

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT



Digital Economy Report
PACIFIC EDITION 2022

Towards Value Creation and Inclusiveness



United
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Geneva, 2023

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Note

Within the United Nations Conference on Trade and Development (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 communications technologies (ICTs) and e-commerce. 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 information 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 (LDCs), to use and benefit from e-commerce. The initiative is also behind the UNCTAD eTrade Readiness Assessment and eTrade for Women programmes, launched respectively in 2017 and in 2019.

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In this report, the terms country/economy refer, as appropriate, to territories or areas. The designations of country groups are intended solely for statistical or analytical convenience, and do not necessarily express a judgment about the stage of development reached by a particular country or area in the development process. Unless otherwise indicated, the major country groupings used in this Report follow the classification of the United Nations Statistical Office. These are:

Developed countries: the member countries of the Organisation for Economic Co-operation and Development (OECD) (other than Chile, Mexico, the Republic of Korea and Türkiye), plus the European Union member countries that are not OECD members (Bulgaria, Croatia, Cyprus, Lithuania, Malta and Romania), plus Andorra, Liechtenstein, Monaco and San Marino. Countries with economies in transition refers to those in south-east Europe and the Commonwealth of Independent States. Developing economies in general are all the economies that are not specified above. For statistical purposes, the data for China do not include those for Hong Kong Special Administrative Region of China (Hong Kong, China), Macao Special Administrative Region of China (Macao, China) or Taiwan Province of China. An Excel file with the main country groupings used can be downloaded from UNCTADstat at: <http://unctadstat.unctad.org/EN/Classifications.html>.

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- 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.
- A blank in a table indicates that the item is not applicable, unless otherwise indicated.
- A slash (/) between dates representing years, e.g. 2021/22, indicates a financial year.
- Use of an en dash (–) between dates representing years, e.g. 2021–2022, signifies the full period involved, including the beginning and end years.
- Annual rates of growth or change, unless otherwise stated, refer to annual compound rates.
- Details and percentages in tables do not necessarily add up to the totals because of rounding.

Preface

Digital transformation is under way in the Pacific and presents both opportunities and challenges for the region. Improvements in digital connectivity across the region are converging with growing opportunities for e-commerce, digital payments and digital trade. For some businesses, electronic commerce is opening access to new domestic, regional and international markets. This is especially important for the Blue Pacific Continent to overcome the 'tyranny of distance' inherent in being isolated from global trade networks.

The COVID-19 pandemic magnified the potential of digital technologies to provide solutions to socioeconomic challenges with new ways of working and communicating emerging across the region. In some countries, the pandemic was a catalyst that sped up long-planned digital initiatives. New mobile money and electronic payment systems accelerated financial inclusion across the region and businesses began turning to online platforms to market and sell their products.

At the same time, we are reminded of the economic and social divides that may be exacerbated by increased digitalization, entrenching both leaders and followers and generating uneven social and economic progress. The digital economy should reduce, not widen, existing income and wealth disparities. The current wave of technological change is unprecedented in terms of speed, scope and scale, and presents the Pacific with a unique opportunity to deliver inclusive digital development that leaves no one behind.

In this context, I am pleased to present the 2022 Pacific Edition of the Digital Economy Report, which aims to strengthen the understanding of digital transformation in the Pacific. While there is no one-size-fits-all solution to address the unique digital challenges faced by the Pacific region, the report provides an overview of the current context and explores how policymakers and local, regional and international organizations can leverage digital technologies for socioeconomic development.

The ongoing adoption of digital technologies in the Pacific is driving complex outcomes that require policy planners and regulators to adopt flexible, adaptive and collaborative approaches. To tap into the tremendous potential of digital transformation in the region, new digital governance models will be needed, as well as the development of comprehensive strategies that build resilience, bridge digital divides and promote economic growth. Inclusion should be placed at the centre of this discussion; all people and sectors should benefit from the digital economy, including rural populations, women, youth and persons with disabilities.

This Pacific Edition of the Digital Economy Report provides a nuanced analysis of the complexities involved in bridging digital divides, as well as important considerations related to value creation and capture in the digital economy. It concludes with a call to move towards a more holistic, coordinated approach to building inclusive digital economies in the region. It identifies future pathways and recommendations to build on, in alignment with national and regional mechanisms and strategies.

I hope that the Pacific Edition of the Digital Economy Report provides valuable inputs into relevant policy processes. UNCTAD is committed to supporting the process of making digitalization work for sustainable development in the Pacific, in close collaboration with Member States and our partners in the Pacific Digital Economy Programme.

Shamika N. Sirimanne
Director
Division on Technology and Logistics
UNCTAD



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Acronyms and abbreviations

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
ASYCUDA	Automated System for Customs Data
B2B	business-to-business
B2C	business-to-consumer
CARICOM	Caribbean Community
COVID-19	coronavirus disease
GDP	gross domestic product
GNI	gross national income
GSMA	Global System For Mobile Communications Association
ICT	information and communications technology
IDES	Inclusive Digital Economy Scorecard
ITU	International Telecommunication Union
IXP	Internet exchange point
LDC	least developed country
MNO	mobile network operator
MSME	micro, small and medium-sized enterprise
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
PACER Plus	Pacific Agreement on Closer Economic Relations Plus
PAfTS	Pacific Aid for Trade Strategy 2020–2025
PDEP	Pacific Digital Economy Programme
PIFS	Pacific Islands Forum Secretariat
SDG	Sustainable Development Goal
SIDS	small island developing States
SME	small and medium-sized enterprise
SOE	State-owned enterprise
UNCDF	United Nations Capital Development Fund
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
USAID	United States Agency for International Development



Executive Summary

The distinct characteristics of the Pacific region create unique challenges and opportunities for digital development

Digital technologies are transforming how people interact, how businesses operate and how economies are configured. In this process, many countries around the world are struggling to determine how to deal with the development and policy implications of the evolving digital economy. For Pacific small island developing States (SIDS), challenges are amplified due to the distinct characteristics of their economies. Most countries are small in terms of population size – the region is home to 8 of the 10 smallest economies globally – with trade-dependent economies that are physically isolated from major markets and less integrated into global air and maritime shipping networks. This hampers participation in regional and global trading systems, exacerbates connectivity challenges and makes the region less attractive for international investments.

Nevertheless, digital technologies have much to offer the region. Digitalization represents a key solution to narrowing the vast trade distances in the Pacific and to integrate urban and rural markets. For isolated archipelago nations, digital platforms can provide opportunities to open or expand access to local, regional and international markets and knowledge networks. Digital businesses also benefit from lower start-up and operating costs. From a broader perspective, digital transformation offers opportunities for the region to accelerate progress towards virtually all the Sustainable Development Goals (SDGs).

This first Digital Economy Report: Pacific Edition 2022 examines the current status of the emerging digital economy in the Pacific, focusing on connectivity and access to digital technologies for people and businesses. It highlights that a relative lack of data and information on important issues hamper the ability of policymakers to make informed decisions as they deal with the development implications of the digital economy and how to create and capture value by stakeholders in the region. The approaches taken will affect not only trade, innovation and economic progress, but also a range of issues related to human rights, health, education and national security. By providing a holistic view of the Pacific digital economy, the report seeks to contribute to an enhanced understanding of these complex and interrelated factors.

Although connectivity challenges remain, e-commerce is beginning to emerge and offers the potential to accelerate development

The geographic characteristics of Pacific SIDS with widely dispersed populations create fundamental challenges to securing affordable ICT connectivity in these countries. Despite progress related to strengthening digital infrastructure, significant gaps remain in terms of access to reliable, affordable, high-speed and high-capacity broadband Internet. On average, Pacific SIDS lag behind the average for developing economies and SIDS on most indicators of ICT connectivity. Indicators include international bandwidth per user, 3G and 4G coverage, fixed broadband connection speed, mobile broadband subscriptions, affordability of broadband packages and Internet use. The average for Pacific SIDS is generally similar to the average for least developed countries (LDCs).

Increasing levels of access to digital technologies are converging with growing opportunities for e-commerce and digital trade. More and more economic activity in the region occurs on digital platforms for digital payments, social media, messaging and e-commerce. Remittances carried out on digital payments platforms play a particularly important role in some economies.

Although levels of activity vary across the region, online stores and e-commerce platforms are beginning to emerge and establish themselves in the Pacific. Significant commercial activity occurs on Facebook, where various groups bring together buyers and sellers in informal online marketplaces. These 'social sellers' exist in almost all Pacific SIDS. Formal e-commerce platforms, such as Jungle and BzzMart in Papua New Guinea and VitiKart in Fiji, are gaining traction with domestic customers and businesses. Fewer export-focused e-commerce businesses have been established in the region.

Notably, global business-to-consumer (B2C) e-commerce platforms have yet to penetrate the Pacific markets.

For many businesses and consumers, social media can serve as a building block for local digital entrepreneurship and innovation. The anticipated growth of digital businesses and e-commerce platforms can also lead to higher productivity, greater opportunities for micro, small and medium-sized enterprises (MSMEs) and new job creation. E-commerce could also be leveraged as a tool for integrating urban and rural markets. Archipelago states face pervasive challenges to private sector development, with their vast distances between markets and high barriers to buyer–seller discovery and trade. With many people living in rural areas, businesses are forced to limit operations to their immediate surroundings. In this environment, digital marketplaces and online stores could facilitate broader market access and more domestic and regional trade.

The emerging digital economy in the Pacific risks widening existing divides

Notwithstanding the development potential of e-commerce and the digital economy, there are several risks to consider. The dominance of major platforms and data providers can distort the distribution of wealth created by the digital economy and hinder local value creation and capture. Evidence from other regions suggests that the pandemic may have accentuated the concentration and consolidation of market power rather than reducing inequalities between and within countries. In some instances, digitalization has resulted in job losses or the accrual of value to those with higher levels of education and income.

Although digital technologies can help to achieve inclusive and sustainable development, they can also lead to new divides and greater inequality. For example, gender inequalities in the digital sphere exacerbate existing gender divides and, at the same time, women and girls remain vulnerable to digital threats. The net impact of the digital economy in the Pacific is hard to predict but the impacts in other regions suggest that the digitalization of economies will be broadly disruptive. For particular groups, sectors and industries, progress is likely to be uneven.

Given these risks, inclusion should be placed at the centre of the digital development agenda. In the Pacific, digital development should not be viewed within a narrow development lens where progress is measured solely in terms of more people and businesses using the Internet or participating in e-commerce. Digital development should be pursued in the context of the broader realization of economic, social and cultural rights as well as all other human rights, and for the transformative changes envisioned in the 2030 Agenda for Sustainable Development. These rights include the right to education, the right to food, the right to health, the right to an adequate standard of living and the right to work.

Policies and regulations in the Pacific need to be adapted to the digital economy

Digital technologies create both opportunities and challenges. It is the responsibility of governments, in close dialogue and partnership with other stakeholders, to shape the direction of the emerging digital economy in the region so that it benefits all Pacific islanders. Policies that solely prioritize access to digital technologies for consumers and businesses will not be sufficient. A holistic approach is needed that balances the importance of access with other social and economic considerations.

As in many other parts of the world, policies and regulations have not kept pace with the pace of digitalization in the Pacific. In most countries, policies related to data, competition, taxation, labour markets and intellectual property have not yet been adapted to the digital age. Trade agreements and consumer protection laws also rarely take into account the complexities associated with increased online commercial and trade activity.

Policymakers in the region will need to update relevant policies and regulations, with the aim of building inclusive digital economies. Impacts on vulnerable groups should be considered in the context of potential risks such as job losses or market consolidation, which may result in lower pay or reduced labour protections in some industries. At this early stage, there are more questions than answers about how to deal with the digital economy. Given the limited empirical evidence, as well as the rapid pace of technological change, policy responses will need to be regularly reassessed and adjusted.



