high dependency on a single commodity (coffee) for exports highlights an urgent need for diversification. Key challenges also include high labour concentration in sectors with declining productivity and weak productive sector growth, coupled with the country's prevailing



land ownership issues, low literacy in English and highly uneven development across the country. New conduits of growth driven by MSMEs and anchored in productive sectors such as agriculture, tourism and manufacturing are needed.

The coffee sector is one of Timor-Leste's leading sources of export income, making up 85–90 per cent of the country's annual merchandise exports (excluding extractive sectors) since gaining independence (Observatory of Economic Complexity,

2023). The largest source of foreign income, excluding oil and gas income, is remittances. The export diversification agenda is expected to target the ASEAN market, given Timor-Leste's proximity to the region. This will also benefit Timor-Leste's institutional and regulatory preparedness in terms of trade facilitation, paperless trade and e-commerce, given necessary alignments with ASEAN's strong regional e-commerce agenda that will be required as part of ASEAN membership.

Table 1
Key economic indicators

Indicator	Timor-Leste
GDP growth rate	2023: 2.3%
	2024 and 2025 (forecast): 3% and 3.1%
Merchandise exports, 2023	\$293.8 million, of which:
	• Fuels: \$159.4 million (54.3% of total exports)
	• Coffee: \$105.3 million (35.8% of total exports)
Trade balance, 2023	Goods and services (deficit): -\$962.9 million (-40.5% of GDP) of which:
	• Goods (deficit): -\$610.1 million (-25.6% of GDP)
	• Services (deficit): -\$352.8 million (-14.8% of GDP)
International tourism receipts, 2023	\$51 million (73.4% of all exports of services; 2.1% of GDP)
Remittances: receipts, 2022	\$185 million (8.4% of GDP)
	Reference value in 2019: \$100 million (4.9% of GDP)
Foreign direct investment: inward flows, 2023	\$13 million (0.5% of GDP)
	Reference value in 2019: -\$239 million (disinvestment, -11.8% of GDP)

Source: UNCTAD based on UNCTADStat for the following indicators: merchandise exports, trade balance, tourism expenditure, remittances and foreign direct investment (accessed November 2024 at <https://unctadstat.unctad.org>); and International Monetary fund, World Economic Outlook (October 2024) for GDP (accessed November 2024 at <https://www.imf.org/external/datamapper/datasets/WEO>).

Notes: International tourism receipts are the sum of travel and passenger transport (all modes). Travel includes accommodation, food and beverage, local transportation, recreational and cultural services, purchases of souvenirs, personal care items, and other goods. Travel excludes international passenger transport services, which are recorded under the passenger transport category (including air, sea and other modes of transportation such as travel by rail, road, or inland waterways). The IMF data related to GDP was used for GDP growth rate, as well as for calculating the shares of GDP for trade balance and tourism expenditure.

A renewed long-term vision is essential for guiding the country's economic growth through e-commerce.

Timor Digital 2032 aims to develop a strategic plan for an inclusive digital economy.

1.2. National policies related to trade, services and logistics

Strategic Development Plan 2011–2030

Timor-Leste's national vision has been set out in the Strategic Development Plan, which envisages the country's transformation from a low-income to an upper-middle-income economy by 2030 (Government of Timor-Leste, 2011). Priority sectors identified in the Plan to drive economic diversification are the downstream petroleum sector, agriculture, tourism, fisheries, light manufacturing and mining.

Guides for Economic Reform and Growth

The foundation of the economic reform and growth strategy of Timor-Leste was set out in the Guides for Economic Reform and Growth, which were in force until 2018 and laid out guidelines for building a predictable market and achieving compliance with ASEAN and WTO standards and guidelines. The reforms focused on creating a secure and transparent regulatory framework for businesses to operate. Other important goals included reducing excessive red tape and bureaucratic hurdles that raise costs for doing business; streamlining processes for imports and exports; strengthening government institutions; and establishing effective service delivery systems to business sectors.

Programme of the Ninth Constitutional Government of Timor-Leste

E-commerce policies must align with the development agenda of Timor-Leste to ensure coherence with government priorities. The Programme of the Ninth Constitutional Government, which is updating the Strategic Development Plan, emphasizes economic diversification and growth in key productive sectors such as agriculture, tourism, services and light manufacturing. Given the focus on the services sector, fostering

entrepreneurship and stimulating innovation, aligning e-commerce policies with this Programme is important to support both job creation and overall economic development.

Economic Recovery Plan for 2020–2023

In response to COVID-19, Timor-Leste adopted the Economic Recovery Plan. Among other things, it aimed to contribute to Timor-Leste's economic transformation and create more jobs domestically. Between 2020 and 2022, the government implemented several short-term Economic Recovery Plan measures, including providing subsidies for the private sector and supporting informal workers.

There are also limited references to 'digital' in the Plan – first, to develop a digital marketing strategy to sell Timor-Leste as a tourism destination; and second, an acknowledgement that delays in processing documents of many companies using digital technology during COVID-19 was the combined result of a delay by the civil service in providing services, and lack of access to Internet services across the country. However, e-commerce was not explicitly mentioned.

Moving forward, Timor-Leste needs to redefine its national policy pathways. Given that the Guide for Economic Reform and Growth expired in 2018 and the Strategic Development Plan was presented in 2011 when conditions for economic growth were different, many policies do not reflect today's social and business realities. A renewed long-term vision and strategy are essential to guide the country's economic transition and growth, with a greater focus on e-commerce and the digital economy.

1.3. National policies related to digital transformation, ICT, e-government and e-commerce

The digital economy in Timor-Leste is hindered by unreliable, slow and expensive Internet services. This bottleneck has significantly impeded the adoption of



digital technologies among consumers, businesses and even government entities, resulting in limited use cases and engagement with digital platforms. However, a transformative shift is anticipated with the imminent arrival of a submarine cable (TLSSC), which promises to substantially enhance Internet connectivity and related cost and reliability indicators. In anticipation, the government has embarked on the following strategy initiatives.

- **Timor Digital 2032** is the country's strategic plan for digital and ICT development, drafted by TIC TIMOR. Launched in 2023, it aims to leverage digital technologies to foster human and economic development. It emphasizes the digital transformation of key sectors such as government services, health care, education and agriculture towards an inclusive economy. A core recommendation is the development of a NECS. Additionally, it recommends establishing a policymaking-level steering committee to oversee digital and ICT development, which would ensure focused implementation management for the recommendations of the strategy. TIC TIMOR is developing a five-year road map derived from Timor Digital 2032.
- Prior to this plan, Timor-Leste had a National Policy for ICT for the period 2017 to 2019, which aimed to enhance e-government services, diversify the domestic economy through ICTs, and create a secure digital ecosystem in the country. The policy emphasized developing ICT skills with a focus on creativity, as recommended by the Ministry of Education, Youth and Sport. However, this policy has since become outdated and no longer reflects the country's evolving digital needs. In response to the evolving digital landscape, discussions to develop a new ICT policy are under way. This new policy is expected to align with the goals outlined in Timor Digital 2032, which include applying a

'One Government ICT' approach by centralizing all ICT policy, infrastructure and workforce under TIC TIMOR. The centralization will extend to managing ICT systems, data centres, cybersecurity and digital government services.

- After the completion of the eTrade Readiness Assessment, the Ministry of Commerce and Industry (MCI), with the support of UNCTAD, will lead the development of a NECS. The NECS, intended for implementation between 2025 and 2029, will align with and build on existing strategies, ensuring a cohesive and comprehensive approach to digital transformation.

1.4. Institutional coordination mechanisms for e-commerce and digitalization

The governance and coordination mechanisms for e-commerce and the implementation of the NECS could fall under a high-level NECS steering committee; for example, co-chaired by MCI and MTC. The steering committee would include senior leaders from various ministries, ensuring comprehensive representation and expertise.

A steering committee for digital and ICT development is also planned, aligning with the vision of Timor Digital 2032. This committee will have the same membership as the erstwhile National Commission for Trade Facilitation, ensuring continuity.

Currently, there are no public-private dialogue mechanisms specifically for e-commerce. However, a forthcoming NECS steering committee and the steering committee for digital and ICT development could provide platforms for such discussions.

Institutional coordination needs to be enhanced, and mandates clarified among key institutions. Specifically, clear demarcation of mandates between MTC and TIC TIMOR is necessary to address existing coordination challenges.

Institutional coordination will provide clarity for e-commerce growth.



1.5. Production of and access to relevant statistics

The National Institute of Statistics of Timor-Leste is the official agency in charge of gathering statistics in Timor-Leste. It coordinates with the Ministry of Finance and other relevant agencies regularly, and collaborates with international organizations such as the United Nations Population Fund, the United Nations World Food Programme and the Food and Agriculture Organization of the United Nations.

BCTL and ANC collect relevant statistics on digital payments and ICT. However, no data related to e-commerce has been collected yet, reflecting that such activity remains nascent. It is crucial to establish data-collection mechanisms now to enable comprehensive data gathering in the future.

1.6. E-commerce activity

E-commerce is only beginning to be used in Timor-Leste. There are two active e-commerce businesses: HaloDili (<https://halodili.com/>), an online shopping and food delivery app primarily catering to the Dili area; and Jaymall (<https://jaymall.online/home>), an online retail store. Small-scale local businesses have also started offering online sales through social media platforms, including Facebook and Instagram.

Private-sector stakeholders have noted that their main motivations for selling online are to attract more customers nationally and abroad, as well as gaining an edge over their competitors. They also indicate that while household appliances, computers and related equipment, apparel and tourism are the main sectors currently being affected by e-commerce, this list is expected to diversify to include others, such as professional services, in the future.² This aligns with the findings from focus group discussions held with stakeholders.

² Based on results from an UNCTAD stakeholder survey (private sector).

³ Based on inputs received during focus group discussions conducted in November 2023.

⁴ Based on results from an UNCTAD stakeholder survey (private sector).

Consumer uptake of e-commerce, however, remains limited. One reason for the slow adoption is the high cost of Internet access and a general mistrust and lack of awareness related to electronic transactions.³ Only 14 per cent of Timorese adults report having purchased something online (UNCDF, 2023), which reflects the significant barriers to greater e-commerce participation in the country. Existing e-shops, therefore, primarily target the expat community and international companies, while domestic consumers have been slower to embrace online shopping due to these constraints.

1.7. Private-sector stakeholder motivations for selling online are mainly to attract more customers nationally and abroad⁴

Potential sectors for e-commerce growth

With the anticipated rise in Internet access after deployment of the TLSSC and the potential decrease in associated costs, coupled with increasing consumer and merchant engagement with digital content, e-commerce opportunities are growing. This projection emphasizes productive sectors with significant potential for both capacity expansion and export growth.

In terms of cross-border e-commerce, the agriculture and tourism sectors exhibit considerable scope for expansion. Looking ahead, light manufacturing and other service sectors, beyond tourism, may also become viable candidates for e-commerce growth. Marketplaces are likely to play a pivotal role in facilitating MSMEs' entry into cross-border trade, supporting the aspirations of Timor-Leste for closer regional integration, especially with ASEAN member states.

Consumer preferences are influenced by high Internet costs and a lack of trust in e-commerce.



Agriculture

Agriculture is the largest non-governmental sector in Timor-Leste, excluding the extractive industries. It engages a substantial portion of the population and plays a vital role in ensuring food security and fostering rural development. According to the 2021 Labour Force Survey, more than 228,000 working-age adults work in agriculture, making it the largest sector in terms of employment (Government of Timor-Leste, 2022b). The relevance of e-commerce for agricultural exports becomes clearer as increased Internet access allows farmers and MSMEs to tap into digital marketplaces, offering them direct access to consumers both nationally and across borders.

Export growth in the agriculture sector will be directly tied to value chain enhancements, which are necessary to ensure the survivability of cross-border e-commerce export relationships. Investments will be required in various stages of the value chain across key agricultural subsectors. These include seeds and inputs, extension services, and digital innovation to provide information about practices and markets. Improving credit facilities, agri-processing infrastructure and the institutional capacities of agricultural research institutions will enable farmers and businesses to tap into higher-value export markets. Developing a comparative advantage and improving trade facilitation efficiencies will also be critical for Timor-Leste's agricultural exports to succeed in regional and international e-commerce markets.

Processing and value addition for agricultural products can help Timorese increase revenues from the same volume of agricultural exports. Investments in areas such as seeds, inputs, extension services and enhancing market access will be essential to realize the potential of e-commerce marketplaces. Local value addition can boost export prices and encourage further investment in the agricultural value chain, strengthening rural e-commerce businesses' capabilities (Market Development Facility, 2023).

Coffee

As the country's primary agricultural export, coffee has significant potential to enhance MSME participation in e-commerce. Around 37 per cent of households are engaged in its production, with organic coffee seeing a significant rise in exports, and the highest growth rate of coffee production in Asia and the Pacific, recording an increase of 51.4 per cent from 2020/21 to 2021/22 (International Coffee Organization, 2023). In recent years, there has been a concerted effort to promote coffee from Timor-Leste in the global market. Notably, Starbucks has been actively promoting coffee from Timor-Leste as part of its Reserve programme, which features rare and high-quality coffees from around the world.

The coffee sector has evolved into a competitive market, featuring multiple actors and export destinations. It has demonstrated resilience, having been able to withstand market disruptions such as price fluctuations and biosecurity challenges in individual markets (Market Development Facility, 2023). However, the sector also faces challenges stemming from climate change and global price fluctuations, lending impetus to the need to develop other export commodities.

Horticulture

The diverse climate of Timor-Leste allows it to produce various fruits and vegetables, including tomatoes, carrots, cabbages, bananas and mangoes. Horticulture is an important source of income for many rural households. E-commerce marketplaces could expand sales to regional markets, supported by the proximity of South-East Asian and Australian markets. Investments in cold chain infrastructure, postharvest handling, processing and packaging would be necessary to ensure quality and safety standards. While Timor-Leste currently exports mostly unprocessed agricultural commodities such as konjac, vanilla, candlenut and coconut, these crops offer much greater revenue potential if processed locally (see Table 2).



Table 2
Market potential for key export commodities (excluding coffee)

Export commodity	Number of farmers	Exports 2021 (\$ million)	Potential benefits of local processing and value addition (\$ million)	Current markets	Top global importers
Konjac	1 200	1.60	16.4	China, Indonesia, Thailand	Canada, France, Germany, United Kingdom, United States
Vanilla	1 200	0.40	10.0	Indonesia	Canada, France, Germany, Netherlands, United States
Candlenut / Candlenut oil	11 270	0.40	15.6	China, Indonesia, Singapore, United States	China, Japan, Singapore, Republic of Korea, United States
Coconut	16 000	0.40	18.0	Australia, Indonesia	Canada, China, Germany, Netherlands, United States
Cloves	3 000	0.50	3.6	United States	India, Malaysia, Singapore, United Arab Emirates, Viet Nam
Seaweed		0.08	2.4	China, Indonesia, Republic of Korea, Viet Nam	China, Japan, Republic of Korea, United States

Source: UNCTAD, based on Market Development Facility (2023).

Tourism

Tourism has significant potential due to the country's natural beauty, cultural heritage and historical sites. Since independence, successive governments have attempted to develop the sector as an engine of growth and economic diversification. The National Tourism Policy aims to achieve by 2030 a tourism revenue of \$150 million annually, over 15,000 people employed in tourism, and at least 200,000 international tourists each year with an average stay of five days. However, the sector requires substantial infrastructure development, improved connectivity and marketing to reach its full potential.

The use of international digital platforms is explicitly emphasized in the Strategic Tourism Marketing Plan (2019), which promotes enhancing the official tourism website as a key resource for international outreach, as well as social media campaigns targeting expatriates and tourists from neighbouring countries. Additionally, the plan advocates for digital banner exchanges on

popular travel sites to position Timor-Leste as an attractive destination for regional travelers, particularly from Indonesia. The government in the past decade has sought to develop tourism subsectors, including eco and marine tourism, historic and cultural tourism, adventure and sports tourism, religious and pilgrimage tourism, and conference and convention tourism (Government of Timor-Leste, 2011).

Creative industries

The creative industries have growth potential, particularly in areas such as handicrafts, cultural heritage and music, the performing arts, film and digital media, and gastronomy and culinary arts. There are also natural links with the tourism sector that can be leveraged. As with tourism, e-commerce can significantly enhance marketing efforts for these industries.

Light manufacturing

The government is actively supporting the development of processing and

manufacturing industries to diversify the economy. Sectors with particular potential include food production for domestic and export markets, construction materials (cement, marble, ceramics), and small-scale manufacturing industries including apparel, value added timber products, salt and mineral water.⁵ In addition, fisheries present significant opportunities for value addition through processing and packaging, which can enhance export competitiveness. By investing in these sectors, including fisheries, Timor-Leste can also leverage e-commerce platforms to access international markets and improve economic resilience.

Services sector (excluding tourism)

Given the current low base of the non-tourism services sector, it is difficult to predict which segments will demonstrate growth. There may be potential for professional services, including legal, consulting and accounting services, especially if cross-border accreditation is established, potentially with ASEAN member states, Australia and New Zealand. There is also potential for freelancing services to find a foothold via e-commerce and digitally delivered services.

1.8. Trade policy and regional integration

Trade policy priorities are strategically designed to integrate the country more effectively into regional and global markets. A significant milestone was achieved with the country's accession to the WTO in 2024. The completion of the accession process in just over seven years reflects both strong commitment by the government and international support received.

Regional integration, particularly with ASEAN, remains a high priority. Full ASEAN membership would enhance regional trade opportunities, especially given the country's geographical proximity to ASEAN member states. Regional integration is essential

for promoting economic cooperation, increasing market access, and facilitating the development of Timor-Leste's digital economy, including e-commerce. To achieve this, regulatory alignment will be vital in promoting cross-border e-commerce and digital trade opportunities.

ASEAN is one of the most dynamic regional communities, having made significant progress in e-commerce through various instruments since 2015. With a dynamic and growing middle class and rising purchasing power (Hoppe & Bajjal, 2019), Timor-Leste offers a largely untapped market for its products and services, moving beyond its traditional reliance on the oil and gas-based extractive sectors. Timor-Leste's observer status in ASEAN allows for close engagement, but full membership would unlock further opportunities for e-commerce expansion by tapping into the bloc's single market. In 2023, Timor-Leste's exports to ASEAN amounted to \$45.3 million, 28 per cent of its total exports globally, which stood at \$163.7 million. However, this represents a significant decrease from \$471.8 million in 2022. This decline also highlights the country's vulnerability due to its reliance on petroleum exports and the need for greater economic diversification.

Singapore emerged as the leading destination for Timor-Leste's exports within ASEAN in 2023, surpassing Indonesia. Despite this shift, the overall export profile still reflects a substantial trade deficit with ASEAN partners, limited diversification, and a concentration of exports in petroleum products and coffee. Strengthening trade ties with ASEAN would allow Timor-Leste to better align its policies and regulations with regional best practices, particularly in e-commerce, which could help diversify its exports and boost sectors such as agriculture and services. The AEC Blueprint 2025, building on the foundation laid by the AEC Blueprint 2015, broadens the scope to include a stronger emphasis on the promotion of MSMEs and the adoption of

Strengthening ties with ASEAN will enable Timor-Leste to align its policies with best practices in trade, investment and e-commerce.

⁵ For more information, see <https://www.tradeinvest.tl/node/24>.



green technology. Additionally, it prioritizes four key areas of e-commerce development: online consumer protection, online dispute resolution, interoperability of e-certification and authorization, and a comprehensive framework for data protection. These elements are crucial for Timor-Leste's integration into ASEAN's digital economy, as they create the regulatory conditions necessary for smooth cross-border trade.

Further alignment with ASEAN's Work Programme on Electronic Commerce (2017–2025), which focuses on modernizing legal frameworks and securing electronic transactions, is necessary for Timor-Leste to foster a seamless, secure e-commerce environment. The ASEAN Agreement on

Electronic Commerce, signed in 2019, represents another crucial instrument for Timor-Leste, as it acknowledges the role of e-commerce in reducing barriers to trade, particularly for MSMEs, and promotes regional cooperation on issues such as privacy, data protection and online consumer security.

Timor-Leste, as an observer in ASEAN, will need to upgrade and align its regulatory framework based on the AEC Blueprint 2025, the Work Programme on Electronic Commerce, and the ASEAN Agreement on Electronic Commerce to achieve full membership and fully leverage these regional e-commerce opportunities.



Table 3
Importing markets in ASEAN for products exported by Timor-Leste
 (\$ thousands)

Importers	Exported value (2019)	Exported value (2022)	Exported value (2023)	Trade balance (2023)	Main exported products
World	141 448	471 774	163 722	-746 103	Petroleum products
ASEAN aggregation	88 282	113 608	45 269	-413 561	Petroleum products (68 per cent); coffee, tea, maté and spices (15 per cent)
Singapore	59 607	9 890	31 242	-62 996	Petroleum products
Indonesia	6 730	103 387	11 765	-288 690	Coffee, tea, maté and spices
Philippines	0	15	2 057	1 115	Ships, boats and floating structures
Thailand	105	53	99	-12 408	Article of iron and steel / motor cars and other vehicles
Malaysia	21 806	109	39	-30 182	Vehicles, iron / steel articles, waste and scrap
Cambodia	0	1	2	-36	Travel sets for personal toilet, sewing or shoe or clothes cleaning

Source: UNCTAD, based on ITC, Trade Map.



The European Union-Pacific Economic Partnership Agreement is another priority area. Timor-Leste officially expressed its intention to accede in 2020, and the European Union has provided technical assistance through the Pacific Islands Forum-Strengthening Pacific Intraregional and International Trade project to support Timor-Leste in the process, focusing on trade in goods to facilitate easier access to European Union markets.

Timor-Leste has observer status in the Pacific Islands Forum, and attends events such as the Organisation of African, Caribbean and Pacific States leaders meeting held in 2023.

Timor-Leste maintains ties with CPLP countries. The first Global Economic Forum of the CPLP took place in Dili in February 2016, promoting trade and investment between CPLP countries and the Asia-Pacific region.

Domestically, Timor-Leste prioritizes enhancing productivity fostering economic self-sufficiency, and gradually building a competitive edge. A strategic trade policy framework is currently under development to establish clear guidelines and objectives to streamline Timor-Leste's approach to international trade, ensuring that it supports the nation's long-term economic growth and development objectives.

1.9. E-government

E-government is a priority area in the Government Strategic Plan, the Ninth Constitutional Government's

Programme and Timor Digital 2032. TIC TIMOR, established in 2017, is the agency mandated to lead e-government implementation in the country.