Build on the strong momentum to address policy concerns

Fortunately, there is strong momentum in the region to advance the digital economy and address its most pressing policymaking concerns. Many Pacific countries have completed e-commerce diagnostic studies and started formulating national e-commerce strategies. The diagnostic studies, such as eTrade Readiness assessments, provide a broad understanding of the digital development issues facing countries and stress the importance of policy coherence, both nationally and regionally.

Looking ahead, policies that strengthen the overall business, policy and regulatory environment for the digital economy will be important. Several frameworks have been developed to provide guidance to policymakers. The emphasis within these frameworks on the cross-sectoral nature of the digital economy has important implications for policymakers, which include identifying priorities of various reforms with limited government resources; understanding core challenges and opportunities at the interplay of various ecosystem components; and articulating visions and actions that can lead to an inclusive digital economy.

Research and data collection efforts should be strengthened

More in-depth research and data on the digital economy and its development implications in the Pacific are needed. Reliable and comprehensive data on connectivity, access and use of digital technologies is needed to inform policymaking and to track the progress of related interventions. In addition, more dedicated research on the development implications of the digital economy should support policy design and implementation, development programming and regional cooperation initiatives. Enhanced research capacity could help to document and project the benefits and costs accruing to Pacific countries from digitalization.

One approach to enhancing research capacity could be to establish an 'Institute for Pacific Digital Economies' in one of the leading research institutions in the region. This institute could work with development partners, researchers and non-governmental organizations to carry out research, organize capacity building workshops and publish research findings on issues that are relevant to the digital economy in the Pacific. One important area that could benefit from additional research by such an institute is the potential development implications of the digital economy for marginalized groups, including women and people living in rural areas, in the context of achieving sustainable and inclusive outcomes.

Regional cooperation and international support are key for building inclusive digital economies

While some issues related to the digital economy can be addressed through national policies and strategies, the unique characteristics of Pacific SIDS necessitate greater regional cooperation and consensus-building as well as international support. Effective solutions in the digital era require multi-stakeholder collaboration involving governments, the private sector, academia, non-governmental organizations, community groups, research institutions, multilateral development banks and development partners. The complexity of the challenges calls for new partnerships, innovative thinking and creative solutions. New digital governance models may be needed that balance access and growth with resilience and inclusion.

In many ways, the Pacific is well placed to strengthen regional cooperation on digital development. The Pacific E-commerce Initiative provides a platform for policymakers to engage in regional dialogue and consensus-building on the digital economy. The Pacific Regional E-commerce Strategy and Roadmap also provides a common approach to strengthening the enabling policy environment for e-commerce and the digital economy in the region.

This regional momentum has already resulted in significant development partner support. A number of regional programmes – such as the Pacific Digital Economy Programme (PDEP), the Pacific Agreement on Closer Economic Relations Plus (PACER Plus), the Automated System for Customs Data (ASYCUDA) and Markets for Change – are focused on empowering consumers, producers and innovators in the digital economy. Global initiatives can also help to bring partners together for digital development in the Pacific. These include eTrade for all (35 partner organizations working in the digital economy

space) and the Alliance for eTrade Development (a global development alliance between the United States Agency for International Development (USAID) and twelve private sector partners). Furthermore, traditional donors supporting economic and trade development in the region, including the Australian Department of Foreign Affairs and Trade, the New Zealand Ministry of Foreign Affairs and Trade, the European Union, USAID, the World Bank and the Asian Development Bank (ADB), all have ongoing multi-year, regional, subregional and national projects.

Despite recent progress, more development partner support is needed

There is still scope in the Pacific to expand regional initiatives, develop synergies between initiatives at the regional and international levels, and strengthen public–private collaboration. The development community will need to explore more comprehensive ways to support countries in the Pacific, with development partners integrating the digital dimension into their aid policies and strategies. This support should place inclusion at the centre of the digital development agenda, with the aim of reducing digital divides and building capacities in the public and private sectors.

Some Pacific countries lack the capabilities to develop, implement and enforce new policies and regulations related to e-commerce and the digital economy. In this context, more support from donors will be needed to support policymakers as they seek to strengthen the enabling business, policy and regulatory environment for the digital economy. Collecting data and information on digital connectivity and use will be important to developing evidence-based policies and to track their related impacts.

Policymakers will also need to be empowered to participate effectively in processes and meetings related to the digital economy, including at regional and international levels. Finding adequate solutions to cross-border data flows, taxation of global digital platforms and international trade, for example, will require global collaboration and policy dialogue. The full involvement of Pacific countries in these discussions will be critical and any global consensus will need to incorporate the unique circumstances of SIDS.

The Pacific is still in the early stages of its digital transformation. This can be seen as good news because the impacts of technology do not follow a predetermined path. Digital technologies create both opportunities and challenges, with outcomes dependent on policy choices. Governments and partners have a responsibility to build inclusive digital economies that leave no Pacific islanders behind.



CHAPTER I

Setting the scene



Unique challenges and opportunities of digital development in the Pacific region



Small economies and dispersion of Pacific SIDS are major obstacles to accessing international markets

8 out of 10 smallest economies globally

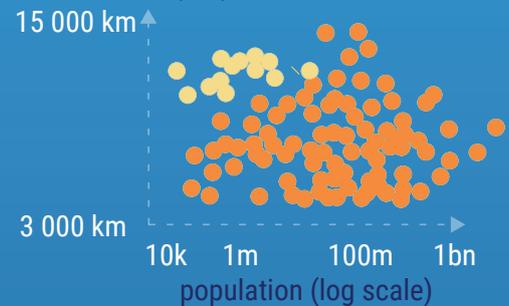
Geographically dispersed, with relatively small populations, Pacific SIDS are **far from major international markets**



Country	Number of populated islands per economy
Micronesia (Fed. States of)	65
Solomon Islands	347
French Polynesia	76
Vanuatu	67
Fiji	110
Tonga	36

number of populated islands per economy

average distance from market (km)



● Pacific SIDS ● Other countries



In this context, **digitalization plays a key role** in **connecting isolated areas, reducing trade distance** and fostering **urban-rural integration**



Data and data flows, either domestic or international, can bring **many benefits to Pacific SIDS** and **help achieving the SDGs**



With inclusion at the center, extra attention should be given to **people in vulnerable situations**

- low-income households
- women, girls & youth
- persons with disabilities



The net impact of the digital economy in the Pacific is hard to predict. Outcomes will partly depend on the **actions taken by policymakers in the region**

A. AN EMERGING DIGITAL ECONOMY

The spread of digital technologies is transforming social and economic activities around the globe. In developing countries, mobile Internet is revolutionizing how people produce, work, consume and interact with each other. In more developed countries, the digital economy is also closely associated with progress with the Internet of Things, cloud computing, data analytics, artificial intelligence, blockchain technologies, three-dimensional printing, and automation and robotics.

These trends are affecting economies in different ways. Business operations and value chains are increasingly digitalized – whether production processes, shipping and transportation networks, retail distribution, or investments and financing. Trade is increasingly conducted online and mobile payments are now ubiquitous in some countries. Between 2017 and 2021, the number of people shopping online increased from an estimated 1.3 billion to 2.3 billion people (from 24 per cent to 39 per cent of the global population aged 15 and older).¹ The COVID-19 pandemic has accelerated this process. People and businesses were brought online, with many services – including remote education, remote work and remote health services – becoming accessible to more people (UNCTAD, 2021a). In developing countries, B2C e-commerce – particularly for ride-hailing and food delivery – has emerged as a key trend associated with the digital economy.

Safe and effective digital technologies and platforms have become essential to sustainable development in the digital age, presenting opportunities to accelerate equitable and resilient growth. For example, digital technologies and platforms can reduce transaction costs for businesses and facilitate access to domestic and foreign markets. They can also enhance productivity and offer new opportunities for entrepreneurship, innovation and job creation. For micro, small and medium-sized enterprises (MSMEs) in particular, digital technologies can make it easier to overcome barriers to expansion, engage in peer-to-peer collaboration and use alternative funding mechanisms such as crowdfunding. In addition, cloud-based solutions have reduced the need for in-house information technology equipment and expertise (UNCTAD, 2019a and 2021b).

In the context of the data-driven digital economy, domestic or international data and data flows can bring many benefits as well as solutions to societal challenges, including those related to the SDGs (UNCTAD, 2021b). In this environment, access to data and the ability to transform data into digital intelligence have become crucial for commercial success (UNCTAD, 2019b). Many global firms use data from the digital economy to inform decision-making processes and corporate strategy, and to optimize production processes or supply chain logistics. Business models continue to emerge to support data collection, the production of insights from data, data storage, analysis and modelling (UNCTAD, 2019b). This is driving further expansion of the digital economy alongside new opportunities for value creation and capture.

The advance of digital technologies creates great potential. At the same time, it comes with social and economic challenges. Digital divides – both in terms of access to affordable digital technologies and capacities to make effective use of them – imply an unequal distribution of benefits. Automation and artificial intelligence could replace workers. Dominant global platforms could increase income inequality and contribute to a greater imbalance of market power and wealth. Digitalization may also have negative impacts on the bargaining power of users, consumers and workers, and result in the loss of privacy. Moreover, new forms of incendiary hate speech and cybercrime have emerged, which pose significant ramifications for individuals, governments, companies and organizations alike (UNCTAD, 2019b).

Although the pace of digital transformation varies, all economies and people are ultimately being affected. The broad implications of this shift will require policymakers to respond to these new challenges and opportunities, irrespective of the level of development or structure of the economy. The Pacific region is no exception.

In this context, inclusion should be placed at the centre of the digital development agenda. In order to leave no one behind, extra attention should be given to those in vulnerable situations, such as low-income households, women and girls, youth, persons with disabilities, and indigenous peoples. A digital economy that advances the inclusion of women and other marginalized groups could help bring about a host of economic and social benefits that support several SDGs under the 2030 Agenda for



Sustainable Development. Relevant SDGs include Goal 1 (No Poverty); Goal 2 (Zero Hunger); Goal 3 (Good Health and Well-being); Goal 4 (Quality Education); Goal 5 (Gender Equality); Goal 8 (Decent Work and Economic Growth); Goal 9 (Industry, Innovation and Infrastructure); and Goal 10 (Reduced Inequalities). Delivery on these and other related goals would have a positive impact on a range of human rights, including the rights to education, to food, to health, to an adequate standard of living and to work.

B. CHALLENGES TO DIGITAL DEVELOPMENT IN THE PACIFIC

The geographic, demographic and economic characteristics of Pacific small island developing states (SIDS) contribute to unique challenges related to digital development. Vast distances between small island economies present challenges related to Internet connectivity as well as merchandise trade and logistics, which depend heavily on relatively expensive seaport and airport infrastructure and transportation. Market and population sizes make the region less attractive for international investment. Internet penetration and use rates are relatively low due in part to large rural populations and low levels of literacy and digital skills. In addition, the multitude of local languages poses a challenge to developing online content and services that are relevant to the local population.

Most countries in the region are archipelago states that consist of a few main islands surrounded by smaller islands and atolls. Many of the islands are populated – Solomon Islands has more than 300 populated islands, Fiji more than 100 and French Polynesia more than 70. Moreover, a significant share of the population live away from the main island in most countries. In Solomon Islands and Vanuatu, more than 70 per cent of the population does not live on the main island (Utz, 2021). In addition, Pacific countries generally have a small landmass and islands are widely dispersed both within and between countries (see annex table 1). For instance, Nauru, with a land surface of only 20 km², is the smallest island nation and the fourth-smallest country in the world. Even compared to other SIDS, those in the Pacific are generally located the farthest from each other and from the main global economic markets (UNCTAD, 2022c).² The closest capitals within the region are those of Kiribati and Marshall Islands, which are still separated by 600 km. These geographic realities in the Pacific create fundamental barriers to rural development, education attainment, connectivity and governance.

Most Pacific SIDS have relatively small populations and many people live in rural and isolated areas (see annex table 1). Figure I.1 shows the relationship between population size and the average distance from international markets and illustrates how remote Pacific SIDS are as a group of countries, even compared with Caribbean countries, for example. About three-quarters of the population lives in rural areas,³ which is well above the global average and the levels of most other country groupings. Challenges such as low levels of secure Internet connectivity can inhibit equitable access to social and economic opportunities (see chapter II). Additionally, low levels of access to affordable and reliable electricity transmission networks are a barrier to economic participation. A relatively high share of the population in some Pacific SIDS still has no postal services (see annex table 2).⁴ This makes last-mile delivery of goods virtually impossible in many areas.

Linguistic diversity in the region is significant, with many local languages (see annex table 1). The largest Pacific SIDS, Papua New Guinea, has the highest number of living languages in the world (820), accounting for 12 per cent of the world's spoken languages, while Vanuatu, with just over 300,000 inhabitants, has 115 languages. The Linguistic Diversity Index⁵ (UNESCO, 2009) places Papua New Guinea, Vanuatu and Solomon Islands as the three countries with the highest levels of linguistic diversity in the world. This diversity has implications for the development of local digital content and broader participation in the digital economy.

If the digital landscape does not consider linguistic diversity, population groups will likely be excluded from digital interactions. For instance, access to data and information will be restricted for speakers of non-dominant languages if they cannot express themselves or create content in their own local languages. This may further increase marginalization of certain populations and limit social and economic opportunities. Literacy levels could also have an impact on digital development. Although the adult literacy rate is above 96 per cent in Fiji, Marshall Islands, Palau, Samoa and Tonga, some



Figure I.1. Population size and access to international markets, all countries, Caribbean countries and Pacific SIDS



Source: World Bank (2017).

Notes: The x-axis is in log scale. The y-axis represents the average distance from markets (the average distance to other economies weighted by their GDP). Country groupings are of the source; for the purpose of this report, Pacific island countries were renamed as Pacific SIDS.

countries still lag. This is especially the case for Solomon Islands and Timor-Leste, where 20 per cent or more of the population is still illiterate (see annex table 2).

Despite these challenges, digital technologies have much to offer to the region. Digitalization is one of the key solutions that can address the lack of physical infrastructure, cover the vast distances in the region and digitally connect isolated areas. It can be critical in fostering inclusive domestic and regional digital trade by addressing uncertainty and asymmetries of information, and by improving the security of transactions among large numbers of small, widely dispersed players. For isolated archipelago nations, digital platforms can provide opportunities to open or expand access to local, regional and international markets. By generating economic activity and innovation across sectors and industries, e-commerce can contribute to growth in productive sectors. This will lead to the integration of rural and urban markets as well as to job creation and export competitiveness. Digital financial services can accelerate financial inclusion of low-income groups, MSMEs and other unbanked and underbanked segments.

C. SMALL TRADE-DEPENDENT ECONOMIES

Even though there is great potential for digitally driven growth in the Pacific, the size and fragility of economies in the Pacific region present several challenges. Most countries are small, have narrow-based economies and are physically isolated from major markets. It is challenging for small economies

to achieve economies of scale both in domestic public and private production. High transport costs prevent these economies from overcoming this challenge through specialization and trade (Utz, 2021). Integration into regional and global trading systems is further hampered by weak connections to networks of value added trade due to isolation from global air and maritime shipping networks. Both agriculture and manufacturing trade costs for Pacific SIDS are often two or three times as high as costs for Australia and New Zealand (Shepherd, 2016).

The ability of Pacific SIDS to cope with external shocks and mitigate the risks varies considerably. More developed regional economies have higher levels of global integration than others, yet many of these Pacific economies are heavily reliant on imports and limited supplies of foreign-sourced income (remittances, exports and tourism-related income). The fragility of national economies is also affected by macroeconomic imbalances alongside substantial variation in natural resource endowments. In addition, the region is highly vulnerable to climate change and natural disasters such as tropical storms and earthquakes, which further contributes to lower economic resilience.

The Pacific region is home to eight of the smallest 10 economies globally, and Kiribati, Solomon Islands, Timor-Leste and Tuvalu are classified as LDCs.⁶ In 2021, the average gross domestic product (GDP) per capita for Pacific SIDS was \$3,966 (see annex table 2), while the average gross national income (GNI) – the total earnings of a resident of an economy – was \$3,798 in 2020. The five most-populated Pacific SIDS – Papua New Guinea, Timor-Leste, Fiji, Solomon Islands and Vanuatu – represent almost 90 per cent of the population of Pacific SIDS, their GDP and GNI per capita was \$2,808 in 2021 and \$2,641 in 2020, respectively.⁷

Pacific SIDS are highly dependent on the import of consumer goods and services. The export sector is narrower and is focused on raw materials and agriculture, with the addition of tourism and related services in some countries. In 2021, trade openness was 30 per cent of GDP (see annex table 3), still below the level observed before the COVID-19 crisis.⁸

Maritime transport is the main option for moving cargo internationally and domestically. The Pacific region's distance from markets creates challenges to trade. Low levels of maritime connectivity in Pacific SIDS are a major obstacle to their economic development. Most do not meet the economic threshold of demand for private shipping companies to provide regular shipping at a profit (Pacific Community, 2011, cited by UNCTAD, 2022a). The Liner Shipping Connectivity Index⁹ – which measures a country's integration level into global liner shipping networks – generally ranks Pacific SIDS near the bottom (UNCTAD, 2022a).

Interisland logistics typically follow a 'hub-and-spoke' system, with cargo and passengers first brought into a country through a primary (international) port and then distributed to secondary ports or other remote outer islands (Utz, 2021). This has significant development implications. Outer island residents living along unprofitable routes are often underserved, limiting their access to essential supplies, education, health care and employment opportunities. For instance, Solomon Islands has a total of 300 inhabited islands but only around 22 locations have regular shipping services. Over 92 per cent of the country's outer islands do not have regular interisland shipping coverage (Utz, 2021).

Remittances to Pacific SIDS accounted for an average of 4.5 per cent of GDP in 2020 and form an important contribution to economies in the Pacific (see annex table 2). This contribution varies considerably among Pacific SIDS. For some countries – such as Papua New Guinea – the contribution is negligible, whereas in other countries it is a much higher share of GDP. For example, Samoa recorded remittances as a quarter of GDP. Tonga has the highest share globally at almost 40 per cent of GDP. Official development assistance (ODA) also plays an important role in the region and represented 7.5 per cent of GNI in 2020. This share of foreign aid in Pacific SIDS is as high as 13.9 per cent of GNI when not accounting for Papua New Guinea. As many as six Pacific SIDS are among the global top-10 ODA recipients, with Marshall Islands and Tuvalu occupying first and second place with 61 per cent and 58 per cent, respectively (see annex table 2).¹⁰

In terms of economic output, Pacific SIDS are generally dependent on the primary sector – with the value added of agriculture and fishery-related activities at 13 per cent of GDP – which is well above that of other SIDS and Caribbean countries (see annex table 3).¹¹ Industrial production in Pacific SIDS stood at 26 per cent of GDP in 2020 – with mining/utilities at 15 per cent of GDP. Mining is particularly present in Papua New Guinea (gold, oil and copper), Timor-Leste (oil, gas, other mineral fuels and



lubricants) and Nauru (phosphate). Manufacturing is well developed in Nauru (e.g. processing of coconut products) and Fiji (sugar production and the garment industry in addition to copper and gold mining) (UNCTAD, 2022c).

The services sector in Pacific SIDS represents 54 per cent of GDP on average, with the hospitality sector being particularly important.¹² Before the COVID-19 pandemic, inbound tourism accounted for 6 per cent of GDP in Pacific SIDS (2019), or 12 per cent when excluding Papua New Guinea. This sector was one of the major economic activities and sources of income for some countries: Cook Islands (64 per cent of GDP); Palau (33 per cent); Vanuatu (32 per cent); and Fiji (25 per cent) (see annex table 3).

The COVID-19 pandemic resulted in severe economic contractions in most Pacific SIDS (International Monetary Fund, 2022a and 2022b). Despite relative success in containing the health consequences of COVID-19, economic activity was significantly disrupted. Pacific SIDS were among the worst-affected developing economies in economic and fiscal terms, mainly due to the supply and demand shocks related to the tourism and fishery industries. Vulnerable populations in tourism-dependent Pacific SIDS were hit particularly hard, with migrant workers and tourism-dependent households emerging as increasingly vulnerable groups. Job creation and decent employment opportunities for individuals in physical proximity service jobs and informal work have also faced disruption. Young people, women and individuals with low levels of education have been disproportionately affected and inequalities have increased.

As digitalization accelerates, the future of Pacific SIDS will partly depend on the ability to leverage digital technologies for the benefit of their people. Although digital technologies can help achieve inclusive and sustainable development, they can also lead to new divides and greater inequality. The net impact of the digital economy in the Pacific is hard to predict but evidence from other regions suggests that it will be broadly disruptive. In this environment, policy decisions will be critical to ensuring that no one is left behind in the digital era. Continued support from international development partners will also be essential.

This report aims to provide a resource to inform effective policymaking in this complex environment. It presents a broad overview of the current digital economy landscape in the region and highlights key information about emerging trends and business models. Chapter II takes stock of data and trends related to the digital infrastructure in the Pacific and examines different aspects related to connectivity, followed by data and trends in ICT and Internet use. Chapter III highlights key policy areas that are relevant to value creation and capture in the Pacific, with a focus on digital platforms and e-commerce. Chapter IV focuses on the cross-cutting nature of e-commerce and the digital economy and the importance of taking action in different policy areas. Chapter V provides recommendations and pathways to support Pacific policymakers as they seek a way forward that maximizes the benefits and minimizes the risks of the digital era.