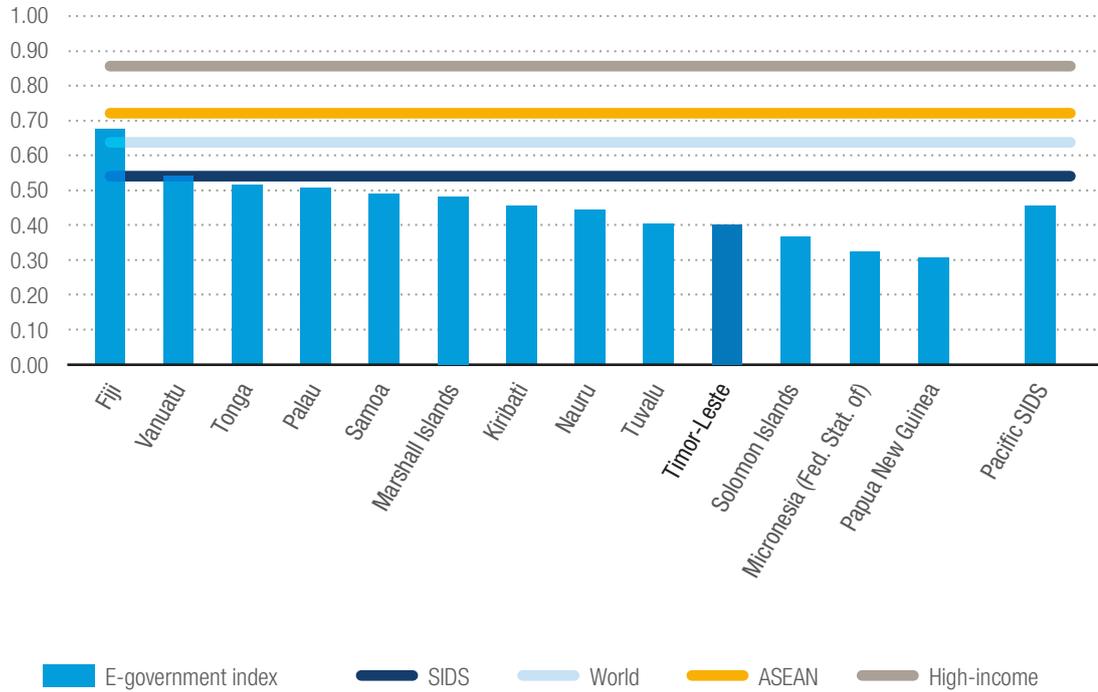
Thus far, the implementation of e-government has proceeded at a slow pace due to the challenges with Internet speeds and affordability. However, it is anticipated that with the arrival of the TLSSC, the scope for deploying and absorbing e-services will increase. The pace of e-government has also been stymied by institutional reorganization – TIC TIMOR is no longer independent and has been absorbed as part of MTC. Going forward, institutional coordination and technical capacity development relating to TIC TIMOR will be essential.

E-government services have the potential to directly support the growth of e-commerce by simplifying administrative processes, providing greater access to essential government services, and facilitating online interactions between citizens, businesses and the government (see Figure 2). The broader goal of digital transformation outlined in Timor Digital 2032 suggests that deploying such services will reduce friction in online business processes, enhance trust in digital transactions, and streamline administrative functions crucial for businesses.

Timor-Leste demonstrates strengths in citizen engagement through e-participation and the availability of online services, surpassing nearly all Pacific Small Island Developing States (SIDS) but not the ASEAN countries (see Figure 3).

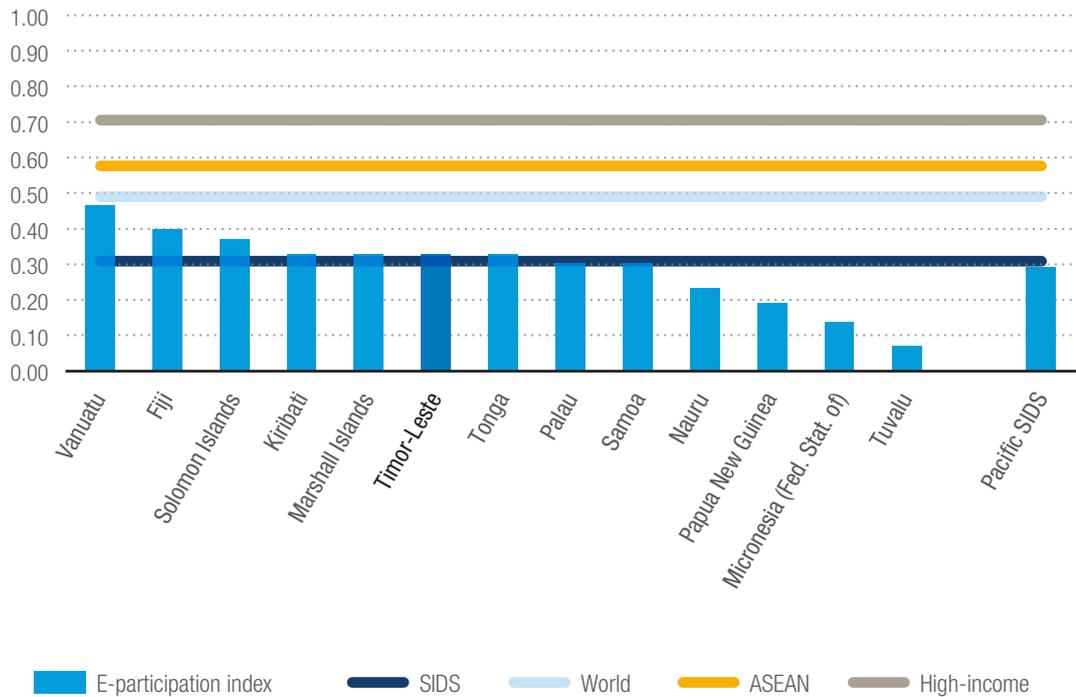


Figure 2
E-government development index, 2024



Source: UNCTAD calculations, based on United Nations E-Government Knowledgebase (2024).

Figure 3
E-participation index, 2024



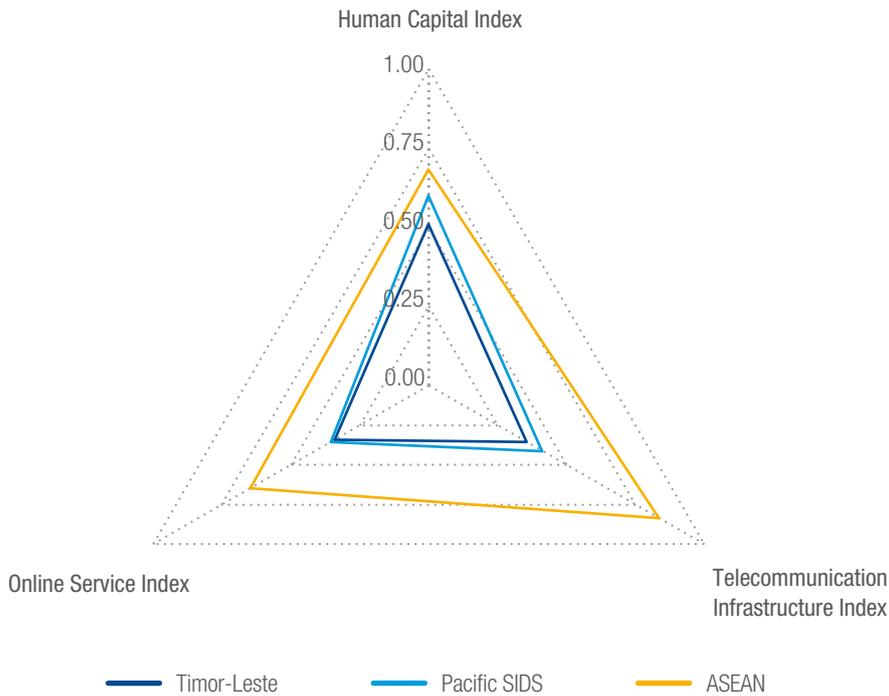
Source: UNCTAD calculations, based on United Nations E-Government Knowledgebase (2024).

However, challenges persist, particularly in telecommunications infrastructure and the overall E-Government Development Index ranking (see Figure 4). In 2024, Timor-Leste was ranked 159th out of 193 United Nations Member States in the Index,⁶ as calculated by the United Nations Department of Economic and Social Affairs. This low ranking reflects the country's underdeveloped digital infrastructure, which impacts not only e-government services but also e-commerce. For e-commerce to thrive, businesses require efficient access to services like electronic

business registration, tax payment systems and digital procurement platforms – all key elements of e-government.

Timor-Leste ranks low among the Pacific SIDS and ASEAN countries in the Human Capital Index, which underscores the considerable room for improvement in workforce readiness to engage with digital government services. Improving telecommunications infrastructure and digital governance will create a more efficient regulatory environment for e-commerce.

Figure 4
E-government development overview, Timor-Leste, selected Pacific SIDS and ASEAN



Source: UNCTAD calculations, based on United Nations E-Government Knowledgebase (2024).

⁶ The United Nations E-Government Development Index assesses national governments' digital capabilities and readiness to deliver online services and engage with citizens via digital platforms. It comprises three primary dimensions: online services, telecommunications infrastructure and human capital. Index scores are derived from a composite calculation incorporating various indicators across these dimensions, providing a holistic evaluation of a country's e-government development.

Key initiatives that can be expected soon include the following.

- **Deployment of *Uma Digital*:** These planned one-stop digital service centres in *sucos* will facilitate access to government e-services. These centres will connect all administration offices to the central government ICT network and serve as the government service desk, linking citizens and local government to the central government, private sector stakeholders and other entities.
- **Prioritization of e-services:** This is due to take place via an assessment exercise in 2024, and implementation is expected to commence thereafter.
- **Capacity development of TIC TIMOR:** Strengthening this agency will be crucial to improving the technical backbone for digital services, which in turn will foster a more conducive environment for e-commerce.
- **More e-services linked to TileSW:** As more services are linked, e-commerce operations – particularly in trade facilitation – will become more efficient and secure.
- **Development of a five-year governance-focused digital development strategic plan derived from Timor Digital 2032:** This road map will outline the strategies for advancing digital governance, improving government efficiency and fostering inclusion through e-government services. It will prioritize improving internal government efficiency and productivity, fostering better collaboration, enhancing the user experience for citizens and businesses, and increasing public participation and transparency.
- **National data centres and standardization:** Establishing national data centres and improving standardization in terms of data handling and storage will boost the reliability and security of online transactions, fostering greater trust in digital services. This is crucial for encouraging broader participation in e-commerce from both consumers and businesses.



2. ICT Infrastructure and Services

Timor-Leste has experienced rapid growth in Internet access, driven primarily by mobile phones. However, broadband services remain slow, unstable and prohibitively expensive. This situation is expected to improve gradually with the arrival of the TLSSC in late 2024. The submarine cable will offer initial bandwidth of 800 gigabits per second, with the potential to scale up to 27 terabits per second, significantly boosting opportunities for e-commerce and growth of the digital economy. The realization of these benefits will depend on the effectiveness of the governance framework in facilitating the transfer of cost advantages from the wholesale to the retail level, and the extent to which network operators upgrade their infrastructure to fully leverage this new capacity.

2.1. Sectoral and institutional context

Timor-Leste has gradually rebuilt and liberalized its telecommunications infrastructure since independence. For nearly a decade post-independence, the state-owned Timor Telecom was the only telecommunications operator in the country. Since liberalization in 2010, two private mobile network operators, Telkomcel and Telemor, have emerged. In 2022, Kacific

Broadband Satellite Ltd, a Singaporean broadband satellite operator, expanded into Timor-Leste by establishing a network of distributors and resellers across the country. Starlink, the satellite ISP owned by SpaceX, has shown interest in entering the Timorese market. However, it is currently facing delays in obtaining the necessary licences, as is the case in other Pacific nations, where Starlink is in various stages of regulatory approval (UNCTAD, *Digital Economy Report: Pacific Edition*, forthcoming 2024).

Table 4
Key institutions overseeing ICT infrastructure

Institution	Mandate
MTC	Responsible for developing and implementing policies in the transportation and communications sectors, with a specific mandate in the ICT area to enhance digital infrastructure, ensure access to reliable and affordable Internet services, and promote the adoption of ICTs.
ANC	Regulator for the telecommunications sector, responsible for licensing, monitoring and enforcement in the sector. A development directorate is due to be established in 2024.
TIC TIMOR	Responsible for centralizing and securing government IT infrastructure. Current priorities for TIC TIMOR include facilitating inter-agency electronic communications (for public administration), e-procurement and e-applications for driving licences. E-education and e-health will follow later, in coordination with line ministries. Previously housed under the Prime Minister's Office, TIC TIMOR is now integrated within MTC.

Source: UNCTAD

There is currently no telecommunications law in Timor-Leste. This regulation is expected to be developed shortly in close collaboration with ANC, TIC TIMOR, the upcoming state-owned enterprise and other entities, along with a specific law for telecommunications investments. Cybersecurity tenets will be included as a priority to ringfence TLSSC operations.

2.2. Status of infrastructure and major telecommunications projects

Timor-Leste is one of the few island countries or territories currently without a submarine fibre-optic Internet connection. The upcoming TLSSC is expected to bring much-needed high-speed Internet bandwidth. Initially, the cable is expected to operate at a capacity of 800 gigabits per second, with the potential to scale up to a maximum of 27 terabits per second (see Box 1). This set-up is poised to significantly enhance the nation's digital connectivity, fostering economic growth and development.

However, an important consideration is the lack of readiness of network providers to upgrade their networks to leverage the additional capacity offered by the cable. This will likely be a bottleneck that will emerge because the pace of TLSSC deployment is outpacing network providers' upgrades. When considering governance and pricing structures, Timor-Leste should study examples from the region including Fiji, Solomon Islands and Papua New Guinea. In the case of Fiji, the benefits in terms of lower costs and higher speeds, combined with investment incentives and strong comparative advantages in terms of human capital, have supported growth in business process outsourcing (Outsource Fiji, 2023).

The anticipated results in Papua New Guinea and Solomon Islands suggest that wholesale cost savings realized by network operators due to cable operations could gradually translate into lower retail costs.

There are ongoing plans to introduce redundancy via two additional submarine cables and a terrestrial cable from the west, overseen by the state-owned Telkomcel. The Asia Connect Cable System, initiated by the Australian start-up Inligo Networks, aims to establish connections between Australia, Guam, Indonesia, Singapore and Timor-Leste. This project received support for a branch near Atauro Island from the Department of Foreign Affairs and Trade (DFAT) of Australia. In 2022, Inligo Networks formed a partnership with SacomTel, securing land for the Asia Connect Cable System's landing station near Dili. As per the agreement, Inligo Networks will handle SacomTel's and the country's international connectivity and link to SacomTel's newly built data centre. This collaboration is set to decrease dependency on satellite services, offering a faster, more affordable and higher-capacity Internet service than is currently available.

National public-sector backbone network

A national backbone has been developed, connecting Dili to government offices in the municipalities (12 at the time of writing this report) using terrestrial fibre optic. The backbone provides for 20 gigabytes per second capacity for local access – i.e. anything hosted in the ICT data centre administered by TIC TIMOR. The TLREN also connects the universities in the country. Once the TLSSC is deployed, this can be connected to the backbone as well as to the TLREN.

The upcoming submarine cable will significantly boost digital connectivity for e-commerce growth.



**Box 1****Submarine cable connectivity for Timor-Leste**

Timor-Leste is one of the last countries in South-East Asia and the Pacific without a connection to an international submarine telecommunications cable,⁷ and various options have been under consideration for the past decade. In 2019, a feasibility study recommended Australia as the gateway. The TLSSC project will connect Dili to the North-West Cable System, which spans Darwin and Port Hedland, by the end of 2024. A landing station is anticipated in Dili, with a future roll-out on the south coast.

MTC is the owner of the TLSSC, with oversight from the Ministry of Planning and Strategic Investment and the Ministry of Finance due to the strategic nature of the project. The cable is funded by the Government of Timor-Leste, with support from partners such as Australia and the European Union for feasibility studies and legal consultancy. Alcatel Submarine Networks will lay the cable, while the Australian firm Vocus is supporting the design and development of the cable landing station in Dili.

Governance

An Interministerial Technical Working Group currently managing the project is led by MTC. This group will be replaced by a project management unit that will facilitate the development of a state-owned enterprise to manage long-term cable operations. This body will decide on the wholesale pricing structure, with due consideration of recent lessons from the Solomon Islands and Papua New Guinea, where pricing benefits were not passed down to retail clients, keeping overall Internet costs high.

Need to upgrade backhaul networks

Individual operators (ISPs / mobile network operators) will need to enhance their infrastructure – such as access points, equipment, data centres and transmission towers – to accommodate the additional capacities. Currently, most networks have capacity of 20 gigabytes per second, which is insufficient given the cable's overall capacity. Without these upgrades, network performance may be hindered by choke points.

Source: UNCTAD.

2.3. Broadband / mobile / smartphone penetration

There has been increased uptake of various digital devices in Timor-Leste, with smartphone access and use growing the fastest. Several elements in the digital economy ecosystem, such as accessing digital platforms and transferring funds via an electronic medium, can take place through such devices. In 2022, approximately 70 per cent of the population had access to smartphones, which represents a relatively

moderate level compared with other Pacific SIDS. The smartphone market is projected to grow annually by a compound annual growth rate of 6 per cent between 2024 and 2028 (Statista, 2023). However, access to other digital devices – such as tablets, laptops and desktop computers – is much lower, with less than 30 per cent of the population having such access (see Figure 5), the lowest level among Pacific SIDS for which data is available.

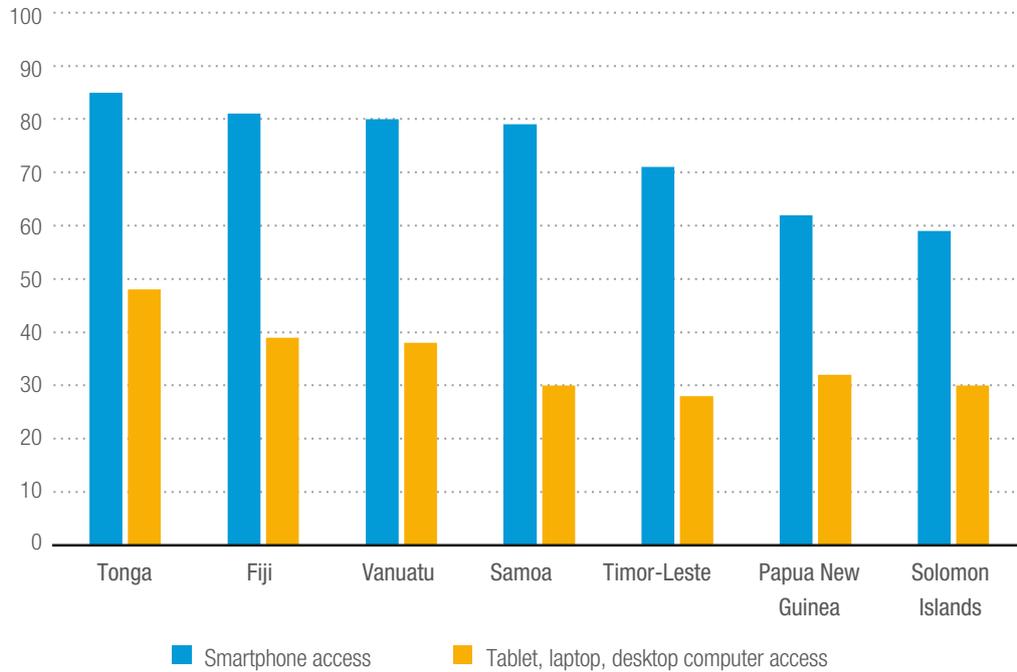
Mobile-based transactions are expected to lead e-commerce growth in the future.

⁷ For example, Kiribati, Nauru, Norfolk Island, Pitcairn Islands, Tokelau and Tuvalu have no submarine cable connectivity. Connectivity is planned with Norfolk Island, Pitcairn Islands and Tuvalu. See Watson (2022).





Figure 5
Access to technology, selected digital devices and Pacific SIDS
 (Percentage of population)



Source: UNCTAD, based on UNCDF (2023-g).

Mobile e-commerce is expected to lead growth as smartphone usage expands.

This growth trajectory is particularly important given that smartphone-based e-commerce transactions are expected to be the primary model of growth in the future. Smartphones dominate web traffic by device at 71 per cent, followed by laptops and desktop computers at 28.7 per cent. The growth rate for traffic via smartphones was 27.4 per cent from January 2023 to January 2024, while traffic from laptops and desktop declined by 34.8 per cent over the same period, indicating a further shift towards smartphones (Kemp, 2024).

Based on this information – and considering that fixed line Internet connectivity is challenging from both a penetration (fixed broadband connectivity at 0.01 per cent of population versus 18.3 per cent for the Asia-Pacific region) and a cost perspective (fixed line price basket at 30.3

per cent of gross national income (GNI) per capita versus three per cent for the Asia-Pacific region⁸) – it can be inferred that smartphone-based e-commerce activity will likely lead other channels.

Timor-Leste has made significant strides in expanding mobile and mobile broadband services to its citizens in the past decade. All three network operators launched 3G service in 2013 and 4G service in 2017 (International Telecommunication Union (ITU), 2018). Liberalization of the telecommunications sector has contributed to 3G coverage spanning 96 per cent of the population.⁹ Low-earth-orbit satellites and microwave connections (cross-border relays from Indonesia) are currently the main modes of international Internet connectivity. Mobile cellular connectivity uptake meets the regional average (see Table).

⁸ ITU Datahub.

⁹ Inferred from ITU (2018). See also <https://www.unescap.org/sites/default/files/Regulatory%20Policies%20and%20ICT%20Trends%2C%20Insights%20from%20Timor-Leste.pdf>.



Despite the improvements, core Internet access and affordability indicators are relatively poor compared with the broader region, and are restricting uptake of even

basic Internet-based solutions. Only 45 per cent of the population are able to access 4G Internet and the cost of Internet access continues to remain prohibitively high.