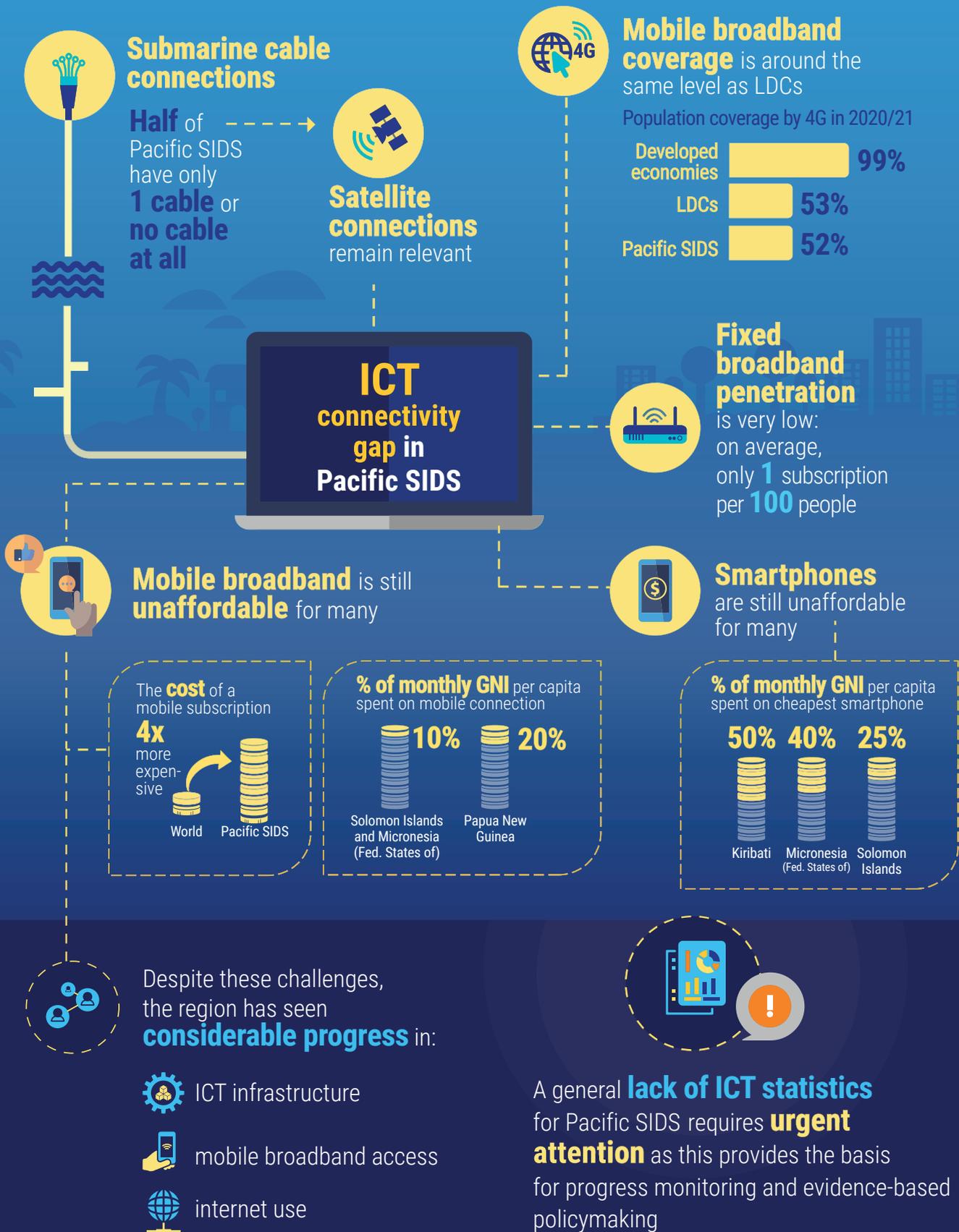
CHAPTER II

Digital infrastructure and ICT use in the Pacific

Digital infrastructure lies at the core of the digital economy. While there is no widely accepted definition of the concept of digital infrastructure (UNCTAD, 2019b), in this report it generally consists of the following levels: (i) ICT networks (the core digital infrastructure for connectivity); (ii) data infrastructure (such as data centres, submarine cables and cloud infrastructure); (iii) digital platforms; and (iv) digital devices and applications.

This chapter takes stock of data and trends related to digital infrastructure in the Pacific and looks at different aspects of connectivity, data and trends in ICT and Internet use. The chapter concludes by highlighting important data gaps that exist for the most relevant indicators.

Key challenges to ICT connectivity in Pacific SIDS



These sources of funding and ownership of international submarine cables can be attributed to their high deployment and maintenance costs – in addition to the high costs of deploying domestic cable infrastructure in the Pacific region (PIFS, 2020). The involvement of donors and development partners has therefore been vital to expand cable infrastructure in the Pacific.¹³ The leading contractor for laying cables in the region has been a private sector cable supplier and operator: Alcatel Submarine Networks (see annex table 4).

The arrival of an international submarine cable to a country can sometimes generate new investment in domestic cable extensions. For example, Tonga was able to use the remaining funds from multilateral banks – initially destined for the Tonga Cable project to Fiji – to partially finance the Domestic Extension Cable to connect another two islands.¹⁴ The Gondwana-2/Picot-2 cable has been in service since August 2022 and assures Internet resilience in New Caledonia. Gondwana-2 is the second international connection, while Picot-2 extends access to other areas of the main island and outer islands on its way to Fiji.

Although the number of Pacific SIDS with multiple submarine cable connections has increased substantially in recent years, many still rely on a single cable and others have no cable at all (see table II.1). An international submarine cable connection, especially an intercontinental one, is a key factor for remote islands to benefit from increased bandwidth and Internet connection speeds. In theory, such connections should also create broader positive effects such as lower wholesale prices for Internet suppliers, lower retail prices for consumers and higher volume for data plans. An international cable deployment often covers only the major and most-populated island. Domestic cable links can then be added from the major island to outer islands. The deployment of both international and domestic submarine cables can happen in parallel.

Aside from Guam (which has 11 connections), Fiji has the largest number of connections to international cables (see table II.1).¹⁵ As of 2022, three countries were not yet connected to any international submarine cable: Nauru, Timor-Leste and Tuvalu.¹⁶ Among the 17 Pacific SIDS connected to international submarine cables, seven rely on a single cable, which is far from ideal. Being connected to multiple international submarine cables increases network redundancy, reduces the impact of outages caused by cuts of submarine cables (box II.1), improves bandwidth and connection speeds, and may decrease Internet services prices.¹⁷

While important advances have been made in terms of submarine cable connectivity, it will likely take years – if not decades – before cable infrastructure reaches all remote communities in the Pacific. In the interim, satellite connections will remain relevant to reach these remote areas.

Table II.1. Number of submarine cables and number of inhabited islands with Internet connectivity in Pacific SIDS, by type, September 2022

	Submarine cables										Inhabited Islands	
	Total active	Total planned	By deployment scope								Connected with submarine cables	Dependent on satellite or microwave
			Intercontinental		Interregional		Intraregional		Domestic			
			a	p	a	p	a	p	a	p		
Guam	11	4	4	3	4	1	3	0	0	0	1	0
Fiji	6	0	2	0	0	0	4	0	0	0	2	108
Papua New Guinea	4	0	0	0	2	0	0	0	2	0	5	0
French Polynesia	3	1	1	0	0	0	1	0	1	1	15	61
Micronesia (Fed. States of)	3	0	1	0	0	0	1	0	1	0	3	62
New Caledonia	3	0	0	0	1	0	1	0	1	0	5	0
Samoa	3	0	0	0	0	0	3	0	0	0	2	2
American Samoa	2	0	1	0	0	0	1	0	0	0	1	5
Northern Mariana Islands	2	0	0	0	0	0	2	0	0	0	3	0
Tonga	2	0	0	0	0	0	1	0	1	0	3	33
Palau	1	1	1	1	0	0	0	0	0	0	1	7
Kiribati	1	0	1	0	0	0	0	0	0	0	1	20
Tokelau	1	1	1	0	0	0	0	0	0	1	1	2
Solomon Islands	1	0	0	0	1	0	0	0	0	0	4	343
Cook Islands	1	0	0	0	0	0	1	0	0	0	2	11
Marshall Islands	1	0	0	0	0	0	1	0	0	0	2	22
Niue	1	0	0	0	0	0	1	0	0	0	1	0
Vanatu	1	0	0	0	0	0	1	0	0	0	1	66
Wallis and Fortuna	1	0	0	0	0	0	1	0	0	0	2	0
Nauru	0	0	0	0	0	0	0	0	0	0	0	1
Timor-Leste	0	1	0	1	0	0	0	0	0	0	0	2
Tuvalu	0	0	0	0	0	0	0	0	0	0	0	9

Source: UNCTAD, based on Watson (2021), United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) (2019), TeleGeography (2022) and various governmental, non-governmental and regional sources.

Note: Inhabited islands concerns either all known inhabited islands, or the major ones, per country.



Box II.1. Damage to submarine cables: The case of Tonga

Damage to submarine cables occurs all over the world. About 70 per cent of all cable faults are caused by human activities such as fishing and anchoring, and around 14 per cent are caused by natural hazards (current abrasion or earthquakes).¹⁸

Repairing damaged submarine cables takes a long time. According to Submarine Telecoms Forum (2019), the average repair time was 25 days in 2019. However, repairs could take longer for intercontinental cables and for those located in remote areas in the Pacific because of travel time for the repair crews.

Among international submarine cables deployed in the Pacific, only the Tonga Cable (connecting with Fiji) has ever been severed.¹⁹ The cable was damaged in the tsunamis when the Hunga Tonga volcano erupted on 15 January 2022. Because Tonga relies on this cable to access the Internet, this resulted in a shutdown of high-speed Internet in the country. It took 10 days for the closest repair crew to arrive in Tonga and Internet connectivity via the cable was only restored one month later.²⁰ Access to high-speed Internet in Fiji was not affected during this period because it was connected to three other international submarine cables at the time. The domestic cable extension that connected the two outer islands in Tonga was also damaged following the volcanic eruption and needed to be repaired later. This experience highlights the infrastructure challenge for island nations in natural disaster zones.²¹

The Tonga Cable had been damaged previously in 2019 by a ship's anchor and the repairs took 14 days.²² Although the events of January 2022 renewed calls for a backup system to be put in place for Tonga, the company in charge of the cable noted that the cost of deploying a backup cable was an issue. While traditional satellite connections were used as backup, their performance was lower than that of the submarine cable.²³ The satellite Internet company Starlink donated 50 terminals to provide high-speed Internet via low earth orbit satellites (see section II.A.1.b) to remote islands and the worst-affected communities in the immediate aftermath of the volcanic eruption.

Source: UNCTAD.

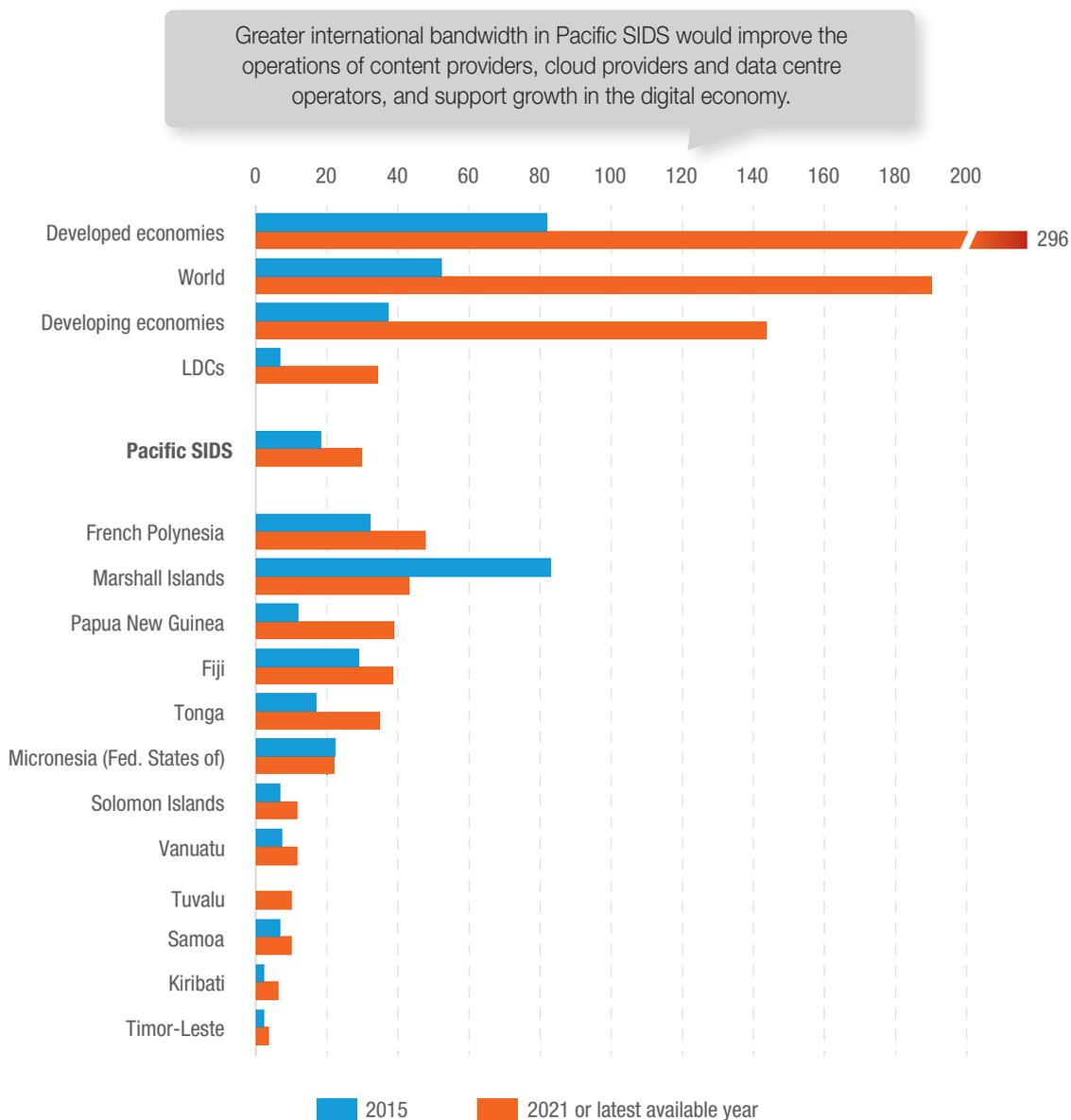
b. Satellites

For decades, communication satellites have been the primary means of enabling telecommunications between Pacific SIDS and other parts of the world (UNESCAP, 2019).²⁴ One of the main advantages of satellite technology is the ability to cover large areas. As thousands of isolated islands and atolls are spread across 33 million km², satellite technology has been an ideal connectivity solution because it is easy to install the antenna. However, satellite communications systems are very costly to install, have high maintenance costs and are not always reliable, especially during heavy rain.