Table 5
Selected infrastructure, ICT access and use indicators, Timor-Leste and Asia-Pacific (2022)

Indicator	Parameter	Value	
		Timor-Leste	Asia-Pacific
2G / 3G / 4G	Population coverage (percentage) by technology (2022)	96 / 96 / 45	99 / 97 / 96
Mobile cellular subscriptions	Per 100 people. Postpaid subscriptions and the number of active prepaid accounts (2022)	110	111
Individuals using the Internet	Percentage of individuals using Internet from any location in last three months (2022)	40.8	64.3
Active mobile broadband subscriptions	Per 100 people (2022)	29.0	89.3
Data-only mobile broadband basket	Per cent share of monthly GNI per capita based on the cheapest mobile broadband plan providing at least 2 gigabytes of monthly data using at least 3G technology (2022)	4.33	1.44
Households with Internet access at home	Percentage of households with Internet access at home (Timor-Leste, 2019; and Asia-Pacific, 2020)	18.9	64.1
Lit / equipped international bandwidth capacity	Megabit per second total lit / equipped capacity of international links, namely fibre-optic cables, international radio links and satellite uplinks to orbital satellites (2022)	5.2Mb	n/a
Secure Internet servers	Per 1 million people (2020)	92	3 518
Price of electricity	Average price of 1 kW/hr (2021)	0.085	0.303*

Sources: ITU Data Hub (<https://datahub.itu.int>) and WB Open Data (<https://data.worldbank.org>).
Note: *Oceania.

2.4. Quality and affordability of digital connectivity

Mobile broadband affordability falls significantly below both the Pacific SIDS average (3.0 per cent of GNI per capita) and the Broadband Commission’s Advocacy Target of 2 per cent. With a rate of 4.3 per cent of GNI per capita, the data-only mobile broadband basket cost three times the Asia-Pacific regional average of 1.44 per cent in 2022. The average cost of 1 gigabyte of data was \$1.92, much higher than comparative economies in the region

such as Cambodia (\$0.12), Indonesia (\$0.28), Philippines (\$0.58), Fiji (\$ 0.09) and Samoa (\$0.36)¹⁰ (see Figure 5).

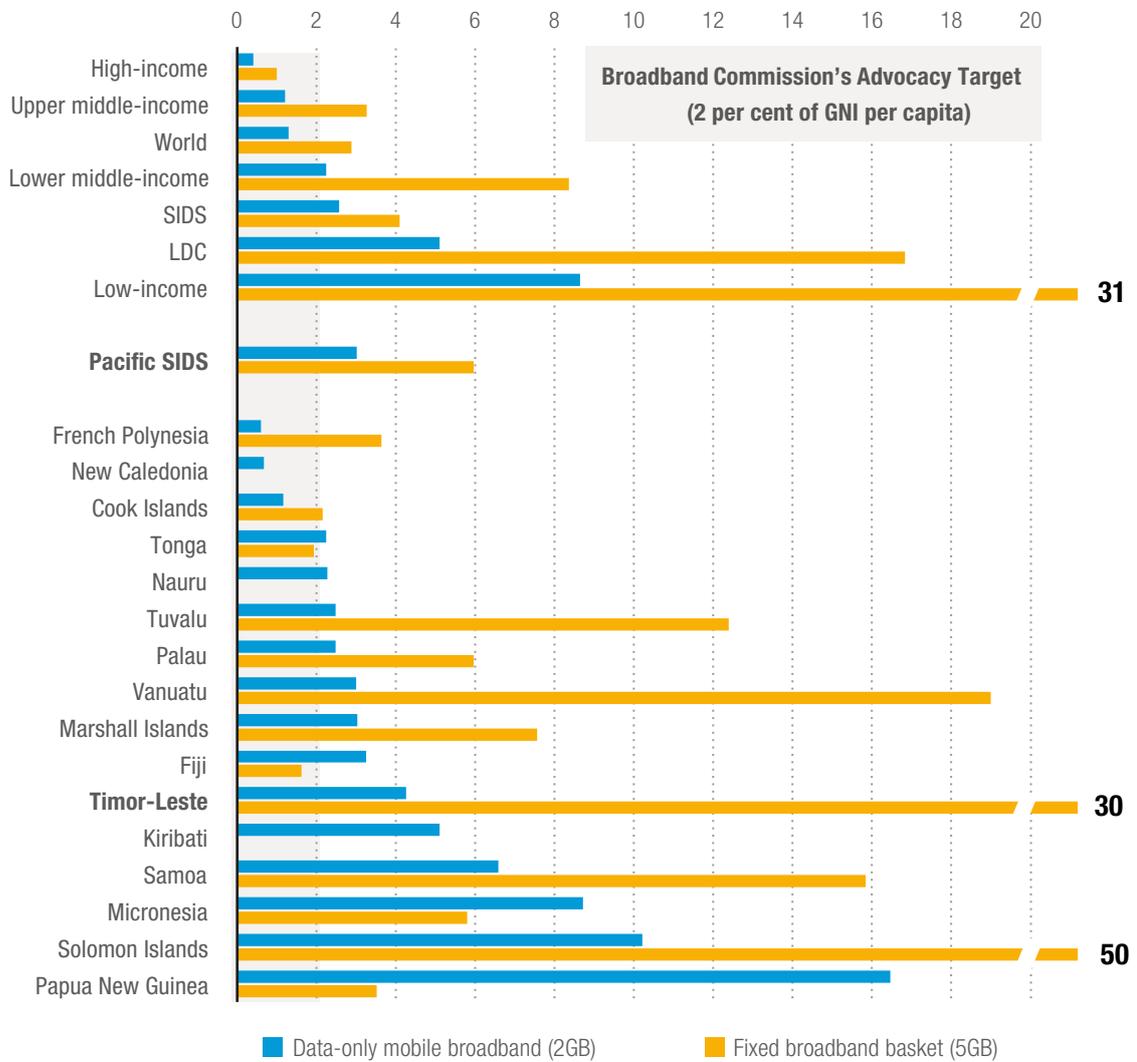
For fixed broadband, the cost in Timor-Leste, as in Solomon Islands, was exceptionally high at 29.9 per cent of GNI per capita, making it prohibitively expensive. This starkly contrasts with the Pacific SIDS average of 6.0 per cent and far exceeds the recommended threshold for affordability set by international standards. Affordability outcomes in Timor-Leste align closely with the scores observed among least developed countries (see Figure 6).

The slow, unstable and prohibitively expensive broadband infrastructure significantly hampers the growth of e-commerce.

¹⁰ See <https://www.cable.co.uk/mobiles/worldwide-data-pricing/>.



Figure 6
Price of broadband subscriptions as a share of monthly GNI per capita,
by country groupings and selected Pacific SIDS, 2023
 (Percentage)



Source: UNCTAD calculations based on ITU data (2024).

Note: Country groupings are those of the source (medians), except Pacific SIDS (median).

Respondents to the UNCTAD survey concurred that Internet access was the most critical factor for the e-commerce sector, with 91 per cent rating it ‘very important or important’ (see Figure 7). Competition among telecommunications and Internet providers is also prioritized, with 79 per cent of respondents assessing increased competition as ‘very important or important’. This is linked to experience with liberalization

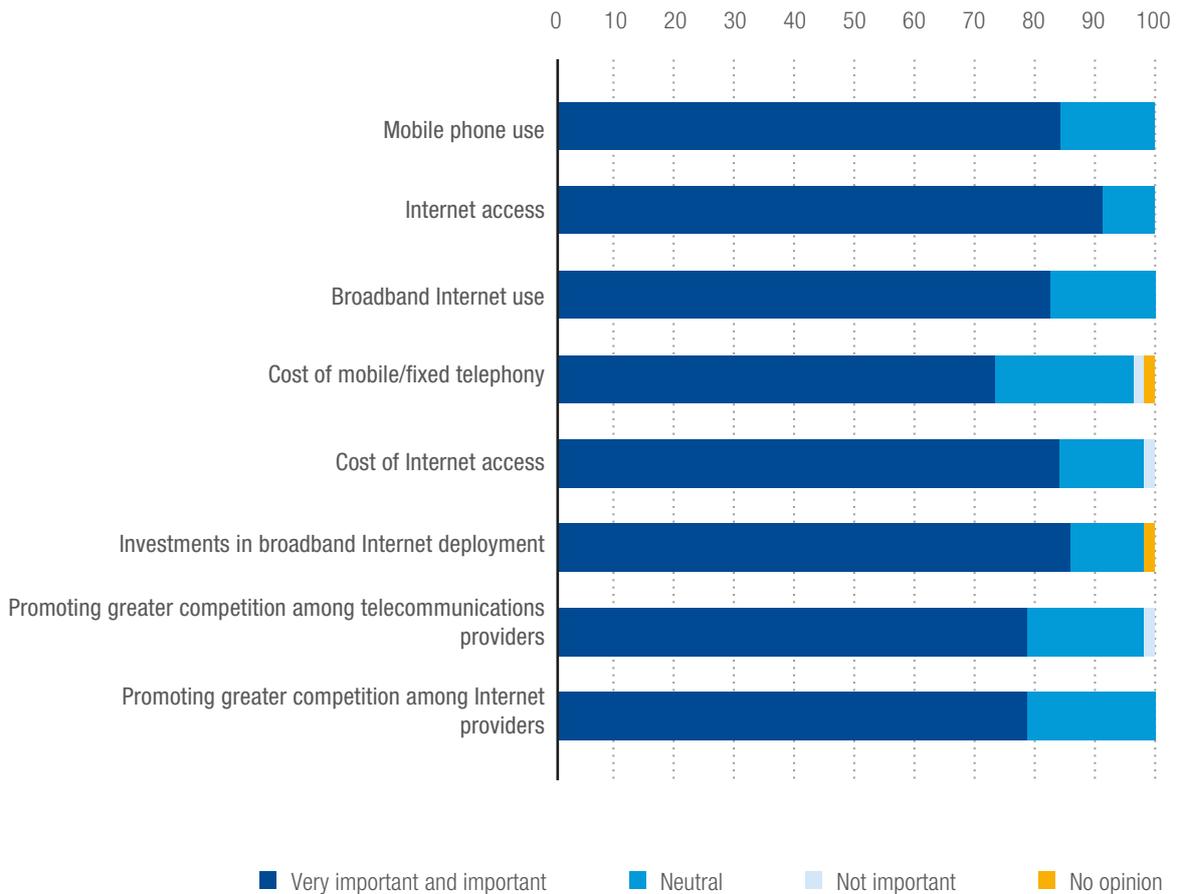
of the sector, where greater competition led to improved services and reduced costs.

This reflects stakeholders’ belief that reliable Internet access is foundational for e-commerce. Costs related to both telephony and Internet access are also highlighted as significant, indicating concerns about affordability and its impact on e-commerce.

Figure 7
Importance of ICT infrastructure for creating an enabling environment for e-commerce in Timor-Leste

(Percentage of survey respondents)

Please rank the following items according to their priority for creating an enabling environment for e-commerce in your country in terms of ICT infrastructure and services (Public and private sector surveys, 57 responses).



The high cost of Internet access can be traced back to two main issues: the lack of international Internet connectivity via fibre-optic cables and the unattractive financial prospects for network operators to extend their services nationwide. The reluctance to invest in expanding networks in the provinces is primarily due to the steep costs of building infrastructure and the small size of the market there. Government support will likely be essential to promote the growth of the network. This support

could take the form of direct investment in infrastructure as well as offering incentives and encouragement to network providers.

Other challenges include:

- Frequent disruption of Internet connection during severe weather conditions.
- Lack of zero-rated pages provided by ISPs, although Timor Telecom offers unlimited Internet packages for a flat fee.
- Limited local content development and adoption in Timor-Leste.

Cybersecurity is crucial for e-commerce growth, with a strategy in development and plans for an agency.

2.5. Emerging issues

Cybersecurity

Key priorities include the establishment of a national agency for cybersecurity and the adoption of a national cybersecurity strategy (draft currently being reviewed by the Interministerial Working Group on Cybersecurity). ANC houses the Timor-Leste Computer Security Incident Response Team, which functions as the computer emergency response team. Training has been provided by Japan and Indonesia as well as ITU.

IXPs

IXPs are crucial infrastructures that enable ISPs to directly exchange Internet traffic within a country, avoiding the need for often costly and distant overseas third-party networks such as international transit providers or content delivery networks. IXPs significantly enhance network efficiency, reduce latency and improve overall Internet performance for users. Timor-Leste falls below the world average of 4.9 IXPs per country and the Pacific SIDS average of 1.7.

In 2016, an IXP known as Timor-Leste Internet Exchange was established in Dili, underscoring the nation's early ambitions to strengthen its digital infrastructure. However, there is limited data on its operations, and it does not appear to be currently functional.

A significant development in 2024 is the anticipated establishment of another IXP, for which the budget has been approved and the tendering process is under way. Tests are currently being conducted with three operators. The IXP is essential, as it will reduce reliance on distant and expensive upstream providers, decrease latency and support the growth of local content.

Digital identity authentication

ADB has provided support for a unique identity system project (Asia-Pacific Project Preparation Facility, 2018). The system will create a digital identity using a random

unique number, biographical data and biometric information, ensuring accessibility to all, including foreigners and those without existing types of identification. Once integrated with civil registration systems, this system will offer critical digital authentication capacities, which contribute to building consumer trust in digital transactions and preventing fraudulent transactions, particularly in e-commerce. An assessment by Estonia proposed a model based on the Indian Aadhaar project.¹¹ The project is currently under review by the Ministry of Justice, TIC TIMOR and other entities.

Electrification

Digitalization requires reliable and affordable access to electricity. The cost of electricity also impacts the competitiveness of firms. Electrification is a fundamental requirement for powering digital devices such as computers, smartphones and tablets; and stable electric supply can increase the use of electronic devices and familiarity with digital platforms among the population. Electrification is often a precursor to broader infrastructural developments, including telecommunications and Internet services.

Electrification coverage in the country has risen considerably. Timor-Leste has made impressive progress on expanding energy access and as of 2021, 100 per cent of the population enjoys access to electricity, up from 67 per cent in 2015 (95.2 per cent urban versus 55.6 per cent in rural areas) (see Figure 8).

This accomplishment contrasts with other countries in the region sharing similar proportions of rural population, such as the Federated States of Micronesia, Solomon Islands and Vanuatu, where rural electrification rates are lower. Timor-Leste also outperforms the Pacific SIDS group.

Nonetheless, this sector is still inefficient due to overcapacity and illegal use of electricity in remote areas. Moreover, prolonged outages continue in rural districts as well as in Dili.

¹¹ Information shared by TIC TIMOR.

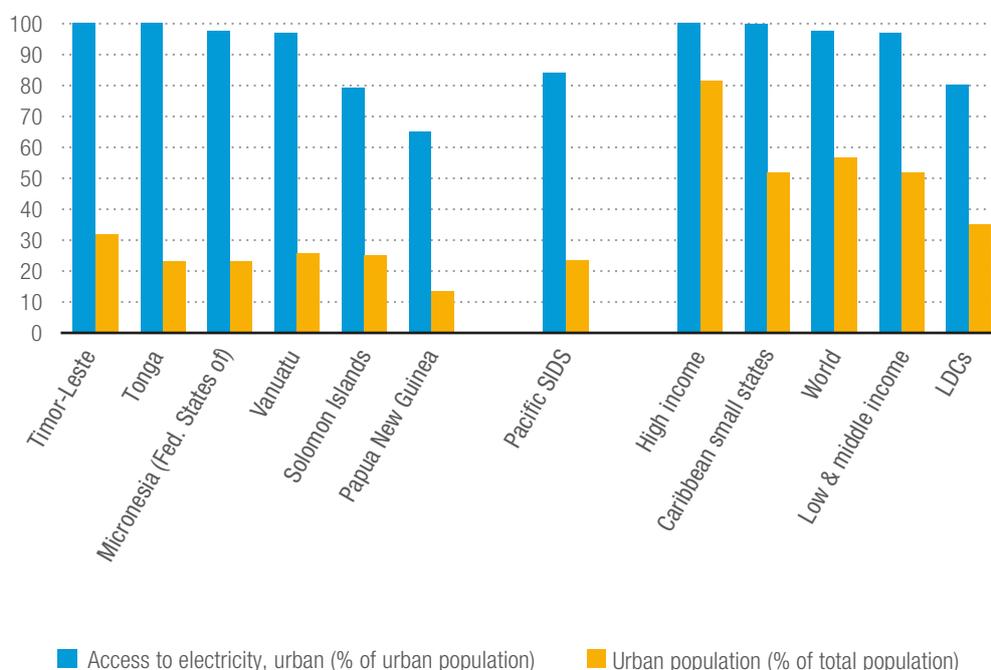




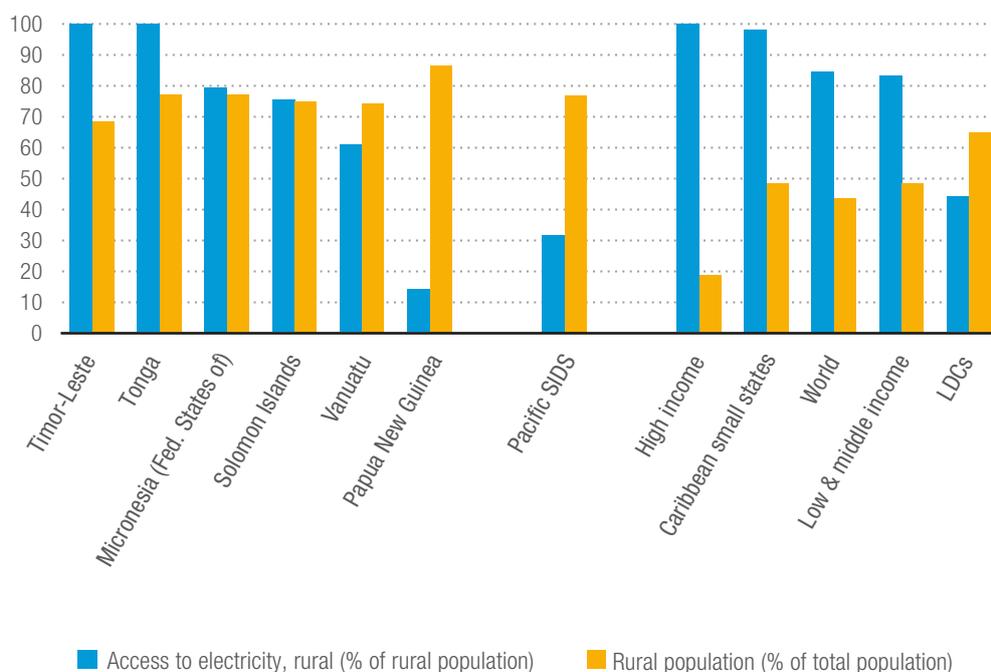
Figure 8

Access to electricity in urban and rural areas, Timor-Leste and selected Pacific SIDS and country groupings, 2021

a) Access to electricity, urban population



b) Access to electricity, rural population



Source: UNCTAD calculations based on WB World Development Indicators, 2021 (<https://datatopics.worldbank.org/world-development-indicators/>).



3. Trade Logistics and Trade Facilitation

Policies to strengthen Timor-Leste's trade logistics ecosystem are critical not only for improving infrastructure and regulatory frameworks but also to support the growth of e-commerce. By enhancing key infrastructure such as roads, ports and airports; and modernizing Customs and trade facilitation processes, the government is laying the groundwork for a more efficient and reliable logistics network that can benefit e-commerce businesses. These reforms, including Timor-Leste's accession to the WTO in 2024 and the implementation of the Trade Facilitation Agreement, aim to streamline cross-border trade and reduce barriers, which are essential for enabling the digital economy and facilitating online transactions. The adoption of TileSW further highlights the government's efforts to integrate the country into regional trade networks, particularly with ASEAN, and create a more conducive environment for e-commerce.

3.1. Logistics infrastructure

The government has placed priority on developing regional ports, expanding and modernizing port facilities, revising the Highway Code, and creating a weather forecasting system to ensure safety in air traffic. These efforts aim to improve urban links to rural and agricultural economies, strengthen the tourism sector and facilitate trade in people and goods. The Timor-Leste Public Transport Master Plan (2024) was launched in collaboration with ADB. Although the final version of the plan is not yet publicly available, it is expected to outline sustainable public transport initiatives and further underscore these priorities on infrastructure development.

The road network spans approximately 6,000km, catering to 90 per cent of passenger traffic and 70 per cent of freight transportation. About half of this network consists of underdeveloped rural tracks. The core network includes 1,426km of national roads and 869km of district roads, with nearly 70 per cent of these roads in very poor condition. Significant portions of the network require extensive rehabilitation or upgrading efforts. Under the new

master plan, the government will continue to focus on enhancing connectivity and improving road conditions to ensure better infrastructure for both urban and rural areas.

Air transport in Timor-Leste is centred around Presidente Nicolau Lobato International Airport in Dili, which connects the country with regional destinations, including Denpasar, Darwin and Singapore. The airport's capacity and facilities have been subjects of improvement projects to cater to increasing passenger and cargo volumes.

A number of issues that will eventually benefit e-commerce have been identified in the government's programme of priorities. These include:

- Capacity development for the regulator, the Civil Aviation Authority of Timor-Leste, and Aerial Navigation and Airports of Timor-Leste as the operator of Timor-Leste's airports.
- Developing a master plan for Presidente Nicolau Lobato International Airport in Dili and finalizing its expansion, including the runway; and ensuring the necessary conditions for this airport to have the capacity to handle



about 1 million passengers per year with the highest safety standards.

- Developing feasibility studies for municipal airports in liaison with the master plan for the international airport to complete a network of fully operational municipal airports, including Los Palos, Maliana, Viqueque, Suai and Atauro (Government of Timor-Leste, 2023).

Tibar Bay Port is the largest container facility in Timor-Leste and reflects the largest greenfield public-private partnership initiative since independence. The government considers such investments crucial for the development of trade and industry in the country, and has placed focus on continuing implementation of the public-private partnership model.

The Programme of the Ninth Constitutional Government of Timor-Leste outlines several priorities for the maritime sector. On the infrastructure front, it includes plans to enhance harbour facilities at Com and Atauro, as well as construct new facilities at Kairabela in Vemasse, Baucau. These developments aim to improve sea access and support the tourism sector. Feasibility studies will also be conducted for the construction of a port at Manatuto and the establishment of a national maritime line. These initiatives are intended to enhance cabotage transport and coastal connections, and provide maritime transport services for passengers and cargo along the country's coastline. The priorities also include plans to restructure and modernize the Port of Dili, transforming it into a city marina and cruise port. On the regulatory front, the programme calls for strengthening the regulator and maritime authority.

3.2. Logistics, postal and last-mile services

CTL, the national postal services carrier, is key to enabling e-commerce, especially by ensuring that businesses can deliver goods across Timor-Leste, including rural and remote areas. The

government has identified priorities to develop the capacities in the sector:

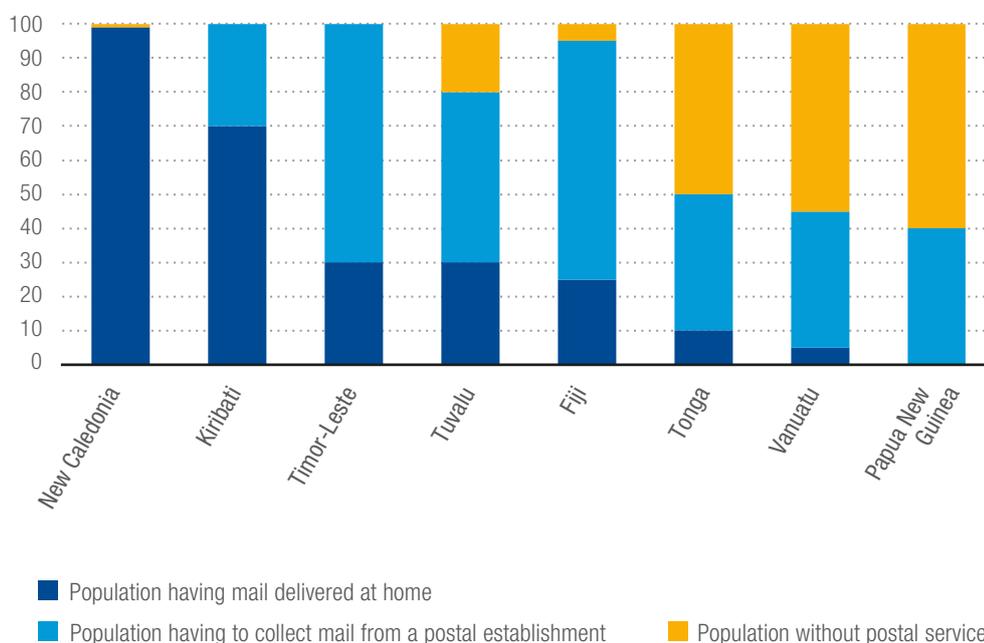
- Reform and develop CTL for more efficient, faster and more accessible services, considering the creation of municipal hubs in liaison with central services. This will ensure that e-commerce businesses can deliver goods more reliably, even to remote areas.
- Introduce innovative systems at CTL to enable parcel delivery up to the Administrative Post level throughout the country. This will improve accessibility for both businesses and consumers in e-commerce, reducing the logistical barriers faced by MSMEs.
- Develop a postal service development plan, including municipal expansion (Government of Timor-Leste, 2023) to address infrastructure gaps needed to support the growing demand for e-commerce.

Beyond CTL, international courier services including DHL, FedEx, D&N Movers, SDV Logistics, Meratus Group and Pronto Logistics are active in the country. However, even these services do not have coverage at the last-mile level, and the costs can be prohibitive for MSMEs.

In Timor-Leste, 100 per cent of the population either collects mail from a postal establishment (70 per cent) or receives mail delivered at home (30 per cent) (see Figure 9). Papua New Guinea shares a similar profile to Timor-Leste, with 60 per cent of its population needing to collect mail from a postal establishment, while 70 per cent of the population of Fiji is served by mail delivery at home. However, these countries have lower overall accessibility to postal services compared with Timor-Leste. While CTL covers much of the country, international courier services generally serve larger urban centres, limiting the reach of MSMEs trying to sell goods online to remote areas.



Figure 9
Postal services, by type of delivery, selected Pacific SIDS and Timor-Leste, 2022 or the latest available year.
 (Percentage of population)



Source: UNCTAD based on UPU data, 2022 (<https://www.upu.int/en/universal-postal-union/activities/research-publications/postal-statistics>).
 Note: 2022 data concern Kiribati, Papua New Guinea, Tuvalu and Vanuatu. 2021 data concern Fiji, New Caledonia, Timor-Leste and Tonga.

A lack of affordable and accessible warehousing options for MSMEs poses a considerable challenge to e-commerce growth.

There is a significant gap in affordable warehousing facilities that are fit for purpose for MSMEs in Timor-Leste. While larger companies can secure warehousing services in various municipalities, the options available to MSMEs are limited in terms of availability, network and affordability.

Developing last-mile supporting infrastructure is already a part of the Timor-Leste Strategic Development Plan. Approximately 30 per cent of the state’s annual spending is allocated to improving key infrastructure such as electricity, roads, ports and airports, as well as rural and other infrastructure (Neves, 2022). However, further investment is required for growth and development, particularly to support the growing digital economy. Enhancing last-mile infrastructure and logistics services is crucial for improving accessibility and efficiency

in the delivery of goods, enabling both MSMEs and consumers to participate more actively in e-commerce. In terms of logistics infrastructure, inadequate road networks, lack of MSME-adapted logistics services, and electrification challenges (reliability and cost) continue to pose significant barriers to connecting and trading online.

3.3. Status of the trade facilitation environment

Timor-Leste acceded to the WTO on 26 February 2024 and has negotiated a transition period for ratifying the WTO Trade Facilitation Agreement. The latter will be instrumental in enhancing the efficiency of cross-border trade processes, which is crucial for the development of e-commerce in the country.

In 2017, the Council of Ministers of Timor-Leste adopted Resolution No. 24/2017, selecting the ASYCUDAWorld Customs management software as the platform for the implementation of TileSW in Timor-Leste (Government of Timor-Leste, 2017). This system is central to facilitating e-commerce by streamlining trade-related processes and integrating Customs management with other government agencies.

ASYCUDA's Customs management software was further enhanced in 2021 through integration with the TradeInvest platform, which offers information and services to both local and foreign investors. TileSW has been marked by a phased approach. Initially, it connects the Customs Authority of the Ministry of Finance with the government agencies with the most significant impact on Customs clearance operations, and which, once connected, should eliminate the majority of current bottlenecks in Customs clearance and ensure that goods, including e-commerce shipments, are processed more efficiently. These improvements are essential to achieve faster, more secure trade, which is crucial for enabling digital commerce.

The agencies with the most significant impact on Customs clearance operations include:

- Tax Authority
- Ministry of the Interior
- Ministry of Agriculture, Fisheries and Forestry
- Ministry of Health
- MTC
- Ministry of Tourism and Environment
- MCI
- TradeInvest
- Port Administration of Timor-Leste.

The system uses international standards such as country codes, currency codes and packaging codes to facilitate seamless data exchange. Furthermore, TileSW incorporates a single-entry-point system, enabling traders and Customs officials to access and process information efficiently.

TileSW currently supports several practical applications, such as motor vehicle import authorization, joint inspection, certificate of origin submissions and approvals, and exporter registration. It also facilitates processes including passenger Customs declaration, tax exemption processing for imported goods, clearance for medicines and medical equipment, and permit applications for importing or exporting animals and plants, and their products. Additionally, the system interfaces with the Tax Authority's system for issuing tax clearance certificates and with the Timor Port system for managing cargo manifest clearances, further easing e-commerce logistics.

Payment of Customs duties and fees is not being processed electronically through the system. The Customs Authority is liaising with BCTL to facilitate Customs duties and fees being payable at designated commercial banks' ATMs (United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), 2023).

The now-dissolved National Commission for Trade Facilitation will be replaced by a strategic unit to manage trade facilitation more effectively. This shift indicates a greater focus on ensuring that policies align with the needs of growing e-commerce.

Efforts are under way to implement a trade information portal where traders can access all necessary information for exporting and importing goods. Electronic data exchange is also a growing area of focus, with the aim of lowering the average cost of trade through digital facilitation measures. It will increase operational efficiency for e-commerce businesses that depend on streamlined cross-border transactions.

A feasibility study conducted by ESCAP in 2023 outlined a plan for Timor-Leste to gradually start sharing trade-related data and documents electronically with neighbouring and partner countries (ESCAP, 2023b). The ESCAP study also recommends further development of national systems, including expansion of TileSW via an extensible structure that can accommodate



A national zip code system will enable e-commerce operators to expand delivery services efficiently throughout Timor-Leste.

future technologies; and continued development of key laws currently under development, including a cybersecurity policy to support electronic data exchange. It stresses the need for strong cooperation with key regional partners on prioritizing exchange of information for the following documents as a priority:

- Pre-arrival information
- Certificate of Origin
- Customs declaration
- Cargo manifest
- Dangerous goods information
- Export / import permit
- Phytosanitary certificate (ESCAP, 2023b).

The United Nations Global Survey on Digital and Sustainable Trade Facilitation highlighted progress in trade facilitation in Timor-Leste, including areas essential for fostering e-commerce. Despite some improvements, the country ranks the lowest among regional peers in trade facilitation reforms overall (see Figure 10). The major areas of concern are the very low implementation rates in formalities and cross-border paperless trade, which are critical for efficient e-commerce operations. These challenges reflect the need for further simplification of trade processes and better use of technology to streamline Customs and cross-border operations. The country's trade facilitation score improved from 24.73 per cent in 2021 to 30.11 per cent in 2023 (ESCAP, 2024).

Overall, the implementation of ASYCUDAWorld and the TileSW project represent significant progress in enhancing the trade facilitation environment in Timor-Leste, aligning with international standards and best practices to streamline and modernize trade processes. At the same time, there is no Authorized Economic Operator or Trusted Trader programme in the country. The Customs Authority treats all exporters the same, although it uses a system of risk profiles.

3.4. Physical addressing issues

Timor-Leste lacks postcodes or zip codes, which poses a significant challenge for last-mile delivery, which is essential for e-commerce operations. Without a uniform nationwide system in place for addresses, businesses and postal services rely on descriptions or landmarks, which can cause delays and inefficiencies in delivery. CTL delivers post up to the municipal branch, after which recipients are responsible for collecting their documents and parcels, posing additional barriers for rural consumers and complicating the delivery process for e-commerce firms.

TIC TIMOR is supporting CTL in the development of a national system of zip codes, which is expected to be integrated with CTL's website. This initiative is vital for enabling smoother e-commerce operations, as standardized addresses will facilitate better logistics planning and delivery routes.

At the current level of e-commerce, operators such as HaloDili and Jaymall mainly use their own transportation to deliver in the capital. Dili's small size allows for this and the main segment of customers – predominantly expats and international organizations. However, the lack of formal addressing systems in rural areas limits e-commerce penetration beyond Dili and hinders the broader development of digital trade.

3.5. Regulatory issues

Timor-Leste is still in the early stages of developing its legal and regulatory framework to facilitate electronic transactions and cross-border paperless trade (ESCAP, 2023b). However, with the passage of the e-commerce law, as well as ongoing work on the cyberlaw framework (see also Legal and regulatory frameworks), the country can start engaging in pilot projects to implement electronic exchange mechanisms, particularly within the region.



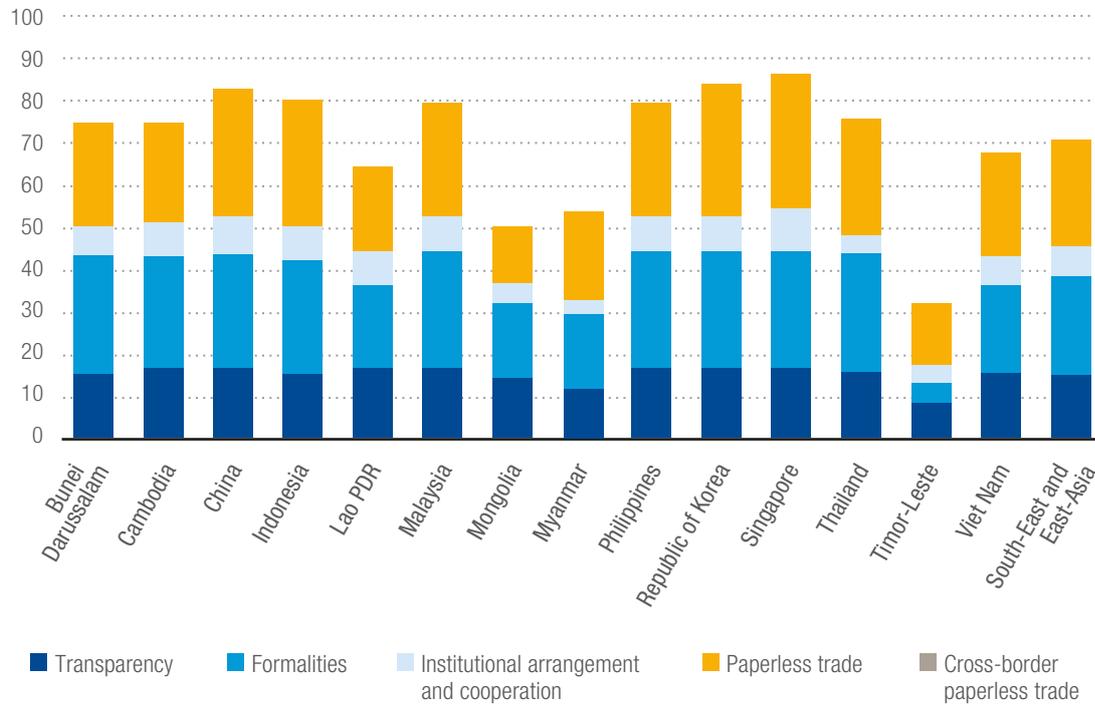
In principle, Timor-Leste can start participating in ASEAN Single Window initiatives, given that it has been admitted as the eleventh member of ASEAN, currently with observer status. This participation will support the paperless trade agenda of Timor-Leste as well as support its regional integration agenda vis-à-vis ASEAN.

The 2017 Customs Code legally acknowledges key aspects of electronic transactions, such as electronic documents and digital signatures (Government of Timor-Leste, 2017).



Figure 10
Average implementation rates of trade facilitation measures in South-East and East-Asia, 2023

(Percentage)



Source: UNCTAD, based on ESCAP (2024).



4. Payment Solutions

In Timor-Leste, the development of digital and mobile payment solutions is an essential foundation for enabling the growth of both domestic and cross-border e-commerce. Effective payment systems reduce barriers for consumers and businesses, making it easier for them to engage in digital trade. As more people, particularly in rural areas, gain access to secure and efficient digital payment methods, barriers to participating in the digital economy diminish, enabling broader adoption of e-commerce. Though Timor-Leste’s digital payment landscape is still evolving, advancements in digital wallets like TPay and Mosan have laid the groundwork for a more inclusive financial system. Though challenges such as limited digital literacy and infrastructure persist, these advancements are already helping reduce financial exclusion and paving the way for future growth in the digital economy, particularly e-commerce.

4.1. Financial system penetration

The financial services network has been steadily growing, exhibiting double-digit year-on-year growth in terms of banking vehicles added. The steep increase in banking service facilities such as branches, ATMs, electronic funds transfer at point of sale, and other access points is particularly notable.¹² In addition to the number of access points, the geographical distribution has also improved, according to the latest financial inclusion report prepared by BCTL (BCTL, 2023) (see Table 6).

4.2. National payment system

The predominance of the cash economy also limits the radius of deliveries for existing e-commerce firms to the capital due to logistical and security-based challenges. There is a significant need for payment gateways that allow payments to be made directly online to reduce cash

dependency. This could materialize as the P24 system gradually expands to online payments (beyond ATM-based digital payments) with upcoming P24 reforms.

Modernization and interoperability within the country’s P24 system are key priorities for the government to strengthen digital financial services. The Real-Time Transfer Network system, established by BCTL in 2015, facilitates an interconnected network of systems that allows individuals, companies, organizations and other entities to make electronic payments. It is essentially a real-time gross settlement system for payments of large amounts, above \$200,000. The importance of the interoperability aspect was borne out by the UNCTAD stakeholders surveys. About 85 per cent of respondents identified interoperability between different online and mobile payment methods as very important or important, suggesting that stakeholders value a seamless and integrated digital payment ecosystem (see Figure 11).

The P24 system’s expansion to online payments can significantly enhance e-commerce by reducing reliance on cash.

¹² Financial services access points are locations or interfaces where consumers can access a variety of financial services. These can include, but are not restricted to, bank branches, sub-branches, ATMs, electronic funds transfer at point of sale, digital wallet services, currency exchange bureaux, money transfer operators and credit cooperatives.



Table 6
Evolution of financial services access points, 2016–2022

Type of financial services	2016	2018	2020	2022	Per cent growth (2020–2022)
Bank services: Branches, sub-branches, ATMs, electronic funds transfer at point of sale, meeting centres and banking vehicles	484	375	421	603	43
Other deposit-taking institutions: Field offices, meeting centres	671	1 012	1 234	1 534	24
Digital wallet services: Agents and merchants		178	3 182	4 199	32
Insurance companies	2	2	2	3	50
Currency exchange bureaux	2	3	5	4	-20
Money transfer operators	14	20	22	23	50
Other credit providers: Pawnshops and microcredit services		9	15	18	20
Credit cooperatives: Credit union and multisectoral cooperatives that offer credit	32	43	68	124	82
Total	1 205	1 642	4 949	6 508	32

Source: UNCTAD, based on BCTL (2023).

Using the Real-Time Transfer Network infrastructure as the foundation, the P24 system facilitates integration with major banks and telecommunications providers such as Timor Telecom, Telemor and Telkomcel, and has contributed to the development of the telco-led mobile money ecosystem in the country. P24 serves as the primary interbank payment system,¹³ facilitating live payments across banks and digital wallets. Most banks are members of P24, and consumers can also use ATMs of various member banks for cash withdrawals and bill payments (tax).

P24 supports international card-based processors. BCTL has begun connecting P24 to international payments systems such as Mastercard, Union Pay and Visa. BNU is a Visa acquirer and issuer and Mastercard acquirer, allowing Visa and Mastercard cardholders to use BNU's ATM with the P24 logo. BNCTL is a Union Pay acquirer and is in the process of becoming a Mastercard acquirer and issuer.

4.3. Payment systems regulation

From the perspective of fostering e-commerce in Timor-Leste, the policy goal of BCTL to encourage the use of electronic payment methods and digital financial services is important. To achieve this, BCTL is actively working to significantly expand the network and variety of digital payment services, utilizing the national interconnection system to broaden access to payment services. This includes promoting the use of credit and debit cards, as well as mobile phones, as platforms for executing payments.

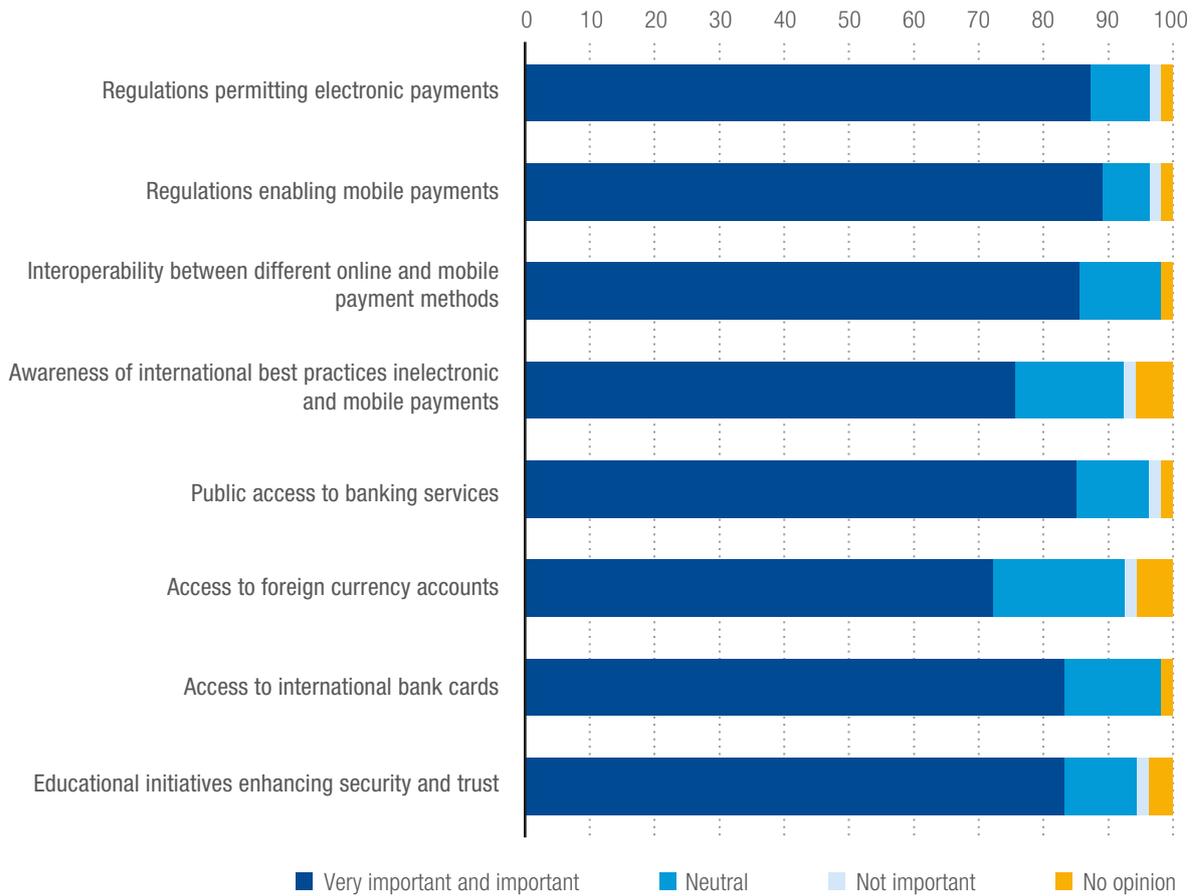
Respondents to the UNCTAD survey (see Figure 11) exhibited strong consensus on the importance for enabling e-commerce of regulations permitting electronic payments and enabling mobile payments. Both measures were considered 'very important or important' by close to nine out of ten respondents.

¹³ Built on the Real-Time Transfer Network established in 2015, which laid the foundations for payments between individuals, companies or government organizations within Timor-Leste.

Figure 11
Importance of payment solutions as enablers for e-commerce

(Percentage of survey respondents)

Please rate the following items according to their priority to create an enabling environment for e-commerce in your country when it comes to payment solutions. (Public and private sector surveys, 55 responses).



Source: UNCTAD, based on Timor-Leste eTrade Readiness Assessment Online Survey, 2024.