While all Pacific SIDS continue to use satellite technology (see table II.1), the main purpose has shifted from international and domestic connectivity to redundancy and backup services (UNESCAP, 2019). Despite this shift, satellite connectivity remains relevant for telephone services and the provision of Internet access to remote communities (PIFS, 2020). It is expected that satellites will continue to play a role in the overall connectivity ecosystem in the Pacific, despite the relatively low number of satellite-based broadband subscriptions. According to data from the International Telecommunication Union (ITU), there were 124 satellite subscriptions in Fiji in 2020, 212 in Vanuatu and only 2 in Kiribati in 2019.²⁵ The relatively high cost of satellite Internet subscriptions is a major factor behind the low demand for these services. For instance, the average starting price of satellite Internet packages from one provider offering its services throughout the region – Juch-Tech Inc. – represents between 30 and 50 per cent of monthly GNI per capita in Fiji, Kiribati and Vanuatu.²⁶

More recently, traditional satellite broadband systems have been complemented by low earth orbit satellites (see box II.1). This nascent technology allows the satellites to gravitate closer to earth and reduces latency. The large number of satellites also offers better resilience. SpaceX's Starlink constellation of more than 2,000 active satellites is currently the most advanced system,²⁷ while competitors such as Amazon and OneWeb have joined the race for satellite-based Internet. However, monthly fees remain an obstacle for many users. For instance, Starlink's service fees of about \$99 per month in Fiji, Kiribati and Vanuatu are still not much lower than traditional satellite services.²⁸

Figure II.2. International bandwidth per Internet user, global, by country grouping, Pacific SIDS, selected years
(Kilobits per second)



Source: UNCTAD calculations, based on ITU (2022d), Statistics: Global and regional ICT data, update of 25 January. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>; and ITU (2022f), World telecommunication/ICT indicators database 2022, July Edition. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>.

Notes: The latest years with available data per grouping and country are the following: 2021 (all groupings except Pacific SIDS), 2017 (Pacific SIDS) and among the listed countries in the figure – 2020 (Kiribati), 2018 (Fiji) and 2017 (all countries except Kiribati and Fiji). Country groupings are those of the source, excepts of this figure must take into account the difference of years with available data as well as the fact that ITU 2021 data for groups include estimations. The drop of bandwidth capacity per Internet user in Marshall Islands between 2015 and 2017 is related to the dramatic rise in Internet users and a constant level of international bandwidth.

c. International bandwidth capacity

International bandwidth is an important indicator of the state of an economy's digital infrastructure, in particular its capacity and links with global Internet networks to exchange data traffic.²⁹ Bandwidth capacity affects the operations of content providers, cloud providers, interconnection providers and data centre operators. Some providers have invested heavily in developing their own bandwidth capacity to be independent from public carriers and to control quality and price. These include Google

(Alphabet), Facebook (Meta), Amazon and Microsoft. International bandwidth is also important to national Internet service providers such as traditional carriers, wholesalers and mobile operators.³⁰

The Pacific generally lags behind other country groupings in relation to international bandwidth capacity (see figure II.2). In 2021, Internet users in developing economies had access to 144 Kbit/s. The latest available data for most Pacific SIDS is for 2017 and cannot be compared directly with data from 2021 for other country groupings. However, data available for 2017 show that Internet users in Pacific SIDS had access to 30 Kbits/s.³¹ Growth in the availability of international bandwidth in Pacific SIDS in the period 2015–2017 was slower than in most other country groupings in the same period.³² The relatively low capacity in the region mainly reflects limited submarine cable connections (see section II.A.1.a). This results in low levels of subscriptions for broadband services (see section II.B.1.a), a limited customer base for content providers, and a limited number of data centres (see section II.A.2.b). These issues will likely become less prominent as international bandwidth capacity in the region is expected to increase with further access to intercontinental submarine cables.

2. Middle-mile connectivity

a. Internet exchange points

An Internet exchange point (IXP) is a physical location where different networks connect to exchange Internet traffic via common switching infrastructures and, as such, forms a key element in the global Internet infrastructure. The networks that participate in IXPs include Internet service providers, content providers, hosting companies and governments. IXPs are dispersed across countries, enabling local networks to exchange information efficiently, as they eliminate the need to exchange local Internet traffic overseas. Access speeds for local content can improve as much as tenfold with an IXP as traffic is routed more directly (Internet Society, 2015).

As of April 2022, there were 725 IXPs in the world, with an average of 9.7 per country for developed economies, compared with 2.8 in developing economies (see table II.2). For Pacific SIDS, the corresponding number was only an average of 1.4, which is comparable to LDCs and SIDS overall. Only a small number of Pacific SIDS or territories had established IXPs: Guam³³ had three, Papua New Guinea had two, and Fiji, New Caledonia, Timor-Leste, Tonga and Vanuatu had one each.

UNESCAP notes that IXPs have had a positive impact on affordability, latency and traffic capacity in the Pacific.³⁴ The establishment of the IXP in Papua New Guinea in 2017 led to an estimated 10 per cent decrease in the price of Internet services. In Fiji, latency between local operators improved significantly from 60 milliseconds to 2 milliseconds after setting up an IXP in 2017. However, local benefits are not necessarily assured because the distribution of benefits also depends on the equal treatment of domestic and international participants using the IXP (UNCTAD, 2021b). As most Pacific SIDS do not have IXPs, an initiative to establish a regional IXP has been in progress under the auspices of UNESCAP (see box II.2).

Table II.2. Number of Internet exchange points per country, by country grouping (average) and selected Pacific SIDS, April 2022

Country grouping	
Developed economies	9.7
World	4.9
Developing economies	2.8
Pacific SIDS	1.4
SIDS	1.4
LDCs	1.4
Selected countries	
Guam	3
Papua New Guinea	2
Fiji	1
New Caledonia	1
Timor-Leste	1
Tonga	1
Vanuatu	1

Source: UNCTAD calculations, based on Peering DB (2022), The interconnection database. Available at <https://www.peeringdb.com>; Packet Clearing House (2022) and UNESCAP (2022b).

Note: Data source for world and groups (except Pacific SIDS) is only the Packet Clearing House.

Box II.2. Initiative for a regional Internet exchange point in the Pacific

In 2018, Pacific SIDS requested the support of the UNESCAP secretariat and partners, through the Asia-Pacific Information Superhighway initiative, to assess the technical feasibility of establishing a Pacific IXP to improve Internet quality (latency and speed) and regional broadband performance. The secretariat collaborated with regional partners to conduct a feasibility study in 2019 and an operational modality study in 2020 to identify the options and requirements for establishing a Pacific IXP. Subsequently, the secretariat facilitated country consultations on the Pacific IXP in Fiji, New Zealand and Samoa in 2020–2021 to establish the subregional IXP via an intercountry agreement.³⁵

In November 2021, a capacity training workshop on operationalizing the Pacific IXP proposal was organized in Bangkok, Thailand. The workshop had two objectives. The first was to share two key documents with stakeholders: (i) the final guidelines on the operationalization strategy plan for building the Pacific IXP in the overall framework of the Asia-Pacific Information Superhighway; and (ii) a draft operational costing study on establishing the Pacific IXP for Fiji, New Zealand and Samoa. The second objective was to review a draft Memorandum of Understanding.³⁶

The Asia-Pacific Information Superhighway Steering Committee adopted the draft action plan for implementing the Asia-Pacific Information Superhighway initiative, 2022–2026 at its fifth session on 25 November 2021. One of the three pillars in the action plan is Connectivity for All, which includes promoting Internet quality and digital connectivity on establishing IXPs. The expected outputs by 2026 are to have developed guidelines for operating subregional IXPs and to have endorsed a memorandum of understanding on establishing IXPs. The Steering Committee agreed to submit the draft action plan to the Committee on Information and Communications Technology, Science, Technology and Innovation at its fourth session in 2022 for its consideration and adoption.³⁷

Source: UNCTAD.

b. Data centres

Data centres and secure servers form another key part of the digital economy infrastructure. These facilities provide the infrastructure required to maintain and operate servers for both businesses and governments. The lack of domestic data centres implies a greater need to rely on cloud services using data centres located abroad, which can mean higher latency and higher costs for international Internet traffic.³⁸ The availability of data centres can be considered a gauge of the overall digitalization of an economy because it reflects demand not only by the ICT sector but also by other sectors – such as finance, transportation or legal – that have high demand for digital services (ITU, 2021).

As of October 2022, only two countries among Pacific SIDS had one or more colocation data centres: New Caledonia with three and French Polynesia with one (see table II.3).³⁹ Secure servers provide protection for online transactions – such as through data encryption⁴⁰ – and are important for retailers and other businesses to conduct network

transactions. They are often located at data centres and have become essential for e-commerce as they respond to the growing need for cybersecurity and can help overcome the privacy and security concerns of Internet users around issues such as phishing and hacking.⁴¹

Table II.3. Number of colocation data centres, by country grouping and selected Pacific SIDS, 2022

	Number	Per million people
Country grouping		
SIDS	68	5.6
Developed economies	3963	3.0
World	4915	0.7
Developing economies	952	0.2
LDCs	30	0.1
Selected countries		
New Caledonia	3	10.3
French Polynesia	1	3.5

Source: UNCTAD calculations, based on Data Center Map (2022) and UNCTADstat (2022). Available at <https://unctadstat.unctad.org>.

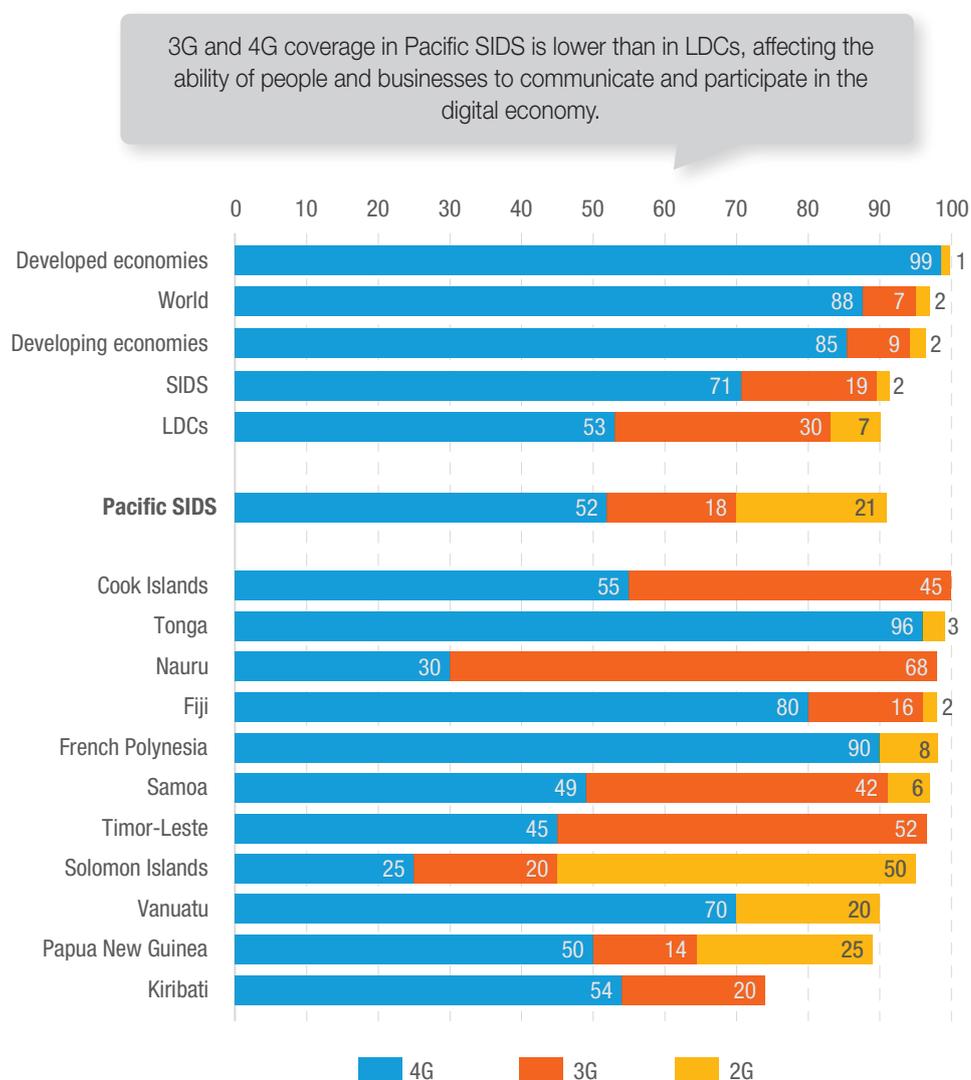
Notes: The Data Centres Map's available data are based on entries which are primarily added and maintained directly by the service providers themselves. This database indicates only countries with at least one or more data centres. Therefore, if a country does not appear, it can be either because it has no data centre or the data are not available. The results per million people for groupings are population-weighted averages.

3. Last-mile connectivity

a. Mobile network coverage

For the development of e-commerce and the digital economy, reliable national digital infrastructure that is equitably distributed is as important as international connectivity. In most developing countries, backbone transmission networks carry data around the country, while mobile broadband connections (mostly limited to 2G, 3G or 4G) provide last-mile connectivity. ITU found that only 28 per cent of people living in LDCs lived within 10 km of a transmission network and nearly 15 per cent lived more than 100km away (ITU, 2021). In Pacific SIDS, 91 per cent of the population lived in areas covered by 2G, almost 70 per cent in areas covered by 3G and 52 per cent by 4G in 2020/21 (see figure II.3).⁴²

Figure II.3. Population coverage of mobile network technology (2G, 3G and 4G), by country grouping and selected Pacific SIDS, 2021 or latest available year (Per cent)



Source: UNCTAD calculations, based on ITU (2022d), Statistics: Global and regional ICT data, update of 25 January. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx> and ITU (2022f), World telecommunication/ICT indicators database 2022, July Edition. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>.

Notes: Only countries with available data in 2020 or 2021 for all technologies, i.e. 2G, 3G and 4G, are listed in the figure. The 4G technology refers to the Long-Term Evolution/Worldwide Interoperability for Microwave Access mobile network. Country groupings are those of the source (2021), except Pacific SIDS (2020). The 2021 data cover the following countries: Tonga, French Polynesia, Timor-Leste, Vanuatu and Kiribati; the 2020 data covers the remaining countries. The values for 2G and 3G networks show the incremental percentage of population that is not covered by a more advanced technology network (example of Solomon Islands: 25+20+50=95 per cent of the population are covered by 2G, 25+20=45 per cent are covered by 3G and 25 per cent are covered by 4G).

For e-commerce, 3G and 4G networks are most relevant as they provide sufficient speed to make use of Internet services through mobile devices. In Pacific SIDS, 3G and 4G coverage remains below the level of other country groupings, including LDCs. Significant disparities exist between countries, partially driven by differences in the dispersion of populations over different islands and remote rural areas. Tonga has a more concentrated population and almost the entire population was covered by 4G in 2021. In contrast, Solomon Islands has a more dispersed population over many islands and only 25 per cent was covered by 4G in 2020.

As 5G deployment is still limited in the Pacific (see section II.A.3.b), 4G remains the fastest and most viable option for last-mile connectivity in the near future. The proportion of the population in Pacific SIDS covered by 4G technology grew from 28 per cent in 2015 to 52 per cent in 2020, which is the second-lowest growth rate after developed economies. This overall figure is partly driven by relatively limited 4G deployment in Papua New Guinea. In 2015, 4G was not yet available in Kiribati, Nauru, Samoa, Timor-Leste and Tonga; and very limited in Fiji, Vanuatu and Solomon Islands. By 2021, many of these countries had successfully introduced or significantly increased 4G coverage. Tonga had the highest coverage, with 96 per cent of the population having access to 4G in 2021.

b. 5G mobile broadband

5G mobile technology offers superior bandwidth capacity and much higher Internet connection speeds compared with 3G or 4G (see section II.A.3.c) and is expected to dramatically improve Internet experiences and revolutionize opportunities for online activities.⁴³ 5G mobile networks are being rolled out fast, with connections forecast to reach 25 per cent of all connections globally by 2025, compared with only 8 per cent in 2021 (Global System for Mobile Communications Association (GSMA) Intelligence, 2022a). The forecast for the Asia-Pacific region (excluding Australia, China, Japan, Singapore and the Republic of Korea) is 9 per cent by 2025 (GSMA Intelligence, 2022b). Among Pacific SIDS, 5G technology has so far only been rolled out in Guam and Northern Mariana Islands. However, network coverage is still limited.⁴⁴ According to GSMA Intelligence (2022a), 5G should become available in Samoa in 2023. The latest forecast for Pacific SIDS is that 5G connections will represent no more than 1 per cent of all connections by 2025 (GSMA Intelligence, 2019b).

The rise of 5G connectivity may have the additional benefit of enabling the use of fixed wireless access.⁴⁵ Even though fixed wireless access has not been commercially successful in the past, newer iterations based on 5G technology can enable network operators to deliver cheaper ultra-high-speed broadband (wireless) to suburban and rural areas as an alternative to fixed-line digital subscriber line and fibre cables (Ericsson, 2021).⁴⁶

c. Internet connection speed

With the arrival of high-speed Internet connections through fibre-optic cables, 4G and 5G technologies, the use of the Internet-enabled ICT devices has changed dramatically over the past decade. The development from basic activities such as sending emails and browsing information to more data-intensive activities – such as social media engagement, e-commerce, online movie streaming, video calls or semi-autonomous vehicles – would not have been possible without parallel improvements in Internet connection speeds.

Statistics for the Pacific region are limited. Based on Ookla data (April 2022), the median mobile broadband download speeds of Papua New Guinea and Fiji were 22.78 Mbit/s and 22.21 Mbit/s, respectively, which situated them between the median speeds of developing countries (19.93 Mbit/s) and SIDS (24.94 Mbit/s). The fastest mobile Internet connections were registered in developed economies (median speed of 50.85 Mbit/s).⁴⁷

More comprehensive data are available on fixed broadband connection speeds. In early 2022, the median download speed for six Pacific SIDS was 9.90 Mbit/s, still half that of the median speed for all SIDS or developing countries (see figure II.4). The fastest fixed broadband connection was in Fiji (13.77 Mbit/s) and the slowest in Timor-Leste (4.34 Mbit/s). Compared with developed countries, Pacific SIDS, like many LDCs, still lag overall.

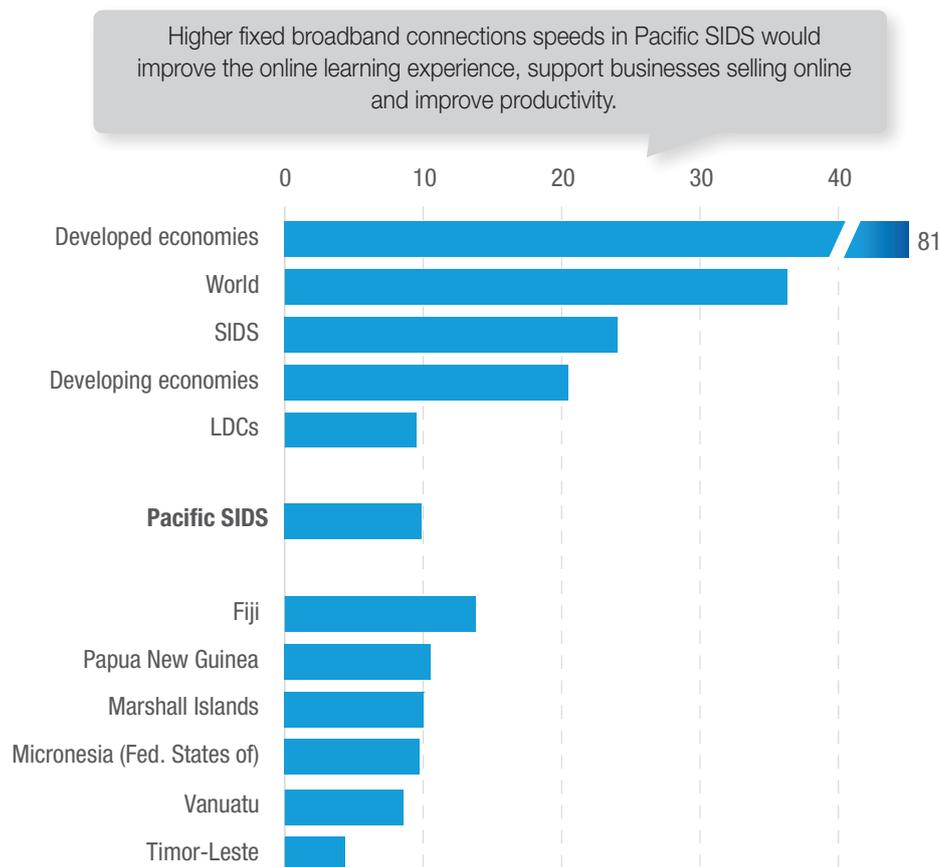
Mobile broadband connections were faster than fixed broadband connections in both Fiji and Papua New Guinea. This is in line with findings from UNCTAD (2021b), which showed LDCs on average



recorded higher mobile broadband connection speeds.⁴⁸ However, these numbers should be interpreted with care. The number of speed tests may influence the value of the median speed of Internet connections. In addition, the methodology to collect data for fixed broadband can include speed measurements made via mobile applications connected to Wi-Fi. The latter technology in many developing countries is based on shared mobile broadband connection (via USB/dongle) rather than fixed broadband. This is also likely to be the case for most other Pacific SIDS, as the Internet is mostly accessed through mobile broadband connections. In developed economies, where fixed broadband Internet is more widespread, the opposite is observed, where the median connection speed of fixed broadband is higher than for mobile broadband.

The importance of mobile broadband use in developing countries, including in Pacific SIDS (see section II.B.1.a), implies that further extension and upgrades to 5G for existing mobile networks will be beneficial for Internet users. Upgrading to 5G will bring larger capacity and faster speeds for data transmissions. It is also possible that 3G and 4G mobile networks will not be able to run applications of the future effectively.

Figure II.4. Fixed broadband connection speeds, by country grouping and selected Pacific SIDS, 2022
(Megabits per second)



Source: UNCTAD calculations, based on Ookla (2022), Speedtest global index. Available at <https://www.speedtest.net/global-index>.

Notes: Countries' speeds are median download speeds (definition and calculations of the source). World and country groupings are based on UNCTAD calculations (medians of the countries' speeds in each grouping). Data concern April 2022, except for the Federated States of Micronesia (January 2022) and Vanuatu (March 2022).

B. ICT AFFORDABILITY AND USE

Opportunities to participate in and benefit from the digital economy require more than just having the right ICT infrastructure in place. People and businesses need to be able to access relevant communication technologies at affordable prices and have the ability to make productive use of such access. In this context, there are significant divides within and among countries in relation to capacities to both connect to and use the Internet. This section takes stock of ICT connectivity, smartphone adoption, affordability of services and devices, and Internet use in the Pacific.