BCTL is one of seven authorities across the Pacific that collaborated to develop the Pacific Regional Regulatory Sandbox Guidelines in 2020, with the support of the Alliance for Financial Inclusion. This initiative allows financial innovators and service providers to pilot their new products, services and business models for a set time under the supervision of BCTL, fostering an environment of controlled experimentation that supports the growth of digital and mobile payments solutions essential for e-commerce. Developing this sandbox is

particularly relevant for e-commerce as it allows potential e-commerce-focused payment solutions to be tested and refined locally, helping address specific consumer and business needs in Timor-Leste. Although no service providers had graduated from the sandbox as of December 2023, a review of the approach could attract more fintech innovations that enable seamless domestic and cross-border transactions, which are critical to expanding e-commerce participation across the country.

4.4. Mobile, cashless payment solutions

Commercial banks, including ANZ, BNU Timor and BNCTL, now offer digital banking services that support online transactions. Mandiri and Bank Rakyat Indonesia are actively developing similar services to enhance their digital presence in the country. However, the uptake of digital financial services remains low among bank clients, influenced by factors such as limited financial and digital literacy, as well as high Internet costs and unreliable access. The cash-based nature of the economy, especially in rural areas, further hinders the adoption of digital solutions.

Most banks in the country offer debit cards to account holders, and the overall number of active cards has been increasing. According to the latest BCTL report, there were approximately 139,000 active cards in circulation as of December 2022, representing a 16 per cent increase from the previous year. This growth has been facilitated by the P24 system, which allows for interoperability among member banks' ATMs, making it easier for customers to access funds across different banks.

Digital wallet services, led by Mosan¹⁴ and TPay,¹⁵ are also gaining traction. Mosan, a subsidiary of Telemor, is integrated with the Mobile Switch through the P24 system, allowing for transfers between bank accounts and digital wallets, as well as transfers between users of the same service. TPay, on the other hand, is operator-agnostic, allowing users with different SIM cards to access its services. Both wallets offer cash-in and cash-out services via agents and merchants, and enable payments directly between users and businesses. The network of digital

wallet agents has expanded rapidly, growing from 178 agents and zero merchants in 2018, to 3,490 agents and 709 merchants in 2022, in all 67 administrative posts and 371 of the 452 *sucos*, covering 82 per cent of *sucos*, providing broad access to digital financial services across the country. The adoption rate for digital wallets has grown substantially, with nearly 22 per cent of the population using these services as of 2020, reflecting a doubling from 2018 (BCTL, 2023).

Despite the progress in digital financial inclusion, Timor-Leste's reliance on cash remains significant. Although roughly one-quarter of adults have access to mobile or digital financial services, primarily through digital wallets, cash is still universally used for everyday household transactions (UNCDF, 2023a). This includes paying for groceries, dining out and settling utility bills. The heavy reliance on cash poses a challenge to broader digital adoption, but the increasing availability of digital wallets offers a promising opportunity to reduce dependence on cash and foster a more inclusive digital economy.

Digital wallets offer a variety of functions, including transferring funds, withdrawing, depositing money, cellular phone top-ups, making electricity prepayments, and balance inquiries. Users can also make purchases via QR codes, pay for services and update account information through the network of agents. The broad reach of these digital wallets positions them as key players in promoting digital financial inclusion and facilitating e-commerce (BCTL, 2023). Transaction volumes and values transacted via digital wallets have expanded rapidly since 2019 (see Figure 12). Digital wallet services have the most extensive access point network among financial services.

The rise in digital wallet adoption to 22 per cent has the potential to enhance e-commerce growth.

¹⁴ Telemor Fintech, Unipessoal Ltd.

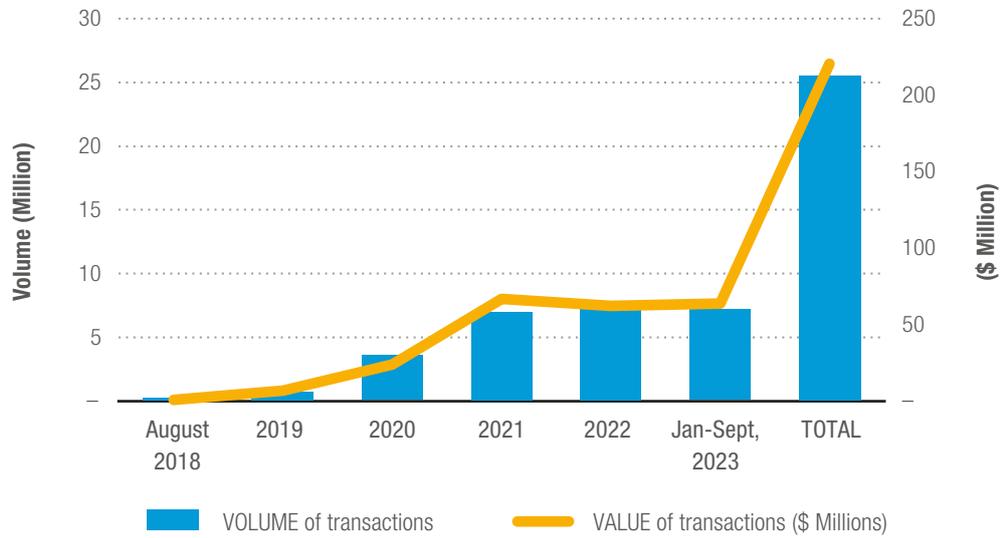
¹⁵ Telin Digital Solution Ltd, linked to Telkomcel.



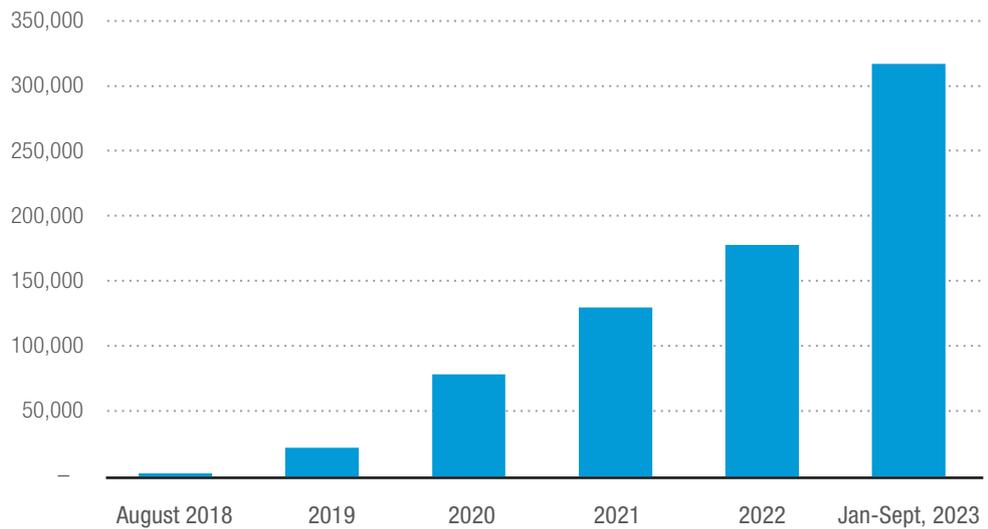


Figure 12
Digital wallet statistics

a) Volume and value (\$) of digital wallet transactions (Mosan and TPay)



b) Number of users (Mosan and TPay)



Source: UNCTAD, based on data shared by BCTL, 2023.



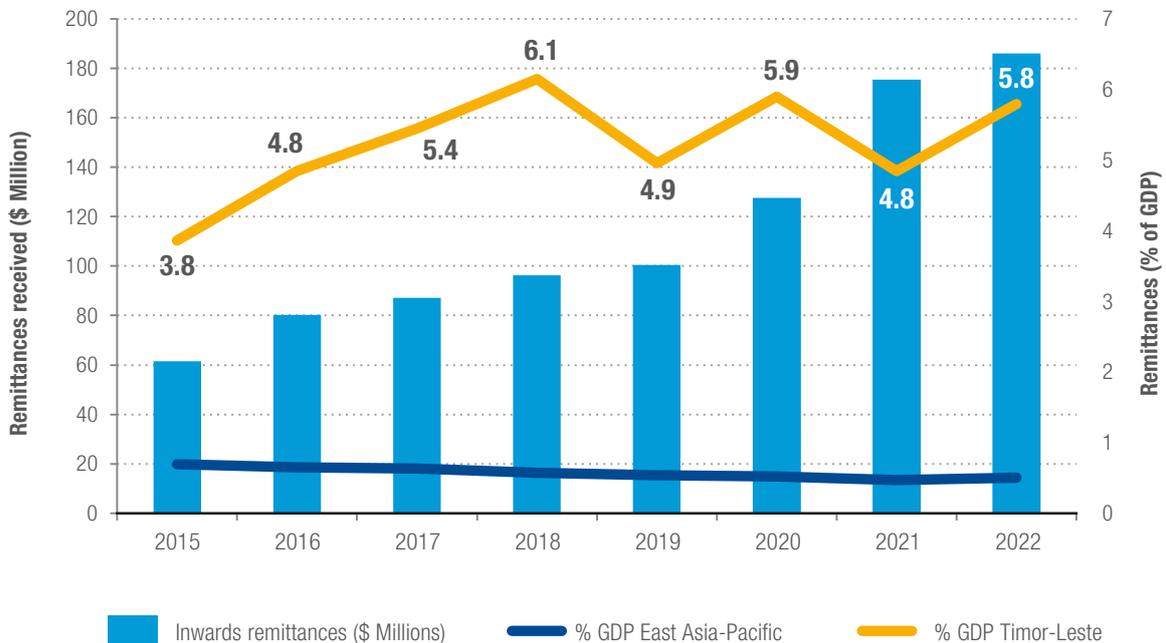
Remittances remain vital in Timor-Leste, with transactions through BCTL-licensed money transfer operators rising significantly in recent years. Around 15 per cent of the population in Timor-Leste has received remittances (of 1,631 surveyed Timorese adults) (UNCDF, 2023). Remittances as a share of GDP grew to nearly 6 per cent in 2022, up from 5 per cent in 2021. Incoming remittances rose by 6 per cent compared with the year before, totalling \$186 million.¹⁶ The United Kingdom and the Republic of Korea are the primary sources of these funds, accounting for 51 per cent and 21 per cent of inward remittances, respectively (BCTL, 2023). In 2021, remittances were the second-largest source of revenue, after oil and gas (Government of Timor-Leste, 2022). Business investments, payments

or purchases and transfers for family are the leading reasons for inward remittances (BCTL, 2023). Facilitating remittances through digital wallets like TPay and Mosan could enhance financial access, supporting recipients' engagement in e-commerce and enabling businesses to leverage diaspora transactions through online payments. This integration would fuel broader economic participation and strengthen the digital economy by streamlining cross-border and domestic transactions.

Groups most likely to have received remittances include Dili residents (23 per cent), adults with a degree or university-level education (24 per cent), adults working in the finance or technology sectors (33 per cent), and adults earning between \$52 and \$85 fortnightly (UNCDF, 2023).



Figure 13
Comparison of remittances: Timor-Leste and East Asia and Pacific, 2015–2022



Source: UNCTAD, based on World Bank data.

¹⁶ WB data (<https://data.worldbank.org/indicator/BX.TRF.PWKR.DT.GD.ZS?end=&locations=TL>).



4.5. Financial education and inclusion

The authorization of two digital wallet solutions –TPay and Mosan– in 2018/19 has supported uptake of digital payment services and financial inclusion, which are essential for fostering broader e-commerce participation. WB highlights that these services have contributed significantly to a 200 per cent increase in financial service access points, enhancing financial accessibility in the country’s more isolated regions. With digital payment options now available to people in remote *sucos* and villages of Timor-Leste, including those without access to traditional banking, citizens can engage more readily in e-commerce, accessing goods and services previously unavailable without physical travel.

As of 2024, financial services are available in every subdistrict, with 391 out of 452 villages hosting at least one access point (WB, 2024). The International Monetary Fund reports that an estimated 13 per cent of the population now uses electronic payment services, and the share of population excluded from financial services has decreased from close to 40

per cent in 2018 to 16 per cent in 2020 (International Monetary Fund, 2022).

These advancements create a foundation for e-commerce by bringing secure, accessible payment options to more citizens, helping bridge the urban-rural gap.

The financial sector has made significant progress, and now servicing the unbanked will be key for expanding e-commerce. According to BCTL, 64 per cent of Timorese adults, overwhelmingly salaried employees, have an account with a formal financial institution (banks, ODTIs, fintech providers). With a 94 per cent bank account penetration among the adult population, the capital Dili (including Atauro) leads the country, followed by Manufahi (62%) and Cova Lima (62%).

Despite lower current account and payment cards access, Timor-Leste stands out with a relatively high percentage (24 per cent) of adults using digital wallets. This rate surpasses that of the nearby Pacific region such as Papua New Guinea, Vanuatu and Tonga, positioning Timor-Leste to scale e-commerce with alternative payment solutions beyond bank-issued debit and credit cards (see Figure 14).



Table 7
Adult population using financial services in 2022

	Banks	ODTIs	Digital wallets
Percentage of total population	64	6	22
Male (%)	65	10	18
Female (%)	62	2	27

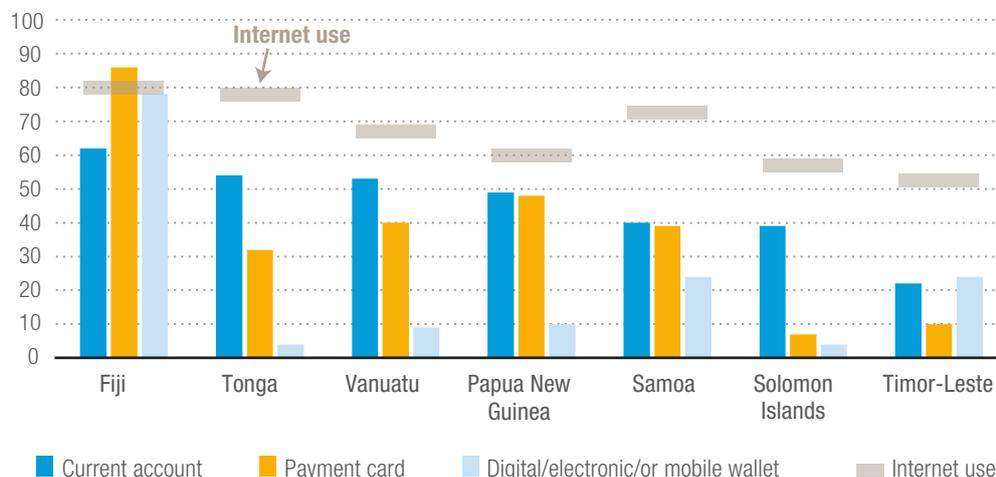
Source: UNCTAD, based on BCTL (2023).





Figure 14
Current account ownership and digital payment solutions, selected Pacific SIDS, 2022

(Percentage of population)



Source: UNCTAD, based on UNCDF (2023a-g)

Development partners and national institutions have launched several initiatives to promote financial literacy, supporting consumers' understanding and use of e-commerce platforms. In 2016, BCTL and what was then the Ministry of Education, Youth and Sport launched a pilot project to teach a financial literacy module to elementary school students, later expanding to more schools, initially as an extracurricular subject, with potential for inclusion in the regular curriculum after successful implementation. Through partnerships with organizations like Federation Hanai Malu (the credit union peak body in Timor-Leste), BCTL also provides adults with financial literacy, empowering them to navigate digital payments and consider engaging with e-commerce.

The Inclusive Digital Economy Scorecard highlights significant challenges in financial and digital literacy in Timor-Leste, stressing the need for continued efforts while acknowledging progress made through targeted programmes.

In 2021, Timor-Leste launched the Digital Village Programme to leverage digital technology for development and bridge the digital divide, promoting the

digital skills necessary for e-commerce. The programme components aim to:

- **Improve digital literacy:** Offer training and education to enhance digital skills, especially in remote and rural communities.
- **Provide access to digital services:** Establish community centres with Internet access and digital devices, to enable residents to access e-government services, education and health information.
- **Support economic development:** Encourage digital entrepreneurship and small businesses through access to online resources, markets and financial services.
- **Enhance government services:** Implement digital solutions to improve the efficiency, accessibility and transparency of government services.

The programme included provisions for digital payment facilities in select villages (Maubisse in 2020, extending to Baguia in 2021, and Uato-Lari, Uatocarbau, Iliomar and Cailaco administrative posts in 2022), giving local entrepreneurs and consumers access to online transactions, a key enabler of e-commerce across the nation.



5. Legal and Regulatory Frameworks

Timor-Leste has made significant progress in its legal framework for e-commerce, with the enactment of the E-Commerce Law closely aligning with UNCITRAL Model Laws. This law provides a robust foundation for digital transactions, ensuring the legal validity and functional equivalence of electronic communications, contracts and signatures. However, challenges remain in institutional capacity, and there are legislative gaps, particularly in areas such as data protection, online consumer protection and cybersecurity.

A draft cybercrime law is currently undergoing stakeholder consultations and review. Efforts are also under way to strengthen IP rights. Strengthening institutional capacities is essential for effective implementation and enforcement of these laws to build trust in the digital economy. Efforts are also being made to establish mutual agreements for electronic data exchange, particularly with Indonesia and other ASEAN countries and CPLP countries, to ensure legal certainty in cross-border transactions.

5.1. Key e-commerce laws

E-commerce and e-transactions laws

The enactment of the E-Commerce Law in 2024 presents a major step in Timor-Leste's commitments related to WTO accession. The National ICT Policy (2017) had recommended an e-commerce law as a priority for proposed legislation, to create an enabling trust-based ICT legal framework for e-commerce and paperless trade in Timor-Leste. Most respondents (86 per cent, see Figure 15) in the UNCTAD survey believe that regulations governing electronic transactions are very important or important to develop an environment of trust for e-transactions.

The E-Commerce Law aligns with UNCITRAL Model Laws, including on Electronic Commerce and on Electronic

Transferable Records, ensuring the functional equivalence of electronic transactions and documents. It establishes the legal effect of online transactions and recognizes the use of electronic documents and electronic signatures while also recognizing functional equivalence and technology neutrality principles. The law provides a mechanism for and jurisdiction over the resolution of disputes concerning online transactions.

Customs Code Decree-Law No. 14 (2017) also governs electronic transactions and forms the legal basis for the TileSW for Customs operations.

The main legislation in the taxation context is the Taxes and Duties Act (Law No. 8/2008 of 30 June 2008). Timor-Leste is a member of the Pacific Islands Tax Administrators Association. No taxation-related discussions are taking place now for e-commerce.

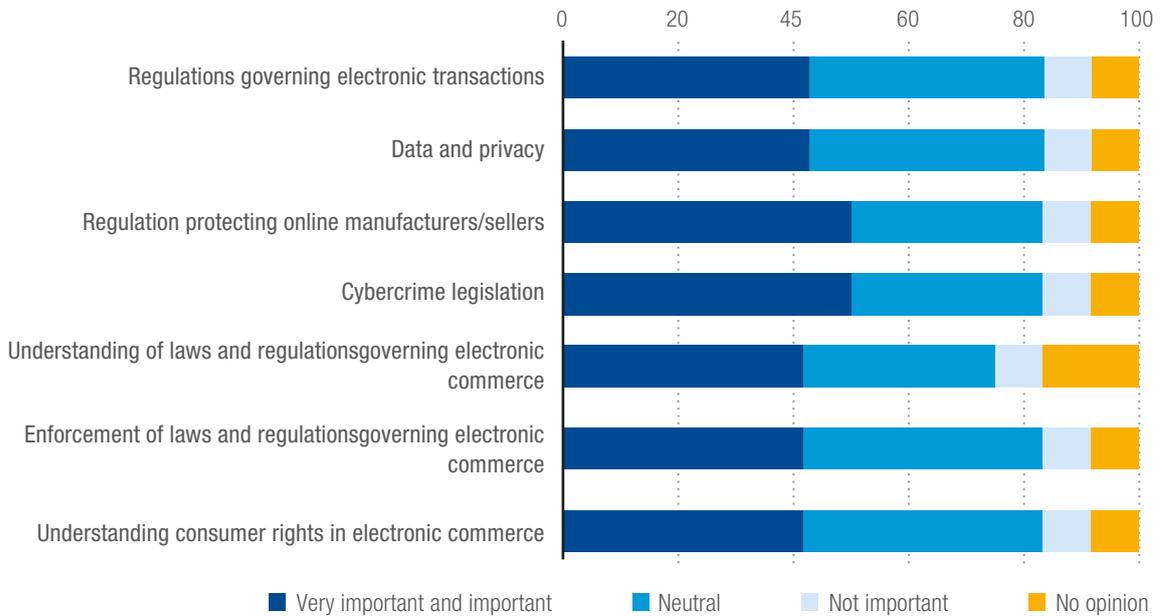
The 2024 E-Commerce Law strengthens trust in digital transactions, aligning with international standards for online trade and electronic signatures.



Figure 15
Importance of the legal and regulatory framework for e-commerce in Timor-Leste, 2024

(Percentage of survey respondents)

Please assess the importance of the following items for a legislative and regulatory framework conducive to the development of electronic commerce. (Public and private sector surveys, 49 responses).



Source: UNCTAD, based on Timor-Leste eTrade Readiness Assessment Online Survey, 2024.

Cybercrime

Decree-Law No. 15/2014 establishes the *Polícia Científica e de Investigação Criminal* (PCIC – Scientific and Criminal Investigation Police) in Timor-Leste, which is tasked with investigating serious, organized and complex crimes. The PCIC could also potentially handle cyber-related crimes as part of its broader mandate. Some similarities can be drawn between the investigative principles of the PCIC and the Budapest Convention (Convention on Cybercrime), particularly in areas such as criminal investigation, data handling and international cooperation. For instance, the PCIC’s ability to cooperate with international law enforcement agencies (article 9) aligns with the Budapest Convention’s emphasis on transnational cooperation in tackling cybercrime.

A Cybercrime Law has been drafted and tabled to help protect Timor-Leste

citizens from cybercrime and online fraud schemes. The draft law expands on existing investigative capacities by introducing specific provisions to combat cyber-related offences. It requires the authorities to obtain a warrant from either a Public Prosecutor’s Office or a judge before ordering the preservation of computer data (article 15), accessing computer data (article 17), searching computer data (article 18), seizing computer data (article 19), and seizing emails and other electronic communications and records (article 20). Article 6 criminalizes unauthorized access to a computer system, and article 7 criminalizes the unauthorized interception of computer data. Article 11 imposes criminal liability on legal entities for cybercrimes committed ‘in their name and in the collective interest of the people who occupy a leadership position’ and by individuals ‘acting under the authority’ of people occupying a leadership position.

Eighty-eight per cent of stakeholders see cybercrime legislation as crucial for safeguarding online economic activities and mitigating cyberthreats.