1. Telephony and Internet

a. Subscriptions

i. Mobile telephony

When comparing types of subscriptions for connectivity for Pacific SIDS, mobile telephony has the highest number of subscriptions. This is followed by mobile Internet data and fixed broadband (see figure II.5). This trend is in line with other country groupings.⁴⁹ However, in actual numbers, mobile telephony subscriptions in Pacific SIDS reached only 62 subscriptions per 100 people in 2020, which is significantly lower than subscriptions in other country groupings. There are also notable differences among countries in the region. For example, Palau had 133 subscriptions per 100 people – a level typically seen in developed countries – whereas the Federated States of Micronesia was the second lowest in the world with 19 subscriptions per 100 people.⁵⁰

The average subscription rate does not necessarily reflect the proportion of people who subscribe to and use a mobile telephony service. One individual can have several subscriptions. Reasons for multiple subscriptions may include separate work and personal lines; multiple lines to benefit from cheaper calls or Internet data packages with different network providers; or as a backup to network congestions or failures. For instance, in Vanuatu, there is a significant number of dual SIM handsets and continued use of multiple networks due to bundled discount offerings by the two main telecom operators.⁵¹ This also occurs in other countries. In Fiji for example, it is common to have SIM cards from each of the two main network providers to take advantage of free calls to users of the same network provider. Another alternative which may affect the interpretation of subscription rates is when several individuals within a family or community share one SIM card, which is likely to be a more widespread practice in poorer, rural and more remote areas.

ii. Mobile Internet

In most developing countries, mobile broadband is the primary way for people to access the Internet. Figure II.5 shows that Pacific SIDS, on average, have the lowest penetration rate in mobile broadband Internet use among all country groupings (27 subscriptions per 100 people in 2020).⁵² Penetration rates do, however, vary significantly among Pacific SIDS.⁵³

The region has seen rapid growth in mobile Internet subscriptions since 2010 when penetration rates in Pacific SIDS were close to zero.⁵⁴ According to UNESCAP (2018), regulatory reform played an important role in boosting penetration rates for mobile broadband subscriptions in the Pacific. Reforms included the introduction of further competition in the telecommunications sector and resulted in improved access to and affordability of mobile broadband services. In the case of French Polynesia, a new submarine cable deployed in 2010 significantly increased mobile broadband adoption.

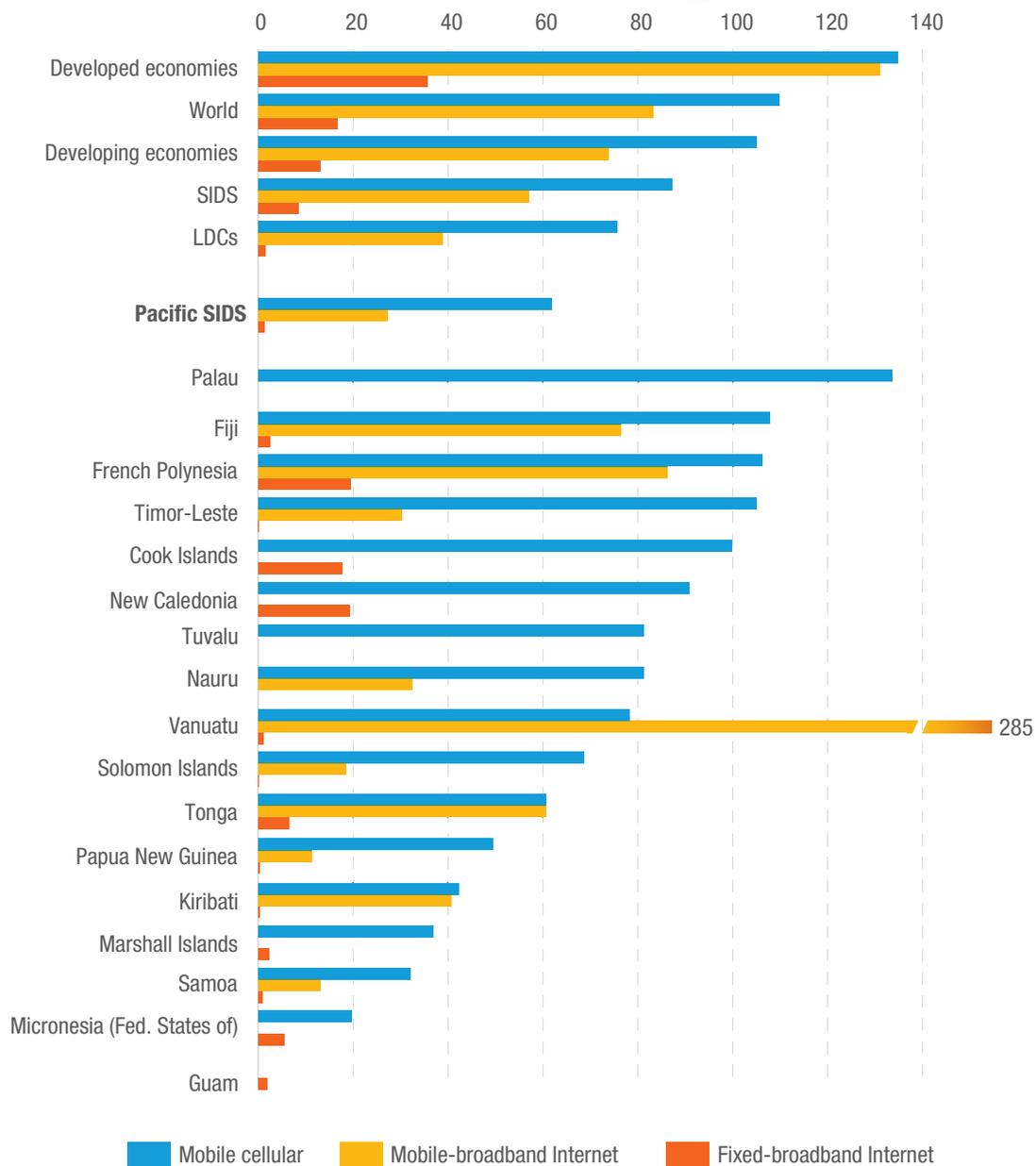
iii. Fixed Internet broadband

Globally, fixed broadband subscription penetration is generally much lower than for mobile broadband subscriptions. This difference is particularly acute in the Pacific and LDCs (see figure II.5). Low subscription penetration for fixed broadband is not a problem in itself because the uptake of Internet in the general population in many developing countries coincided with the broad availability of Internet-enabled mobile devices. This would suggest that countries could move directly to mobile broadband without ever subscribing to fixed broadband services. However, mobile and fixed broadband are not necessarily interchangeable. Connectivity speeds and traffic volumes still rely on backbone networks



Figure II.5. Mobile cellular and Internet subscription rate, by type, country grouping and selected Pacific SIDS, 2021 or latest available year (Per 100 people)

With most people accessing the Internet through mobile phones, increasing mobile broadband subscriptions in Pacific SIDS would lead to more inclusive access to the digital economy.



Source: UNCTAD calculations, based on ITU (2022d), Statistics: Global and regional ICT data, update of 25 January. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>; and ITU (2022f), World telecommunication/ICT indicators database 2022, July Edition. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>.

Notes: 2021 data concern all country groupings (except Pacific SIDS), French Polynesia, Timor-Leste, Vanuatu, Tonga and Kiribati. 2020 data concern the Pacific SIDS as a group and individually all other Pacific SIDS (except French Polynesia, Timor-Leste, Vanuatu, Tonga and Kiribati). Country groupings are of the source, except Pacific SIDS.



that form the basis of fixed broadband coverage. Furthermore, mobile broadband has limitations. The digital economy is increasingly associated with activities that require access to considerable bandwidth with fast upload and download speeds – for example, the use of web meeting and conference tools such as Zoom, Microsoft Teams, Skype and Webex. These services are increasingly used in many workplaces and require upload and download speeds that are not always available in all locations.

Fixed broadband access for Pacific SIDS was similar to access in LDCs and lower than in SIDS overall. The rate for Pacific SIDS was one subscription per hundred people in 2020.⁵⁵ Cook Islands, New Caledonia and French Polynesia are the exceptions and recorded between 18 and 20 subscriptions per 100 people. The low level of subscriptions to fixed broadband in other Pacific economies is likely because of a generally low demand for fixed connectivity and a wider spread of Internet-enabled mobile devices compared with more costly computers and laptops. Additionally, this trend is driven by the logistical and financial challenges related to laying submarine and terrestrial fibre-optic cables for remote and widely dispersed islands. These locations are therefore reliant on expensive satellite broadband Internet. This, in turn, translates into higher retail prices and negatively affects affordability of fixed broadband services.

b. Affordability of Internet plans

Affordability of broadband plans is an important determinant for potential and regular use of the Internet. This is recognized under Advocacy Target 2 of the Broadband Commission for Sustainable Development. The target is for the cheapest data-only mobile broadband and fixed broadband basket subscriptions to be less than 2 per cent of monthly GNI in low- and middle-income countries per capita by 2025.⁵⁶

When expressed as the share of GNI, mobile Internet is generally more affordable than fixed broadband (see figure II.6). In 2021, the target of less than 2 per cent of GNI for mobile Internet was reached in high-income countries and almost reached in low- and middle-income countries. For fixed broadband this was only the case for high-income countries. In the Pacific, the cheapest available mobile Internet plan was on average more than twice as cheap as the cheapest fixed broadband plan.

However, mobile broadband in the Pacific is almost four times more expensive than the global average and 50 per cent above the cost at the SIDS level. Only Tonga and Nauru are close to reaching the 2 per cent target set by the Broadband Commission for Sustainable Development.⁵⁷ In some countries, mobile Internet is still prohibitively expensive – the cost is almost 10 per cent of GNI per capita in Solomon Islands and the Federated States of Micronesia, and close to 20 per cent in Papua New Guinea.

2. Smartphone adoption and affordability

Many people in developing countries use smartphones and feature phones as the primary way to access the Internet. For instance, Facebook users in Fiji and Papua New Guinea own more smartphones than computers.⁵⁸ The adoption of a smartphone depends on several factors, including affordability of the device (see section II.B.2.b) and mobile broadband services (see section II.B.1.b), and transmission networks (see section II.A.3).