From the perspective of public and private sector stakeholders surveyed for this assessment, having cybercrime legislation is viewed as critical, with 88 per cent of respondents labelling it ‘very important or important’ (see Figure 15). This reflects the growing awareness of the risks associated with online economic activities and the necessity of having robust legal frameworks to deter and address cyberthreats.

Some concerns have been raised regarding the draft cybercrime law’s provisions, particularly around accessing, searching and seizing computer data, as well as intercepting and seizing electronic communications. These provisions, with their relatively low application threshold, could impinge on civil rights and liberties (International Center for Not-For-Profit Law, 2021; and Asia Centre, 2021). Cooperation between the Council of Europe and Timor-Leste’s Ministry of Justice is ongoing to align the domestic legal framework with the Budapest Convention, ensuring a balance between safeguarding privacy and enabling effective law enforcement in the digital age.

Consumer protection

The Consumer Protection Law was passed in 2016.¹⁷ This law establishes the legal regime for consumer protection and defines the functions of the State, the rights of consumers, and the role of consumer associations. The law applies to both goods and services supplied and rendered by firms or private persons who are responsible for activities of production, manufacturing, exporting, importing, construction, distribution, transportation or sale of goods and services, with a view to obtaining profits (article 2). However, the regulation needs to be reviewed to ensure fit with transactions occurring digitally. Further discussions are under way to define the required institutional framework to ensure law enforcement.

Data protection law and privacy

A draft data protection law has been developed under the leadership of the Ministry of Justice and is currently with the Council of Ministers for review. The Constitution (articles 36, 37 and 38), Copyright and Related Rights Code, and the Penal Code (sections 183, 184 and 187)¹⁸ provide some data protection and privacy tenets. However, there is a likely gap in terms of new models that have emerged within the digital economy that can pose data protection and privacy risks.

The Coordinating Minister of Economic Affairs (MCAE) is working on a draft competition law, as included in the Legislative Action Plan submitted by Timor-Leste to the WTO. This law will help ensure fair competition in digital markets and could complement the data protection framework. Research from the Organisation for Economic Co-operation and Development (OECD) in 2024 suggests that the intersection between competition law and data protection is becoming increasingly important, as competition in digital markets often revolves around how companies handle data privacy. Companies that compete based on the level of data protection they offer can positively impact consumer welfare by improving the quality of services. Data privacy becomes, therefore, a crucial element of quality, affecting consumer welfare.

Data privacy concerns related to digital wallet services like TPay and Mosan have already been raised by regulatory bodies such as ANC and banks, particularly regarding the storage location of customer data. As e-commerce grows, the risk of data breaches and misuse will increase. It is essential that Timor-Leste’s regulatory framework evolves to address these risks. By ensuring that competition law and data protection regulations work in tandem,

¹⁷ Timor-Leste Ministry of Justice website (<https://www.mj.gov.tl/>).

¹⁸ Chapter V of the Penal Code (approved by Decree-Law No. 19/2009) addresses violations of privacy. Article 183 deals with the public disclosure of private information, article 184 addresses breaches of secrecy, and article 187 addresses tampering with correspondence or telecommunications.



the country can foster a competitive e-commerce environment that prioritizes data privacy and consumer protection while boosting digital economic activities.¹⁹

Intellectual property law

The Constitution (section 60) provides that the State should guarantee and protect the creation, production and commercialization of literary, scientific and artistic work, including the legal protection of copyrights.

On 12 September 2017, Timor-Leste became a member of the Convention that established the World IP Organization. The Government is in the process of finalizing the draft industrial property code, which would contain provisions on trademarks and other aspects. A law on copyrights has also been adopted (ESCAP, 2023). A draft law to establish an IP office is also being consulted on with relevant stakeholders.

- The draft industrial property code covers rights related to trademarks, industrial designs, geographical indications, patents, semiconductor product topographies, and trade secrets. This legislation falls under the jurisdiction of MCI. The draft code has been submitted to the Council of Ministers for approval and onward submission to the National Parliament for legislation. As per the WTO ‘post-accession’ road map / commitment, this legislation is expected to be approved in 2024.
- Copyright and Related Rights Code: Administered by the Secretary of State for Arts and Culture, this law has been officially promulgated by the President and published in the ‘*Jornal da República*’.

To administer these IP laws, separate offices will be established in accordance with the competencies of the relevant ministries. Furthermore, in parallel with approval of the industrial property code,

MCI, with World IP Organization assistance, will also start work on establishing an autonomous office. The office is expected to be operationalized in 2025.

5.2. Institutional capacities

There is a need to strengthen essential monitoring and enforcement mechanisms related to e-commerce and other digitally enabled transactions in Timor-Leste. Better understanding of e-commerce laws and their enforcement were viewed as very important by most stakeholders in the UNCTAD stakeholder survey (see Figure 16), suggesting current gaps in knowledge and application that could be hindering the growth of e-commerce. On one hand, there is a gap in terms of institutions for data protection and IP, while on the other hand there are capacity gaps in existing institutions to enforce current rules and regulations on digital transactions in areas like consumer protection. Figure 16 illustrates the perspective of stakeholders regarding enforcement levels of the cyberlaws that are in place.

5.3. Emerging area – legal context of cross-border exchange of data²⁰

Timor-Leste has undertaken several initiatives to facilitate cross-border exchange of data and collaboration on Customs operations with neighbouring countries.

- **Timor-Leste-Indonesia-ADB MoU:** In 2021, an MoU was signed between Timor-Leste, Indonesia and ADB regarding cross-border trade and cooperation. This agreement is a significant step towards facilitating trade between Timor-Leste and Indonesia by providing technical assistance and potentially establishing a more streamlined process for cross-border trade operations.

Knowledge and capacity gaps in enforcing e-commerce laws hinder growth.

¹⁹ See OECD (2024).

²⁰ Based on information contained in ESCAP (2023b).



- Bilateral consultations:** Timor-Leste is actively engaged in bilateral consultations on enhancing cooperation in Customs operations with Indonesia, potentially leading to more efficient and secure trade processes. The intention is to extend similar consultations to Brazil and, subsequently, to ASEAN and CPLP countries at a later stage, indicating a broad vision for international trade collaboration.
- Customs operations and e-documentation:** Ongoing efforts to digitize Customs operations utilizing systems such as ASYCUDAWorld and TileSW are crucial to establish a foundation for cross-border electronic data exchange (see Section 3.3). These systems aim to facilitate seamless document transfers and enable future interoperability with regional frameworks, aligning Timor-Leste with international

standards for data exchange and promoting smoother, faster trade flows essential for digital trade.

Timor-Leste is seeking mutual agreements for electronic data exchange with other countries, potentially focusing first on Indonesia, with the broader intention to engage with ASEAN and CPLP countries. The focus is on establishing frameworks and systems (like ASYCUDAWorld and TileSW) that facilitate these exchanges, alongside discussions on adopting international standards and securing technical assistance through MoUs; for instance, with donors such as ADB.

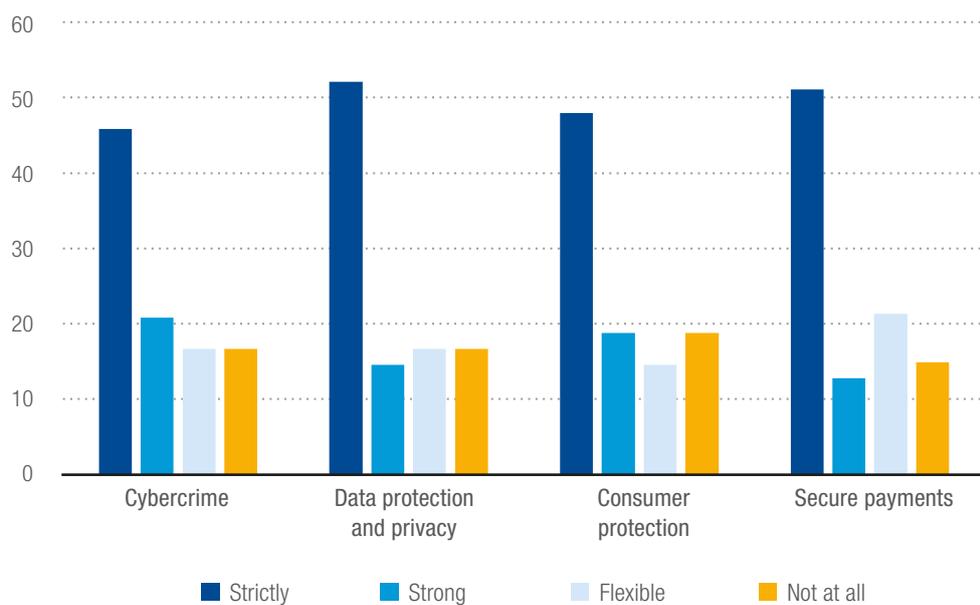
These initiatives indicate a proactive approach by Timor-Leste to enhance its Customs operations and facilitate cross-border trade through electronic data exchange and collaboration with neighbouring countries.



Figure 16
Enforcement of cyberlaws in Timor-Leste

(Percentage of survey respondents)

For each of the following dimensions, would you say that the law is applied strictly (with sanctions), strongly (reminder of the rule), flexibly (awareness) or not at all? (Public and private sector surveys, 48 responses).



Source: UNCTAD, based on Timor-Leste eTrade Readiness Assessment Online Survey, 2024.



6. E-commerce Skills Development

In Timor-Leste, digital entrepreneurship is still in its early stages of growth. Challenges related to Internet accessibility and affordability have extended to the digital skills and entrepreneurship component of the ecosystem. Skills mismatch issues currently impact the IT sector and will likely affect future e-commerce firms unless steps are taken to encourage meaningful industry-academia discussions at the tertiary level. Development partners and select IT firms have taken the lead in developing an innovation ecosystem builder community. Limited English language proficiency and few online local content options in Tetum contribute to the limited uptake of digital content.

6.1. Identification of skill-related gaps

Timor-Leste is experiencing a demographic transition, characterized by a fast-growing younger generation²¹ that possesses distinct skills, knowledge and a greater enthusiasm for technology. Digital literacy is on the rise within this segment. In overall terms however, literacy and skills development has been a weak area, in large part

because of the challenges associated with Internet connectivity and affordability.

At the primary and secondary school levels, students have limited exposure to IT because of weak infrastructure. This includes not having enough access to computers, printers and other similar resources. While there is a curriculum designed to include technology education, the necessary resources for effective teaching are lacking and the curriculum needs to be updated to meet current educational standards.



Table 8
Key indicators of human capital

Indicator	Value	Notes
Human Capital Index	45%	Lower than available averages – East Asia and Pacific (59%), lower middle-income countries (48%)
Average harmonized test scores (on a scale where 625 represents advanced attainment and 300 represents minimum attainment)	371	Lower than regional average
Percentage of lower secondary school-aged children enrolled at that level	89% (2020)	Up from 87% in 2016. Higher than regional average
Youth not in employment, education or training	31% (2021)	Up from 21% in 2016. Higher than regional average
Literate youth	82% (2020)	Lower than regional average
Female labour-force participation rate ²²	24% (2021)	Lower than regional average
Adult unemployment rate	3% (2021)	Unchanged since 2017. Similar to regional average

Sources: World Bank (2023) and Government of Timor-Leste (2022b).

²¹ Seventy-three per cent are estimated to be under 35 years of age. See Novak (2023).

²² WB Group (2024).



Youth entrepreneurship and meaningful integration of the youth in the Timor-Leste economy is important not only from an economic point of view but also given the underlying drivers of fragility in Timor-Leste and the risks of high and enduring youth unemployment. Consider the following statistics:

- About 68 per cent of Timorese are under 25, with most residing in rural areas. However, limited economic opportunities force many to migrate to urban areas.²³ E-commerce has the potential to provide alternative sources of income, allowing young people to earn livelihoods from rural locations by connecting them to larger markets and reducing the need for migration.
- Most formal employment is concentrated in the public sector at about 80 per cent, pushing many educated youth to seek employment overseas. Expanding e-commerce skills and opportunities could encourage private-sector growth, creating sustainable jobs and lessening dependence on the public sector.
- Timor-Leste's labour-force participation rate stands at only 30.5 per cent, much lower than the South-East Asian average of 66.1 per cent.²⁴ Youth face even greater challenges, with a participation rate of just 9.2 per cent – three times lower than the national rate. At the same time, 30 per cent of youth aged 15–24 is not in employment, education or training (da Silva and Gomez, 2023). E-commerce can offer flexible work options for youth who may otherwise struggle to find formal employment, providing a pathway to economic inclusion.
- There is a significant gender imbalance in labour-force participation, with men at 36.9 per cent and women at 24.2 per cent (Grameen Foundation, 2021; and Government of Timor-Leste, 2022b). Women are active participants in the agriculture, trading / retail and handicrafts sectors that are highly

suited to e-commerce. Digital platforms could empower women entrepreneurs, enabling them to reach broader markets and earn independent incomes.

- During the COVID-19 outbreak, approximately 43.3 per cent of those aged 25–39 lost their jobs in 2020–2021 (United Nations Timor-Leste and General Directorate of Statistics, Ministry of Finance, Timor-Leste, 2021). According to the International Monetary Fund, youth bear a disproportionate share of the unemployment burden, with almost one out of three Timorese aged 15–24 out of a job. Nearly 30,000 young Timorese join the workforce every year, yet formal job creation in the private sector remains limited. As things stand, creating more jobs in the private sector could significantly boost economic growth and reduce dependency on public sector employment in Timor-Leste. E-commerce presents a crucial opportunity for this growing labour force, helping to absorb new entrants into the job market and supporting economic diversification in Timor-Leste.

Industry-academia skills mismatch is a significant issue. For companies operating in the digital sphere, it is challenging to find talent that matches their requirements, and in-house training is the norm. There is currently no platform for encouraging industry-academia discussions at the tertiary level, while for technical and vocational education and training (TVET) there are discussion platforms under the National Institute for Workforce Development, responsible for TVET issues and operating under the purview of MCAE. So far, discussions have not covered digital skills aspects.

Part of the reason is the nascent state of the IT sector in the country. Skills gaps start emerging at scale only as sector activity ramps up. This is indicated by the fact that the two most recent (2017, 2022) skills-gap surveys and assessments in

A significant skills mismatch between workforce capabilities and digital economy requirements limits the growth of e-commerce.

²³ <https://population.un.org/wpp/Download/Standard/Population/>.

²⁴ According to Government of Timor-Leste (2022b).



Timor-Leste did not include any IT-related questions or dimensions, focusing largely on the currently MSME-dense sectors, including wholesale and retail trade, repair of motor vehicles and motorcycles, and accommodation and food services.

At the TVET level, the National Institute for Workforce Development lacks clear data on whether graduates from these programmes meet industry demands. To address this, it seeks feedback to improve the qualifications and standards of its courses to better align with industry needs. It is also noted that graduates often work in different fields from those in which they have training, due to limited job opportunities in the market.

According to surveyed stakeholders, capacity-building programmes on

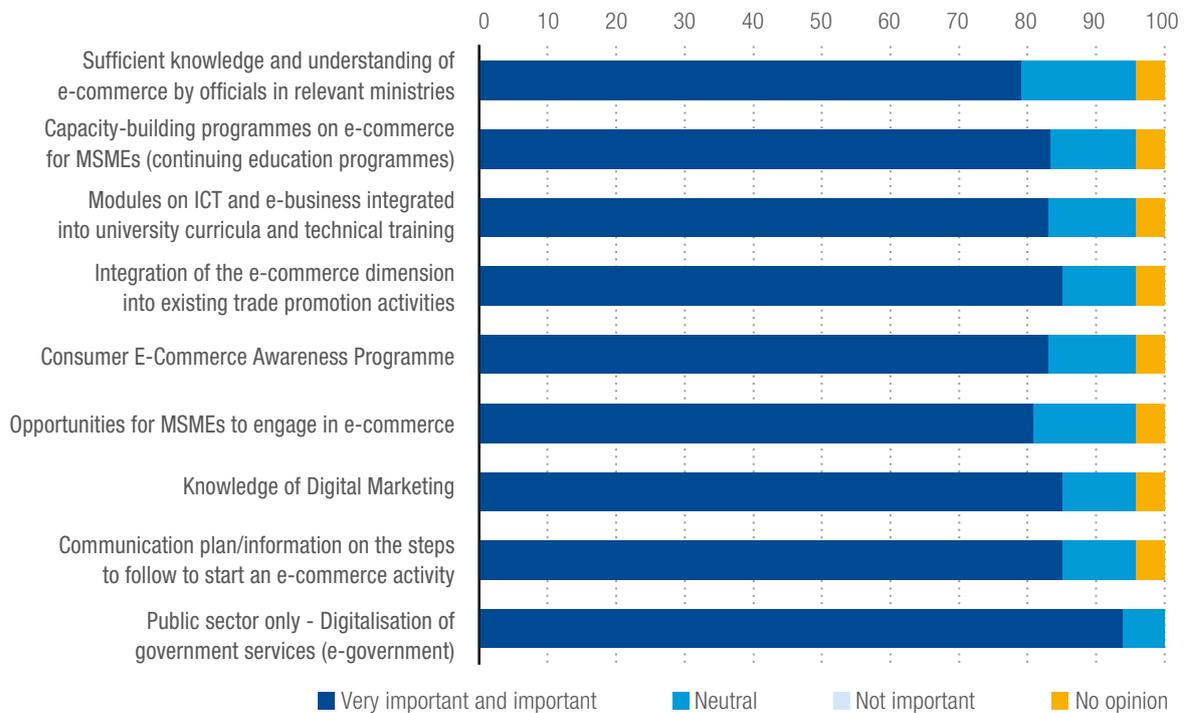
e-commerce for MSMEs need to be introduced (see Figure 17). This indicates a strong belief that continuous education programmes are essential for the growth of e-commerce. Surveyed stakeholders also assessed the integration of ICT and e-business modules into university curricula and technical training as an important element, which supports this emphasis on education. The UNCTAD survey also reflects a concern for the clarity and accessibility of information, with 85 per cent of stakeholders (see Figure 17) rating the importance of a communication plan or information on how to start an e-commerce activity as 'very important or important'. This suggests that potential e-commerce participants find the current guidance insufficient or hard to access.



Figure 17
Importance of skills development as an enabler for e-commerce in Timor-Leste, 2024

(Percentage of survey respondents)

Please rate the following items according to their importance to ensure an adequate level of e-commerce skills in your country. (Public and private sector surveys, 48 responses).



Source: UNCTAD, based on Timor-Leste eTrade Readiness Assessment Online Survey, 2024.



Another challenge impacting both general learning at the primary and secondary school levels, as well as digital skills uptake within the population, is the language barrier. The Tetum language is spoken by most of the population. According to the 2015 census, which offers the latest data on languages, Tetum and other indigenous language speakers constituted 98.9 per cent²⁵ of the population (1,166,781 local language speakers from a national population of 1,179,654). Portuguese (1,384), Indonesian (2,711) and English (7,271) language speakers are dwarfed in comparison.

However, there are insufficient educational materials in Tetum, both online and offline. Most web browsers do not translate web pages to Tetum. At the school level, teachers download digital content in foreign languages, which ultimately becomes a significant obstacle for students to complete assignments (UNESCO, 2023a). A section of the Timorese population also speak Indonesian and Portuguese, depending on age and educational experience. Portuguese is increasingly used in education. Only a small section of the population can speak English.

Box 2 Digital literacy in Timor-Leste

A recent survey conducted by UNCDF provides important bottom lines underlining the state of digital literacy in Timor-Leste. The key findings are listed below.

1. Cost (54 per cent) and the quality or availability of Internet and mobile data services (58 per cent) pose the greatest obstacles to regular Internet use (presumably among those who use or want to use the Internet). Cost and the quality or availability of Internet or mobile data services pose even greater obstacles to accessing the Internet than concerns about the security of Internet services available (34 per cent).
2. Access to digital devices (smartphones) and available Internet connections may outpace digital proficiencies and levels of confidence engaging with digital tools among segments of the population, including self-employed Timorese.
3. Timorese are much more likely to engage in low-complexity tasks. Most Timorese (73 per cent) never use a tablet or computer, largely required for higher-complexity tasks tested in the survey.
4. Older Timorese are significantly less likely to have completed any of the digital and online activities assessed (whereas those under the age of 25 years are most likely to have completed activities). Completion of activities also correlates with the level of educational attainment, with university-educated Timorese significantly more likely to have completed digital and online activities evaluated in the previous three months. The results also reaffirm that Timorese with higher socioeconomic status (referring to income) are more likely to complete digital and online activities than their counterparts with lower socioeconomic status.
5. Progress in the TVET space has been slower than expected in some areas, such as: (i) improving cohort survival rates through Grade 9; (ii) improving transition rates from basic to secondary education; and (iii) improving the transition from school to work, and from school to post-school education and training.

Source: UNCDF (2023a).

²⁵ Calculated using data from <https://inetl-ip.gov.tl/census-population/>.

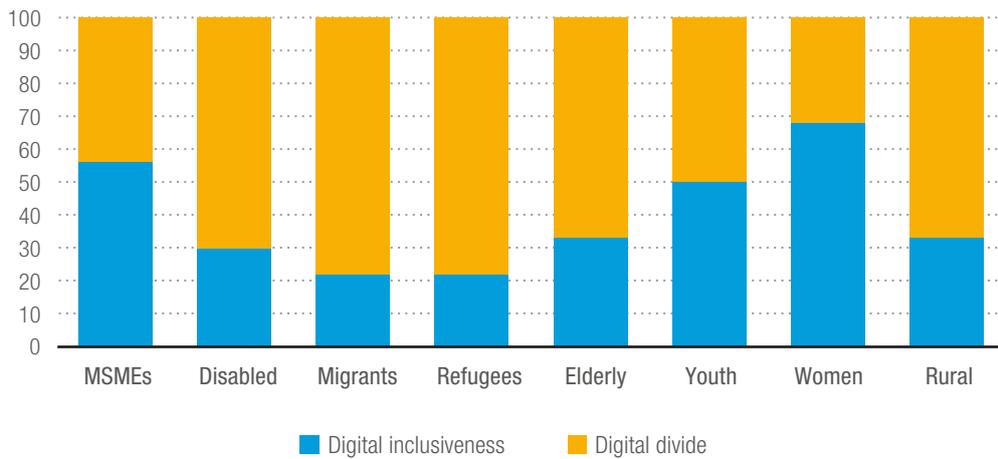


Figure 18 indicates the level of inclusion attained by key segments of the population in the digital economy, such as women, youth, elderly, refugees, migrants, MSMEs, rural inhabitants and people with disabilities

(UNCDF, 2023). The results indicate that women, followed by MSMEs, have attained the highest level of digital inclusiveness. For most of the other groups, there is a significant digital inclusiveness divide.

Digital inclusiveness is highest among women and MSMEs.

Figure 18
Digital inclusiveness by segment
(Percentage)



Source: UNCDF (2023h).

6.2. Initiatives aimed at the development of digital skills

The government has launched several initiatives aimed at building the digital skills of students, with support from development partners.

Throughout 2020, the United Nations Children’s Fund (UNICEF) Learning Passport programme (UNICEF, 2020) expanded in eight countries as a remote learning response to COVID-19 school closures. Timor-Leste was the first country to implement Learning Passport in their digital learning platform, called ‘*Eskola Ba Uma*’ (or ‘School Goes Home’). UNICEF is working with the Ministry to develop the use of *Eskola Ba Uma* for blended teaching and learning in classrooms.

- All teachers agreed that digital instruction is an important way to impart digital skills to students.

- Training and continuous support are key to enable digital learning (among both teachers and students).
- Students learn to navigate the app quickly and are intrigued by its features.

The ‘Leveraging ICT to Improve Education and Skills’ project funded by UNDP and the India-United Nations Development Partnership Fund was aimed at development of students’ digital skills, with the overall goal to increase access to learning opportunities for primary and secondary students, as well as improve the quality of teaching and learning in rural schools across the Oé-Cusse region. The beneficiary scope extended to 5,000 young students from 12 different schools to receive support through the implementation of four in-house innovation labs and a mobile innovation lab.

The project yielded substantial educational benefits: 3,504 secondary students

enhanced their digital literacy with skills in various computer applications, while 50 of their peers delved into robotics and the Internet of Things. Fostering early ICT education, 2,038 younger students learned basic computer operations. The project also upskilled 168 teachers in digital tools and 118 government staff in office technology. Furthering ICT proficiency, 120 students engaged in an advanced three-day bootcamp, tutored by national and international experts.²⁶ UNDP reports that based on project activities, students and teachers of 23 schools in Oé-Cusse have access to in-house computer labs, robotic labs and mobile computer labs, and are able to use basic computer applications, write CVs and design web pages.²⁷

The ICT Skills and Knowledge for Youth in Timor-Leste project is the successor to the above-mentioned ICT project pilot in the Oé-Cusse region and represents an effort to scale up the project nationwide to support more students and teachers. The project ran from 2021 to 2023. Activities include creating computer labs and providing ICT training to educators and students.

MTC is now working with the Ministry of Education to identify seven schools for whom free Internet access will be provided during school hours. Planning is ongoing to identify a programme agenda to maximize the benefits from the Internet facilities.

6.3. Higher education

The following institutions provide tertiary and vocational courses in ICT.

- **National University of Timor-Leste:** Established in 2000, this is the largest and oldest university in the country, offering a wide range of courses across several faculties, including the Faculty of Engineering, Science and Technology.

It emphasizes high intellectual training, research, and the promotion of culture, science and technology, aiming at the country's sustainable development.

- **Dili Institute of Technology:** Founded in 2002, this Institute offers programmes in engineering, computer science and business, including a Master's in Science degree in computer science. This institution is community-based and aims to contribute significantly to the educational landscape of Timor-Leste by providing relevant and practical courses in technology and related fields.
- **National Institute of Science and Technology:** This is a public institute that promotes the advancement of scientific and technological knowledge. The Policy Support Facility within it assists the Government of Timor-Leste to enhance its national research and innovation system through feasibility studies, such as that on the creation of a national digital repository, and setting up of a specific science, technology and innovation programme.

At the TVET level, the National Institute for Workforce Development has the purview of promoting TVET education in the country and promoting skills within the Timorese population. It has granted operational licences to 60 training centres offering courses in various fields, including Level I and II programmes in administration, computer skills and IT. Additionally, 22 accredited training centres provide standard qualifications to address skill shortages in the country by equipping learners with market-relevant skills needed for economic development and employment opportunities.

The TLREN connecting the universities will be essential for e-learning, knowledge-sharing and collaboration between universities in Timor-Leste.

²⁶ Based on data from <https://www.undp.org/sites/g/files/zskgke326/files/migration/tl/ICT-Project-factsheet.pdf>.

²⁷ See <https://www.undp.org/timor-leste/projects/ict-skills-and-knowledge-youth-timor-leste-isky-tl>.



6.4. Innovation ecosystem builders

A study conducted as part of the Pacific Digital Economy Programme has identified Timor-Leste's entrepreneurship ecosystem as one of the weakest in the Pacific. The thrust of existing entrepreneurship projects is on employment creation and import substitution, which narrows the scope and restricts the scope for innovation and entrepreneurship. (UNCDF, 2021).

The *Knua Juventude Fila-Liman*, a one-stop centre for youth innovation, employment and entrepreneurship, managed and sponsored by UNDP Timor-Leste, played a role in supporting entrepreneurship by offering services to local entrepreneurs, helping to cultivate and enhance business skills and capacities, and birthing innovative initiatives such as the 3D Innovation Lab. As a donor-funded project, the Centre ceased operations after the funding period ended; however, the work conducted under it is sustained under the ongoing YEES project.

The innovation ecosystem builder community is currently very small and is led by development partners and select lead IT firms. Similie (<https://similie.com>) is one of the lead firms that is leading the development of a fledging innovation ecosystem. Grants-based seed funding to support start-ups on a competitive basis is

needed to help some seed ideas take root. Incubators will also be a welcome addition, and accelerators in the medium term.

Marketplaces offering shared services are required because MSMEs will likely not be able to develop and own platforms due to technical and financial constraints. Marketplaces offering shared services are required because they can reduce the barriers for MSMEs to participate in e-commerce, particularly if bundled services such as digital marketing, payment processing and logistics support can be provided.

6.5. Integration of e-commerce in national trade promotion efforts

Incorporating e-commerce into trade promotion organization activities is vital because it aligns with modern commercial practices and expands market reach. There is broad consensus among surveyed stakeholders that e-commerce tenets should be integrated into trade promotion activities. A combined 86 per cent of surveyed participants assess this as important or very important (see Figure 17), suggesting that current trade efforts could be enhanced with an e-commerce component. The role of TradeInvest will be critical here because it leads on both the trade competitiveness and investment promotion agenda.

Shared service marketplaces are crucial for MSMEs, lowering e-commerce barriers through bundled services.



7. Access to Financing

The financial system in Timor-Leste comprises commercial banks, microfinance institutions and credit unions, with a strong presence of foreign banks primarily serving international organizations. The national bank, BNCTL, has the largest lending portfolio and significant outreach. Despite high liquidity, there is limited credit available to MSMEs, with private sector credit standing at only 13.5 per cent of GDP. Challenges include a lack of financial literacy among entrepreneurs, limited innovation in the banking sector, a very nascent venture capital space, and regulatory hurdles such as incomplete land and movable asset registries. Efforts to improve access to finance include credit moratorium programmes and the CGS, though uptake has been weak. The YEES initiative and BNCTL's soft-loan facilities are notable efforts to support MSMEs, yet a more robust ecosystem is needed to foster e-commerce and digital economy firms.

A more robust financing ecosystem is essential to support SMEs engaging e-commerce and digital trade.

7.1. Scope and depth of the financial system

The country is home to five commercial banks, with four operating as branches of foreign banks. The four international banks operating in Timor-Leste are: ANZ Bank, Bank Mandiri, BNU Timor – *Grupo Caixa Geral de Depositos*, and Bank Rakyat Indonesia. There are many microfinance institutions offering lending and saving services as well.

The banking system maintains an exceptionally high level of liquidity, given that the sector is primarily financed through residents' deposits, with only a small portion of these funds being loaned out to businesses and individuals (BCTL, 2023).

BNCTL stands out as the sole locally owned bank, under government ownership, boasting the most extensive outreach and the largest network of branches nationwide. In addition to banks, the financial landscape encompasses insurance companies, microfinance institutions, money transfer services, financial cooperatives and credit unions. While banking capital adequacy and liquidity ratios consistently exceed regulatory

requirements, banks still struggle to engage significantly with the private sector.

The four foreign banks operating in Timor-Leste primarily serve international organizations and their staff (ADB, 2019). More recently, the foreign banks have started to penetrate local market segments, but products for Timorese citizens are limited to basic savings accounts and payroll loans backed by salary guarantees for public-sector employees and employees of large corporates. BNCTL, the national bank, plays a substantial role in financial intermediation and has the largest lending portfolio of any of the country's banks (approximately \$200 million in loans outstanding at the end of 2021, of which 40 per cent are SME-based and 60 per cent are for personal consumption). However, BNCTL faces similar constraints to outreach and expansion of credit (ADB, 2021). Advancements in digital and electronic payments can incentivize bank lending.

In addition to the banks, there are two ODTIs – *Kaebauk Investimentu no Finansas* and *Servisu Finanseiru Moris Rasik*. These were initially microfinance institutions, and their activities are heavily focused on credit



products. These institutions also offer savings and collateral savings accounts. It is estimated that 72 per cent of ODTI clients have an active loan, as opposed to 8 per cent of bank clients, reflecting their active engagement in the credit market.

A mobiliary security law, and an insolvency and recovery law, are currently in the Parliament for discussion, while the accounting standard law and banking law are being drafted. Once promulgated, these are expected to support increased access to financing for the private sector.

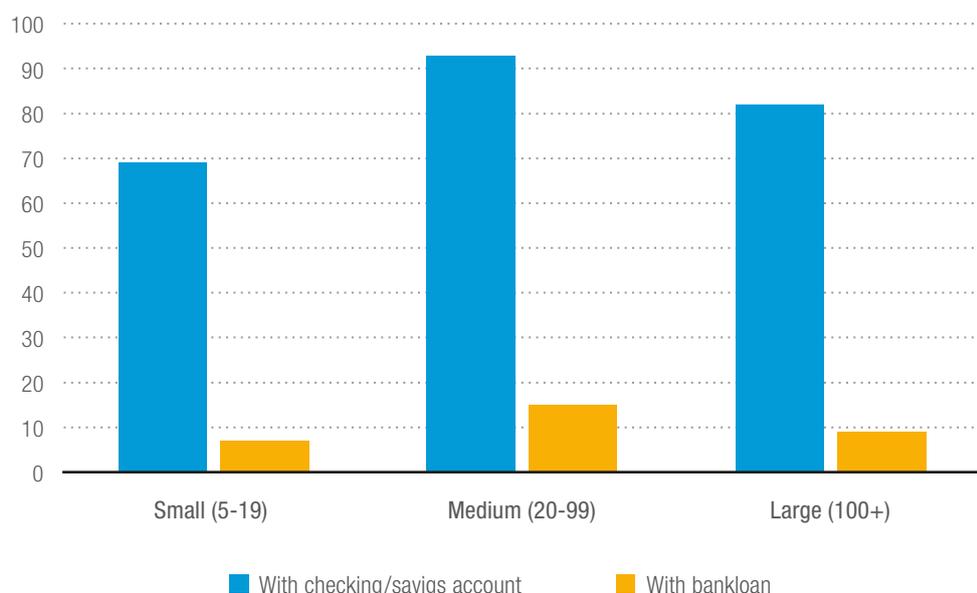
7.2. Key challenges faced by MSMEs in accessing finance

Access to finance remains a major constraint for local firms,²⁸ particularly for start-ups which may have promising ideas but limited or no cash flow.

This is despite the significantly high liquidity in commercial banks.

Private sector credit in Timor-Leste stands at only 13.5 per cent of GDP, compared with an average of 171.6 per cent in the East Asia Pacific region.²⁹ According to WB, while three out of four firms in the country have a checking or savings account, only 8 per cent have a loan or a line of credit (WB Group, 2022a). Most firms rely on internal funds (see Figure 19 and Figure 20) to finance their investment and working capital. In 92 per cent of cases, they finance their investment needs internally, while a small percentage of firms use banks to finance working capital, i.e. 5 per cent. Fifteen per cent of manufacturing firms have a loan or line of credit, and 6 per cent of firms in the services sector have such a loan or line of credit (WB Group, 2022a).

Figure 19
Use of financial services by firms, Timor-Leste, 2021
 (Percentage)



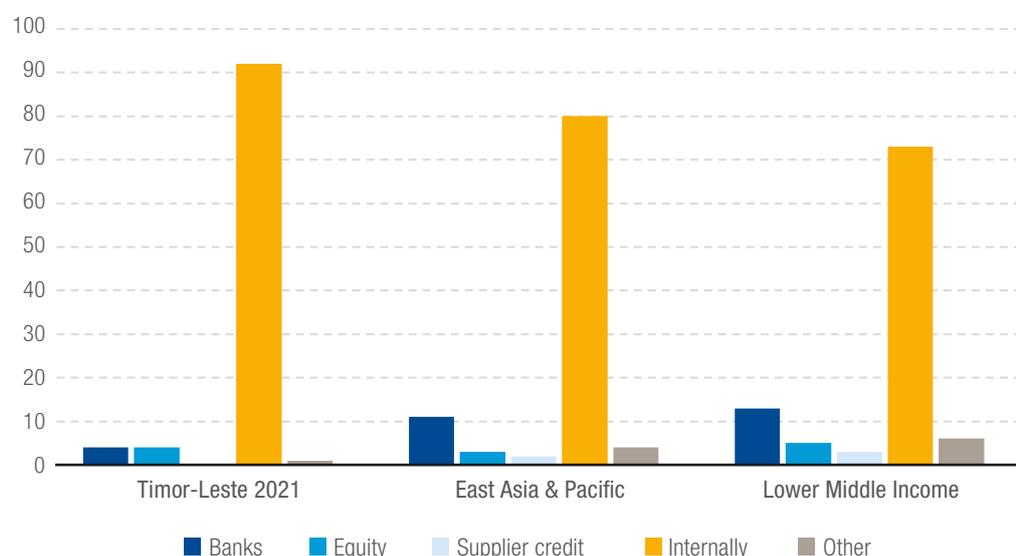
Source: UNCTAD, based on World Bank Group (2022).

²⁸ As per the National Directorate of MSMEs at MCI, a total of 1,359 firms have been registered, of which 1,208 are microenterprises, 118 are small firms and 33 are medium-sized firms.

²⁹ WB Indicators (<https://data.worldbank.org/indicator/FS.AST.PRVT.GD.ZS?locations=TL>).



Figure 20
Sources of financing for purchases of fixed assets by firms, Timor Leste and selected country groupings, 2021



Source: UNCTAD, based on World Bank Group (2022b).

The prevailing challenges can be segmented across three levels: MSMEs, lending institutions and the regulatory level.

The upper limit for unsecured loans is typically \$2,000; however, lending institutions are hesitant to lend beyond this point without collateral. The maximum interest rates average around 7.5 per cent per annum.

MSMEs

- Most entrepreneurs have limited financial and business knowledge. Transactions are mostly cash-based, resulting in limited verifiable records. MSMEs typically do not use bookkeeping software so transactions are captured mostly on paper receipts. Some entrepreneurs do not even have bank accounts, and for lending institutions, these factors combine to create a risky lending environment.
- MSMEs are currently not fully aware of the potential benefits and opportunities that e-commerce presents, and that there is a significant gap in market knowledge that needs to be filled. This is borne out by the surveys accompanying this assessment, where awareness-raising

among MSMEs on e-commerce-related opportunities and on available financing opportunities ranked as very important factors (see Figure 19).

- Lending institutions would like to see audited reports of MSMEs seeking loans as a measure of assessing creditworthiness. Loan requests are frequently not backed up by enough evidence that the MSME has a bankable idea and the competencies to execute the idea. A key issue is the absorptive capacities of MSMEs to make use of the banks, which then affects their ability to repay the loans.

Challenges associated with lending institutions / supporting ecosystem

- There is limited familiarity with and understanding of start-ups and the digital economy space within the banking system, reflected in the low uptake of and trust in digital financial services, as well as a strong reliance on cash-based transactions. This lack of engagement with digital finance tools poses challenges for supporting emerging businesses and innovative digital ventures (UNCDF, 2023a).

Awareness of e-commerce and financing opportunities is weak among MSMEs.



- Existing lending instruments are not tailored to sectors that promote innovation and entrepreneurship, and there is a need to bridge this gap. The awareness of bank officers towards e-commerce and other emerging areas is also weak. These findings are also echoed by the stakeholder surveys (see Figure 21).
- There is a gap in terms of an innovation ecosystem builder community that could bridge some of the financing gap for MSMEs, including future e-commerce start-ups. Some development-partner-led programmes have emerged, notably the YEES initiative; however, private-sector-led efforts are also required.
- Venture capital and angel investment are very limited in Timor-Leste. There is potential to develop them given a reasonably strong diaspora in the European Union and Asia.
- The CGS has had limited uptake by commercial banks.
- Alternative forms of financing such as invoice financing / factoring do not exist. The country also does not have a crowdfunding model, nor is there a regulatory framework in place to facilitate the introduction of crowdfunding platforms.
- Bankruptcy laws / procedures are not in place. This has resulted in an increase in the reticence of lending institutions to cater to MSME needs. Most loans are consumption loans for public servants, veterans and other stakeholders.
- There is no standardization for accounting, which would have established benchmarks and guidelines for banks, back-office staff and MSMEs.
- BCTL maintains a credit registry information system to control and assess credit seekers in all banks and mitigate lending risks. However, there is a need to upgrade this system to include detailed information. The current depth of information is considered insufficient to generate reliable ratings. For instance, the system does not record details of company ownership, due to which incidences of company owners with existing loans defaulting and starting a new company with a new loan request have increased.

Regulatory issues

- The lack of clear ownership / registration of land remains an obstacle for SMEs to access loans and for the country to attract foreign investment. The Land Registry Law was enacted in 2022³⁰ but the land registry is not yet complete, and overall, implementation remains a challenge.
- Movable assets such as vehicles also cannot be used as collateral, and there is no movable collateral registry that can be reviewed by lending institutions.
- There is currently no centralized policy, strategy or official definition for MSME development. Additionally, there is no designated institutional leader for MSME-related issues. These challenges at the policy level, coupled with weak coordination among various line ministries and agencies at sector-specific levels, undermine efforts to raise MSME competitiveness.

7.3. Types of financing

Measures have been taken recently to improve access to financing for MSMEs. BCTL launched a credit moratorium programme to support the economy, businesses and households affected by the COVID-19 outbreak. The programme offered the possibility to pause loans for three months. During the 'pause' period, borrowers paid only 40 per cent of the interest costs. The programme contributed the remaining 60 per cent of the interest paid to the bank lender. Individuals and established businesses with ongoing loans were the direct beneficiaries of the programme.

Understanding of start-ups and the digital economy space is weak within the banking system.

³⁰ According to Article 29 of this law, the Land Registry shall be a combination of the existing National Cadaster of Properties database as well as information on the legal titles over a property.



Recognition is growing for tailored financing mechanisms to foster e-commerce growth beyond traditional funding.

In July 2019, the Central Bank launched the CGS for MSMEs, and in August 2020, microenterprises were included as target beneficiaries of the scheme. The programme aims to help MSMEs with access to finance. The initiative reduces the credit risk posed to commercial banks by offering a guarantee that covers up to 70 per cent of the loans, thereby fulfilling legal requirements. Large enterprises are not allowed to participate in the programme. In exceptional cases, the share of risk taken by the CGS is up to 100 per cent. The CGS suffered from weak uptake during the COVID-19 pandemic; however, there is an impetus to reactivate it.

7.4. Funding available via the innovation ecosystem builder community

Entrepreneurs primarily rely on bootstrapping and family or friends for their financing needs (UNCDF, 2021). Government-based funding has not been effective. A UNCDF study notes that funding support has not been designed in line with entrepreneurs' needs and is often absorbed by established entrepreneurs (UNCDF, 2021).

There is a need to deploy financing mechanisms that not only facilitate the initial financing but also support the ongoing growth of e-commerce ventures – via incubators and seed-funding instruments. Stakeholder survey responses prioritized the importance of identifying sources of financing and investment, along with the development of incubators (see Figure 21).

Development partners are playing a role in bridging the financing gap. The YEES project is a start-up competition for 300 entrepreneurs. The project is funded by Korea International Cooperation Agency for six years, starting in 2022, and is implemented by the Ministry of Commerce and Industry, and UNDP Timor-Leste. BNCTL supplements funding for candidates that experience success and require scaling-up financing.

The YEES project provides a loan guarantee programme that is essentially a soft-loan

facility for qualifying / select MSMEs, who can access loans from BNCTL with an interest rate of 3 per cent – which is four to five times lower than the interest rate of other commercial banks – and a grace period of up to six months. The soft loan includes a 75 per cent guarantee (collateral) and limited collateral for high-risk MSMEs. The bank will claim the collateral if the MSMEs default on the loan. As of 2023, the total fund amounts to \$50,014,362. Achievements include the approval of loans for 47 MSMEs, creating 373 jobs, with a notable distribution across genders and sectors including agriculture, commerce, industry and tourism (UNDP, 2023).

Overall, the soft-loan scheme operated via the YEES project through MCI and UNDP has found mixed success. One of the reasons relates to the pending passage of the collateral law. Also, the target group currently only includes established MSMEs that have already operated for a minimum of one year. This excludes start-ups that have potentially bankable ideas but lack the financial access to drive their operations in the early days. A review of the criteria could meaningfully boost access for start-ups.

Venture capital in Timor-Leste

The venture capital space is still small. According to Statista, total capital raised in Timor-Leste is expected to reach \$6.3 million by 2024, almost all of it in the seed stage, focused on idea validation and initial growth. There are no dedicated venture capital firms specifically targeting Timor-Leste start-ups, and there is also no venture capital and angel investment network available in the country.

There are some examples of investor backing for local ventures such as HaloDili and Similie; however, there are few other examples of successful investment-backed SMEs in the market. As noted earlier, efforts by the private sector to develop a calendar of innovation and tech-related events are ongoing. Establishment of such a calendar could eventually support the development of an angel investing network.



Figure 21
Importance of access to financing as an enabler for e-commerce
in Timor-Leste, 2024

(Percentage)

Please evaluate the following items according to their priority to create access to finance conducive to the development of e-commerce in your country. (Public and private sector surveys, 47 responses).



Source: UNCTAD, based on Timor-Leste eTrade Readiness Assessment Online Survey, 2024.

Conclusion

Economically, Timor-Leste is at a critical juncture. As the nation strives to pivot from a dependency on traditional sectors like oil and gas, the emerging digital economy could offer a beacon for economic revitalization and sustainable development. With strategic investments and regulatory reforms, e-commerce is poised to play a transformative role in the nation's economic landscape.

This shift will be driven by the anticipated arrival of the TLSSC, promising to substantially enhance Internet connectivity across the nation. Improved digital infrastructure is expected to catalyse the digital economy, enabling previously unfeasible use cases such as e-health, e-education and e-commerce by providing much-needed bandwidth and speed at affordable prices. The TLSSC offers significant opportunities that could result in digital transformation of the entire country.

However, the real benefits of such infrastructure will depend on the governance of cable operations, a market-led pricing model, and the ability of mobile network operators and ISPs to upgrade their infrastructure to accommodate the cable. The experiences and challenges faced by Papua New Guinea and Solomon Islands in ensuring that wholesale savings enjoyed by operators are shared with retail clients may provide valuable insights. Coordination between institutions such as MTC, ANC and TIC TIMOR will be critical.

On the regulatory front, Timor-Leste has taken commendable steps towards creating a conducive environment for e-commerce. The enactment of the e-commerce law and ongoing efforts to streamline trade logistics and payment systems reflect a strong government commitment to nurturing a digital economy. These regulatory frameworks aim to safeguard transactions, enhance consumer protection, and foster trust in digital platforms, which are crucial for the adoption of e-commerce.

The financial services landscape in Timor-Leste is evolving, with significant growth in access points and the adoption of digital wallet solutions such as TPay and Mosan. These developments indicate a move towards greater financial inclusion, which is integral to e-commerce growth. The ongoing enhancement of interoperability among payment platforms and the introduction of more user-friendly financial products will further facilitate the ease of online transactions.

As Timor-Leste aims for full membership in ASEAN, aligning its e-commerce strategies with regional standards is essential. Key frameworks to consider include the AEC Blueprint 2025, the ASEAN Agreement on Electronic Commerce, and the ASEAN Work Programme on Electronic Commerce 2017–2025. These initiatives are designed to enable smooth e-commerce transactions across the region, encourage digital innovation, and ensure a secure digital trade environment. By adhering to these standards, Timor-Leste will not only facilitate its integration into ASEAN but also enhance its economic resilience and competitiveness.

To fully realize the potential of e-commerce, Timor-Leste must continue to address existing challenges through cohesive policy implementation, capacity-building and strategic international partnerships. The journey towards a robust digital economy will require persistent efforts, adaptability and deepened engagement with both local stakeholders and development partners. This assessment, the first to review Timor-Leste's fledgling e-commerce ecosystem, offers a road map to chart and implement policy and technical actions by the government, private sector, and civil society actors, supported by development partners. It will be complemented by a NECS, to be elaborated in 2024.



The Way Forward: Action Matrix

1. E-commerce Readiness Assessment and Strategy Formulation				
No.	Indicative Action	Expected Results	Priority	Potential Support
1.1	Develop a NECS accompanied by an implementation management and governance framework that will support the implementation of recommendations, the NECS strategic implementation plan and broader e-commerce development.	A medium-term road map to guide e-commerce development in Timor-Leste, serving as a blueprint and a needs assessment for development partners to support Timor-Leste's e-commerce development.	High	MCI, <i>UNCTAD</i>
1.2	Set up a governance and coordinating mechanism for e-commerce.	Establishment of dedicated coordinating structures to oversee the forthcoming NECS implementation and support the long-term growth of Timor-Leste's e-commerce.	High	MCI, MCAE, Ministry of Finance, MTC, BCTL, <i>European Union, UNCTAD, UPU</i>
1.3	Clarify the mandate and demarcation of duties between ANC, TIC TIMOR and the National Directorate of ICT, which have overlapping mandates to some degree.	Improved cooperation and clear role definition among public-sector agencies that govern the ICT sector, strengthening support for digital and e-commerce initiatives.	High	Council of Ministers
1.4	Develop a a five-year governance-focused digital development strategic plan based on Timor Digital 2032, establishing the necessary governance and coordination structures to support digital transformation in public services.	A governance-focused digital development strategic plan that prioritizes user experiences for citizens and businesses, and promotes public engagement and transparency, essential foundations for a secure and efficient e-commerce ecosystem.	Medium	TIC TIMOR, <i>WB, UNCDF</i>
1.5	Participate in regional e-commerce initiatives and knowledge-sharing platforms. Develop capacities of trade negotiators and relevant government officials on ASEAN-related e-commerce initiatives including the AEC Blueprint 2025, ASEAN Agreement on Electronic Commerce, and ASEAN Work Programme on Electronic Commerce.	Enhanced capacity to align Timor-Leste's national e-commerce regulations and practices with ASEAN standards, accelerating progress toward ASEAN integration.	Medium	MCI, MCAE, Ministry of Foreign Affairs and Cooperation <i>ADB, DFAT, European Union</i>
1.6	Conduct a capacity needs assessment for TIC TIMOR in terms of human and technical resources, and implement capacity development initiatives based on identified priorities.	Strengthened capacities of TIC TIMOR to lead digital transformation, supporting elements of Timor Digital 2032 for e-commerce readiness.	Medium	MTC, TIC TIMOR, <i>ITU</i>
1.7	Establish a statistics collection, analysis and dissemination mechanism for e-commerce statistics involving key agencies. Build capacities of the National Institute of Statistics and agencies involved in domestic and cross-border e-commerce trade.	Availability of reliable e-commerce statistics that inform policy, private-sector strategies and civil society, promoting data-driven growth of e-commerce.	Low	National Institute for Workforce Development, <i>UNCTAD, ITU, UPU</i>



2. ICT Infrastructure and Services				
No.	Indicative Action	Expected Results	Priority	Potential Support
2.1	Establish a state-owned enterprise that will manage long-term cable operations, including wholesale pricing structure, with due consideration given to recent lessons learned from similar initiatives in the Solomon Islands and Papua New Guinea.	Efficient management of cable operations to deliver high-speed, affordable Internet, benefiting both e-commerce businesses and retail clients.	High	Ministry of Finance, MTC, ANC, DFAT, WB, ADB
2.2	Ensure ISPs, mobile network operators and other service providers shore up their infrastructure such as access points, equipment, data centres and transmission towers to accommodate the additional capacities from the TLSSC.	High-speed connectivity across Timor-Leste that facilitates business operations, particularly e-commerce, in all areas of the country.	High	ANC, DFAT, WB, ADB
2.3	Expand the national backbone to all municipalities.	Nationwide high-speed connectivity that enables seamless e-commerce transactions and digital business operations.	Medium	MTC, ANC, DFAT, WB, ADB
2.4	Continue expansion of the 4G network across the country and explore 5G as a forward-looking technology made feasible due to TLSSC enhancements.	Progress towards universal coverage that strengthens access to digital markets, paving the way for e-commerce growth.	Medium	ANC, MTC, DFAT, WB, ADB
2.5	Develop a digital authentication infrastructure that facilitates unique identification for certifying and authenticating identities.	Access to authentication services that enhance security for online transactions, instilling confidence in e-commerce for businesses and consumers.	High	Ministry of Justice, TIC TIMOR, government-to-government support (Estonia, India)
2.6	Adopt the national cybersecurity strategy for Timor-Leste, after successful review by the Interministerial Working Group on Cybersecurity.	A strategic cybersecurity framework that safeguards digital infrastructure, crucial for secure e-commerce operations in Timor-Leste.	High	Interministerial Working Group on Cybersecurity, led by the Office of the Prime Minister
2.7	Conduct a feasibility study involving key government agencies, along with Internet operators and private sector representatives, on identifying use cases arising from the expected improvements in Internet connectivity.	Accelerated introduction of targeted e-services that facilitate e-commerce and bolster the digital economy.	Medium	ANC, TIC TIMOR, MCAE, MCI, ADB, WB
2.8	Introduce standardization in terms of data storage and data exchange at key government agencies based on international standards.	Improved data standardization and interoperability that support secure and efficient cross-border e-commerce.	Low	TIC TIMOR
2.9	Establish IXPs and ensure their upkeep.	Reduced dependency on external providers, lowering latency and costs for local e-commerce platforms and other digital services.	Medium	ANC
2.10	Establish a National Agency for Cybersecurity, and adequate resourcing of the Timor-Leste Computer Security Incident Response Team.	Enhanced national cybersecurity capabilities that protect digital and e-commerce infrastructures, building trust in online transactions.	Medium	ANC, TIC TIMOR, ITU, Government of Japan, Government of Indonesia



3. Trade Logistics and Trade Facilitation				
No.	Indicative Action	Expected Results	Priority	Potential Support
3.1	Formalize the working arrangements between various agencies engaged in TileSW.	Improved coordination for TileSW, enabling streamlined processes that facilitate e-commerce and cross-border trade.	High	Timor-Leste Customs Authority, <i>UNCTAD</i> , <i>ESCAP</i>
3.2	Expand the functionality of TileSW, particularly in paperless trade. Launch pilot initiatives for exchanging documents and data with partners.	Expanded functionality of TileSW to support paperless trade and e-commerce, allowing faster and more secure cross-border transactions.	High	Timor-Leste Customs Authority, <i>UNCTAD</i> , <i>ESCAP</i>
3.3	Engage in regional and bilateral efforts to accelerate alignment of cross-border paperless trade tools and processes in Timor-Leste with good practices, particularly with ASEAN member countries. This participation is crucial to prepare Timor-Leste for its accession to ASEAN and integration into the ASEAN Single Window.	Improved readiness for ASEAN integration, facilitating cross-border e-commerce through alignment with ASEAN paperless trade standards.	High	Timor-Leste Customs Authority, MCI, MCAE, <i>ASEAN Secretariat</i> , <i>bilateral government-to-government engagement</i> , <i>ESCAP</i> , <i>UNCTAD</i>
3.4	Adopt and implement a national transport sector master plan.	Strengthened transportation infrastructure that enables efficient e-commerce logistics and delivery networks across Timor-Leste.	Medium	MTC, <i>ADB</i> , <i>WB</i>
3.5	Accelerate development of a national addressing system, including zip codes and street addresses. In the interim period, pilot alternate addressing systems such as geo-located addresses.	Enhanced addressing systems that support accurate and efficient e-commerce deliveries, improving business and consumer connectivity.	Medium	MTC, CTL, municipal governments, Ministry of Rural Development and Community Housing, Ministry of Public Works, <i>UPU</i>
3.6	Enhance the capacities of CTL via development of a medium-term strategy and active engagement in UPU initiatives supporting operational, digital and payment readiness.	Enhanced capacity of CTL to support e-commerce logistic, positioning it as a key player in Timor-Leste's e-commerce ecosystem.	Medium	MCI, MTC, CTL, <i>UPU</i>
3.7	Proactively study and implement cross-border paperless trade applications and procedures in connection with the Timor-Leste-Indonesia-ADB MoU Regarding Cross-Border Trade and Cooperation Technical Assistance.	Improved cross-border trading environment that simplifies e-commerce transactions with ASEAN, supporting the growth of digital trade.	Medium	MCI, <i>ADB</i> , <i>ESCAP</i> , <i>ASEAN Secretariat</i>



4. Payment Solutions				
No.	Indicative Action	Expected Results	Priority	Potential Support
4.1	Expand the connectivity of P24 to international payments systems such as Mastercard, Visa and Union Pay.	Expanded access to international payment systems, facilitating e-commerce transactions and enabling international sales.	High	BCTL, WB
4.2	Expand digital financial inclusion initiatives to service the unbanked population.	Improved access to digital financial services in underserved areas, enabling broader participation in e-commerce and digital transactions.	High	BCTL, UNCDF, Alliance for Financial Inclusion, ADB, UPU
4.3	Implement digital wallet solutions that address common challenges consumer face, to promote the use of digital wallets for e-commerce and other digital transactions.	Increased adoption of digital wallets, supporting e-commerce transactions and enhancing accessibility for consumers.	Medium	MCI, BCTL, UNCDF
4.4	Develop a national payment gateway via which e-shops can accept digital payments from consumers.	Improved uptake of cashless payments among merchants (businesses and consumers), driving e-commerce growth and simplifying transactions.	Medium	BCTL
4.5	Review the licensing regime for new fintech services and assess the viability of introducing a national sandbox mechanism or special licensing schemes for introduction of fintech services in the country.	Established pathways for innovative fintech solutions that support digital payments and e-commerce growth.	Medium	BCTL, WB, UNCDF
4.6	Develop a national QR code standard in the country.	Improved ease of payments as well as interoperability within payment solutions for e-commerce transactions.	Medium	BCTL, ANC, UNCDF
4.7	Introduce digital payments acceptance for a prioritized list of e-services and paperless trade-related services, in addition to the Customs duty functionality that already exists. Allow users to pay online in addition to through P24-affiliated ATMs.	Expanded use cases for digital payments that will improve acceptance of online payments and boost e-commerce engagement.	Medium	Timor-Leste Customs Authority, BCTL, ADB, WB



5. Legal and Regulatory Frameworks				
No.	Indicative Action	Expected Results	Priority	Potential Support
5.1	<p>Cover existing gaps in Timor-Leste's legal framework for e-commerce. These include:</p> <ul style="list-style-type: none"> • Passage of the draft cybercrime law • Consumer protection (review to ensure alignment with digital transactions) • Regulations complementary to e-commerce law • Electronic signatures, including digital signatures • Online payment and payments • Electronic records retention • Integrated Postal Reform and Development Plan. 	A comprehensive legal framework supporting secure and transparent e-commerce operations, including consumer protection, electronic transactions and data security.	High	Ministry of Justice, BCTL, MCI, ANC, UNCITRAL, WB, ADB, UNCTAD, UPU
5.2	Raise the awareness of businesses and consumers on key legislation related to the recently passed E-Commerce Law (legal issues related to cross-border paperless trade among its various stakeholders), including chambers of commerce, the trade community and the legal profession.	Improved awareness among businesses (including chambers and sector institutions) and consumers on rights and responsibilities covered under the law, fostering greater compliance and trust in digital transactions.	High	MCI, UNCDF, UNCTAD
5.3	Evaluate the potential benefits of introducing targeted tax incentives to foster the growth of e-commerce for firms operating in the e-commerce space.	Increased attractiveness for investments in the e-commerce space, coupled with an improved business environment for domestic operators.	High	Tax Authority, Ministry of Finance
5.4	Establish enforcement institutions for monitoring and enforcement of key cyberlaws, including a data protection agency and IP office.	Established institutions for monitoring and enforcing data protection and IP laws, fostering a secure environment for e-commerce and digital transactions.	Medium	MCI, MCAE, World IP Organization
5.5	Improve capacities of negotiation teams in trade / technical / legal dimensions, particularly when dealing with regional and international partners (ASEAN, bilateral partners).	Strengthened negotiation capacities for regional and international trade agreements that support e-commerce development, particularly in alignment with ASEAN standards.	Medium	MCI, ADB, WB
5.6	Conduct a detailed analysis of the draft competition law and draft data protection law.	Thorough understanding of how these laws interact and impact digital trade, including in the context of ASEAN, is created.	Medium	Ministry of Justice, MCI, OECD



6. E-commerce Skills Development				
No.	Indicative Action	Expected Results	Priority	Potential Support
6.1	Following TLSSC roll-out, intensify development of online and blended learning platforms for all teachers and students.	Wider access to e-learning platforms across education levels, building the foundational digital skills necessary for participation in the e-commerce ecosystem.	High	Ministry of Higher Education, Science and Culture; <i>UNICEF, UNDP, UNESCO</i>
6.2	Conduct a study on the feasibility of leveraging Uma Digital as pilots for e-commerce in municipalities – using e-government services as a channel for e-commerce. Review the Bangladesh Ekshop model for any lessons that can be applied in Timor-Leste.	Enhanced connectivity between rural and urban areas through e-commerce channels, increasing digital access and economic participation.	Medium	TIC TIMOR, Ministry of Rural Development and Community Housing; <i>UNCDF, UNDP</i>
6.3	Support the development of private sector-based certificate-level training institutions as well as business development services. Ensure proper accreditation.	Expanded accessibility, affordability, and quality of skills in IT and other areas that may be relevant for e-commerce firms (such as digital marketing, content creation, search engine optimization, etc.), enhancing the talent pool for e-commerce growth.	Medium	National Agency for Academic Assessment and Accreditation
6.4	Revise the curricula of primary and secondary schools, and bridge hardware / software resourcing needs.	Levelling up of digital literacy levels for primary and secondary school students, building essential skills for future participation in the digital economy.	Medium	Ministry of Higher Education, Science and Culture; <i>UNESCO</i>
6.5	Support efforts by private sector players to develop Comoro Valley as an innovation hub in Dili.	A vibrant innovation hub in Dili that supports e-commerce start-ups and fosters digital entrepreneurship in Timor-Leste.	Medium	Private sector players, <i>UNCDF, UNDP</i>
6.6	Leverage the TLREN for e-learning, research and innovation once the TLSSC is deployed.	Strengthened e-learning, research and innovation networks at the tertiary level that support e-commerce skills development and innovation.	Medium	TIC TIMOR; Ministry of Higher Education, Science and Culture
6.7	Launch a value chain initiative involving a productive sector (product or services) with relatively high export potential. The pilot would link e-shops, logistics firms and mobile wallets to incentivize SME onboarding on the e-shops and consumer spending via mobile wallets. The pilot would also test / encourage partnerships between delivery providers, e-shops and mobile wallets.	Enhanced digital integration and economic growth by boosting e-commerce efficiency, promoting SME participation in digital platforms, and fostering innovative partnerships, particularly in sectors that can serve as natural anchors for e-commerce.	Medium	Ministry of Agriculture, Fisheries and Forestry; Ministry of Tourism and Employment, MCI, <i>UNDP</i>



7. Access to Financing				
No.	Indicative Action	Expected Results	Priority	Potential Support
7.1	Reactivate the CGS based on lessons learned from COVID-19-era implementation. Consider prioritizing MSMEs seeking funding for initiatives related to digital entrepreneurship.	Increased lending from banks for start-ups, particularly in digital entrepreneurship, promoting innovation in the digital economy.	High	BCTL, Ministry of Finance
7.2	Expedite implementation of the 2022 Land Registry Law.	Enhanced clarity in land ownership / registration, improving MSME access to financing, and bolstering investment in sectors including e-commerce.	High	Cabinet of Ministers
7.3	Clarify the legal basis for movable collateral and develop a movable collateral registry.	Improved financing options for start-ups, including those in e-commerce, through accessible collateral mechanisms for borrowers with limited assets.	Medium	BCTL, Ministry of Justice
7.4	Adopt crowdfunding legislation and support development of platforms facilitating start-up fundraising from private citizens and companies. Review regional passporting / licensing options.	New funding channels for e-commerce and digital start-ups through crowdfunding platforms, increasing access to capital.	Medium	BCTL, MCI, Ministry of Justice
7.5	Expand the existing grant-based pool of funding, and/or introduce a new one, to support start-ups via a competitive process.	Expanded grant-based funding for competitive start-up initiatives, encouraging innovation in e-commerce and digital sectors.	Medium	UNDP, UNCDF
7.6	Encourage development of a diaspora-led venture capital / angel investment network in support of digital start-ups.	Increased diaspora-driven capital and mentorship for digital and e-commerce MSMEs, strengthening the digital economy.	Medium	MCI, BCTL
7.7	Establish a credit bureau that can be used by lending institutions to assess the creditworthiness of individuals and companies seeking loans.	Enhanced lending environment for creditworthy e-commerce and digital businesses, supporting access to needed financing.	Medium	BCTL



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Annex I:

List of UNCTAD eTrade Readiness Assessments

- Trinidad and Tobago eTrade Readiness Assessment (March 2025).
- Mauritanie: Évaluation de l'état de préparation au commerce électronique (March 2024).
- Ghana: eTrade Readiness Assessment (November 2023).
- Perú: Evaluación sobre el estado de preparación para el comercio electrónico (November 2023).
- Mongolia: eTrade Readiness Assessment (June 2023).
- Member States of the Economic Community of West African States: eTrade Readiness Assessment (September 2022).
- Kenya: eTrade Readiness Assessment (June 2022).
- Tunisie: Évaluation de l'état de préparation au commerce électronique (February 2022).
- Jordan: eTrade Readiness Assessment (February 2022).
- Côte d'Ivoire: Évaluation de l'état de préparation au commerce électronique (February 2022).
- Iraq: eTrade Readiness Assessment (November 2020).
- Member States of the West African Economic and Monetary Union: eTrade Readiness Assessment (November 2020).
- Niger: Évaluation rapide de l'état de préparation au commerce électronique (July 2020).
- Bénin: Évaluation rapide de l'état de préparation au commerce électronique (June 2020).
- United Republic of Tanzania: Rapid eTrade Readiness Assessment (April 2020).
- Mali: Évaluation rapide de l'état de préparation au commerce électronique (December 2019).
- Malawi: Rapid eTrade Readiness Assessment (December 2019).
- Kiribati: Rapid eTrade Readiness Assessment (October 2019).
- Tuvalu: Rapid eTrade Readiness Assessment (October 2019).
- Lesotho: Rapid eTrade Readiness Assessment (March 2019).
- Bangladesh: Rapid eTrade Readiness Assessment (March 2019).
- Afghanistan: Rapid eTrade Readiness Assessment (March 2019).
- Madagascar: Évaluation rapide de l'état de préparation au commerce électronique (January 2019).
- Zambia: Rapid eTrade Readiness Assessment (December 2018).
- Uganda: Rapid eTrade Readiness Assessment (December 2018).
- Burkina Faso: Évaluation rapide de l'état de préparation au commerce électronique (September 2018).
- Togo: Évaluation rapide de l'état de préparation au commerce électronique (September 2018).
- Solomon Islands: Rapid eTrade Readiness Assessment (July 2018).
- Vanuatu: Rapid eTrade Readiness Assessment (July 2018).
- Sénégal: Évaluation rapide de l'état de préparation au commerce électronique (July 2018).
- Lao People's Democratic Republic: Rapid eTrade Readiness Assessment (April 2018).



- Liberia: Rapid eTrade Readiness Assessment (April 2018).
- Myanmar: Rapid eTrade Readiness Assessment (April 2018).
- Nepal: Rapid eTrade Readiness Assessment (December 2017).
- Samoa: Rapid eTrade Readiness Assessment (October 2017).
- Bhutan: Rapid eTrade Readiness Assessment (April 2017).
- Cambodia: Rapid eTrade Readiness Assessment (April 2017).

All reports are available on the website: <https://unctad.org/topic/ecommerce-and-digital-economy/etrade-readiness-assessments-of-LDCs>.





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