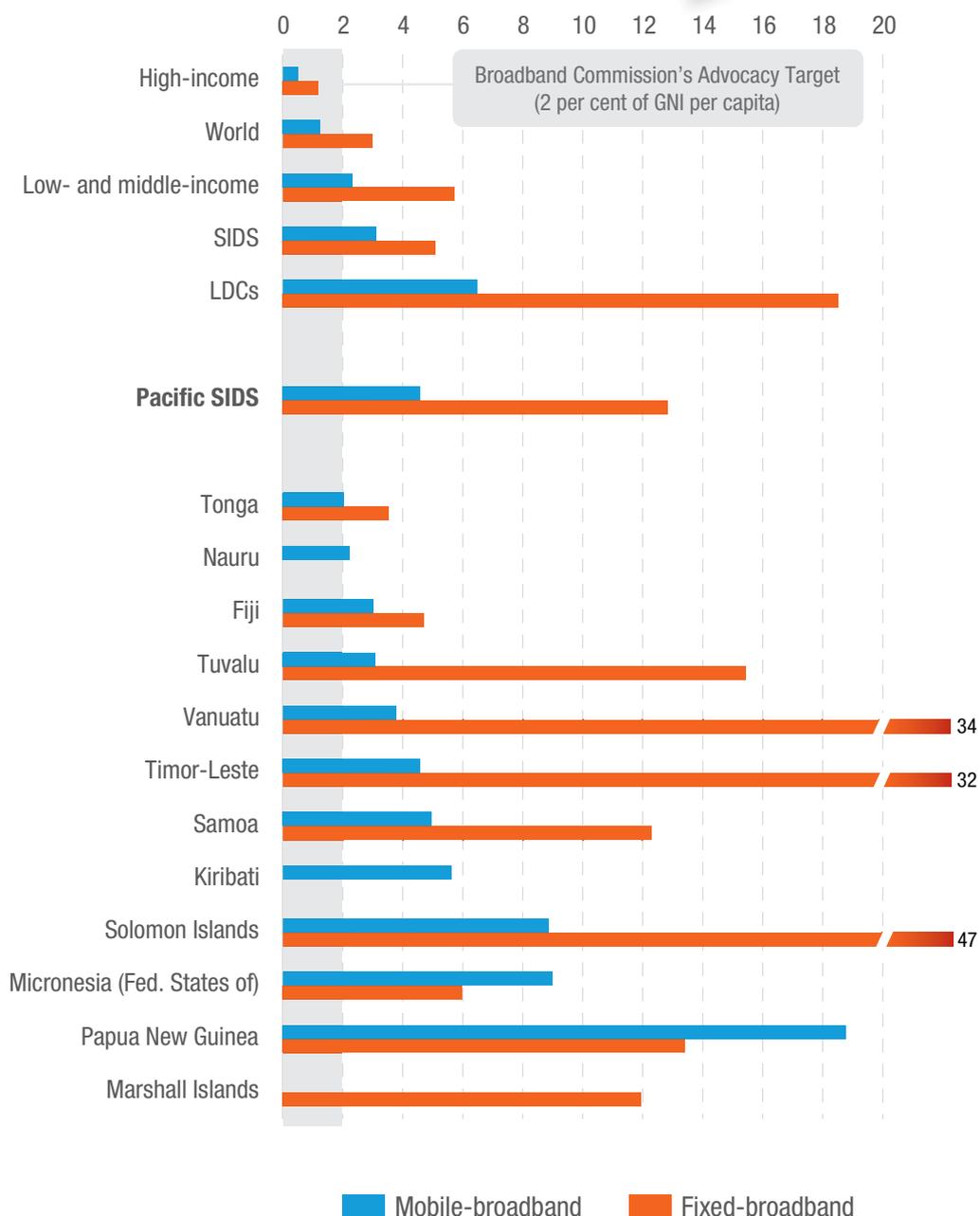
a. Adoption

The smartphone adoption rate (expressed as the share of smartphone connections among all mobile connections) in the six Pacific SIDS for which data are available fell below the global average of 60 per cent in 2018. The adoption rate varied from 22 per cent in Papua New Guinea to almost 50 per cent in French Polynesia in the same year (see figure II.7).⁵⁹ This gap was even more pronounced when compared to high-income countries, where smartphone adoption reached almost 80 per cent in 2020 (GSMA Intelligence, 2021). The rate of smartphone adoption in Fiji doubled between 2014 and 2018 but growth was considerably lower in other Pacific SIDS and even negative in the case of New Caledonia. However, GSMA forecasts that smartphone adoption in the Pacific could reach 70 per cent by 2025, catching up with global and Asia-Pacific adoption rates (GSMA Intelligence, 2019b). This forecast was based on the assumption that the price of smartphones will decline and that new vendors of low-cost smartphones will emerge in the region.



Figure II.6. Price of broadband as a share of monthly GNI per capita, by country grouping and selected Pacific SIDS, 2021
(Per cent)

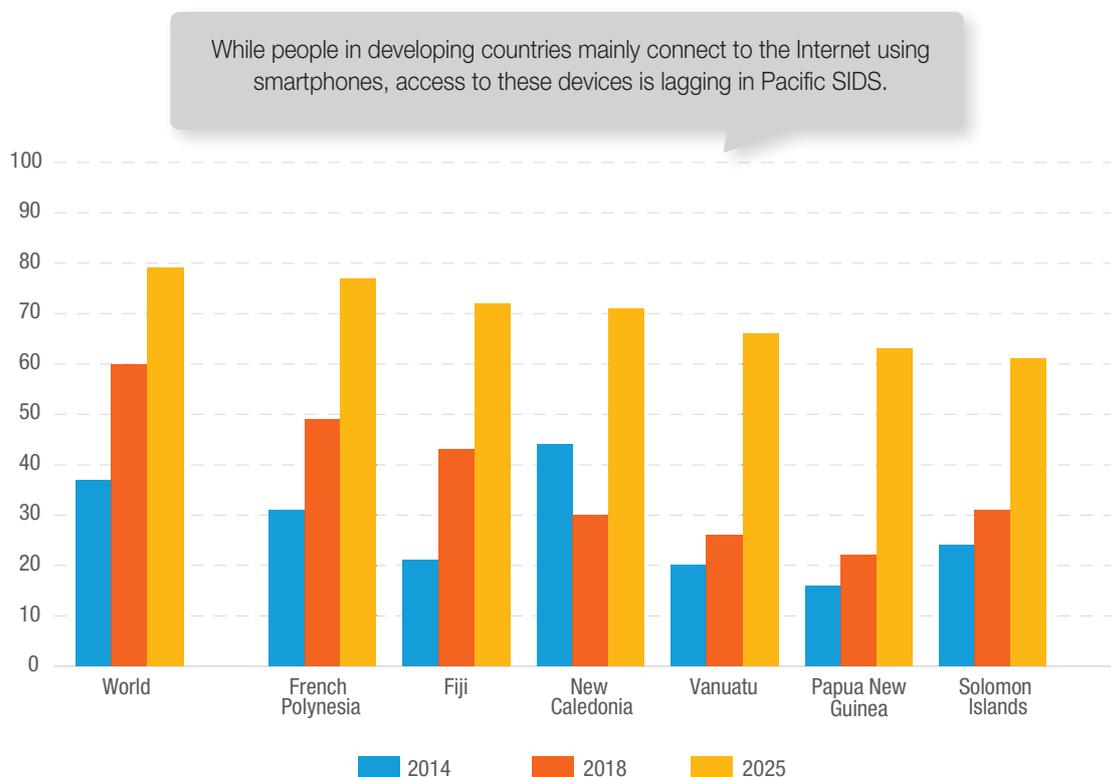
Broadband Internet is unaffordable for most people in Pacific SIDS. In Papua New Guinea, buying a mobile broadband package would cost nearly 20 per cent of the average monthly income.



Source: UNCTAD calculations, based on ITU (2022a), ICT prices: ICT price baskets [historical data series, March 2022 release]. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/ICTprices/default.aspx>.

Notes: Fixed broadband: Price of an entry-level fixed broadband basket, defined as the cheapest fixed Internet subscription available domestically, with a minimum of 5 GB monthly data allowance and an advertised download speed of at least 256 Kbit/s. Mobile broadband: price of an entry-level data-only basket, defined as the cheapest data-only mobile broadband subscription available domestically, with 3G technology or above and a minimum monthly data allowance of 2 GB. Country groupings are those of the source (medians), except Pacific SIDS (median).

Figure II.7. Smartphone adoption, global and selected Pacific SIDS, selected years
(Per cent)



Source: UNCTAD calculations based on GSMA Intelligence (2015a, 2015b, 2019a and 2019b).

Notes: Smartphone adoption is the percentage share of smartphone connections to all mobile (SIM) connections. Country grouping is from the source. The 2025 data are GSMA forecasts.

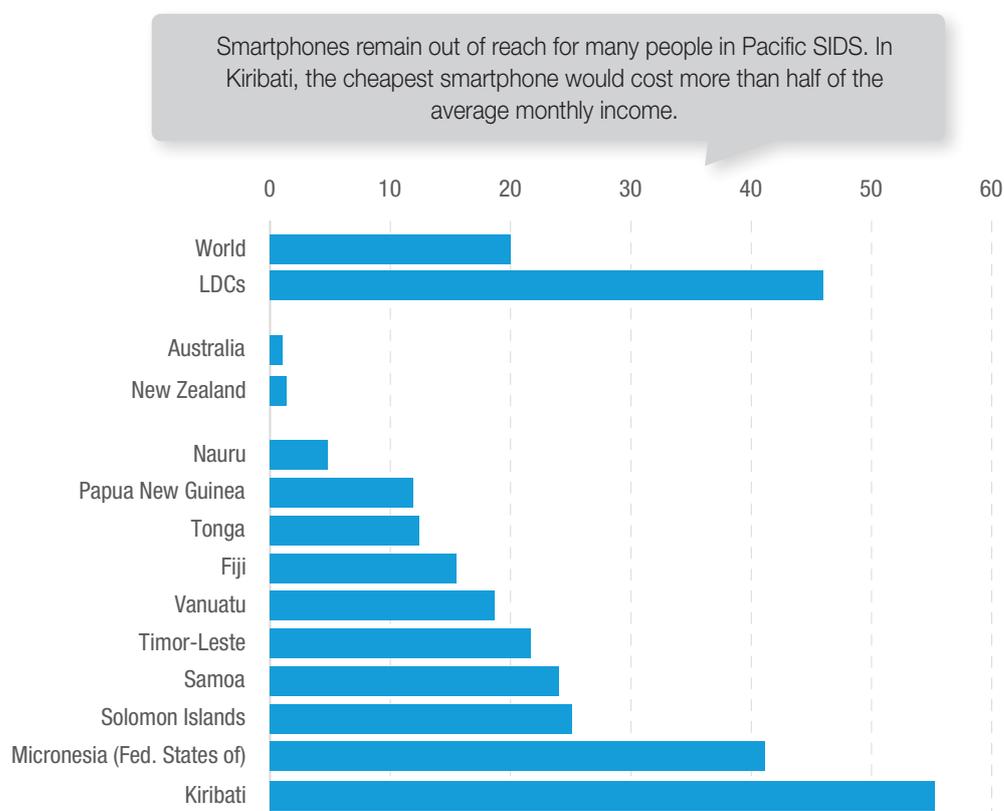
Box II.3. Smartphone affordability and the role of telecom operators

Many factors influence the price and affordability of smartphones. Mobile network operators in the Pacific can play an important role in the offers and prices of smartphones. Between 2021 and 2022, the price of the cheapest available smartphone decreased significantly in Papua New Guinea (from \$135 to \$28), Samoa (from \$139 to \$76) and Solomon Islands (from \$79 to \$49). This change in prices resulted mainly from a shift to more entry-level smartphones. In Samoa and Solomon Islands, the cheapest available smartphones in 2022 were also sold by different operators compared with 2021.

Smartphone offers can often be better adapted to the level of digital literacy and Internet activities of consumers. A smartphone with advanced features is likely to be more expensive, while its functionalities may not be fully exploited, especially by first-time users. Targeting devices for basic Internet use could therefore lead to cheaper entry-level smartphones or feature phones ('not-too-smart smartphones'). For example, the cost of a feature phone in Samoa and the Federated States of Micronesia was significantly lower than the cost of a smartphone in 2021. In Vanuatu, on the other hand, the cheapest available smartphone and feature phone in 2022 were offered at a similar price by the same operator, Vodafone (ATH). This could be interpreted as an effort to adapt entry-level devices to the digital skills of consumers.

Source: UNCTAD, based on Alliance for Affordable Internet (2021a), 2021 prices and affordability of smartphones and feature phones by country [data set]. Available at <https://a4ai.org/research/device-pricing-2021/>. and Alliance for Affordable Internet (2022), 2022 prices and affordability of smartphones and feature phones by country [data set]. Available at <https://a4ai.org/research/device-pricing-2022/>.

Figure II.8. Cost of the cheapest available smartphone as a share of monthly GNI per capita, by country grouping, Australia, New Zealand and selected Pacific SIDS, 2022 (Per cent)



Source: UNCTAD calculations, based on Alliance for Affordable Internet (2022), 2022 prices and affordability of smartphones and feature phones by country [data set]. Available at <https://a4ai.org/research/device-pricing-2022/>.

Note: Country groupings are of the source.

b. Affordability

Affordability of Internet-enabled smartphones is a key barrier to using mobile Internet, especially in developing countries (GSMA, 2022).⁶⁰ Despite the global shortage of microchips and supply chain issues, the global average cost of the cheapest smartphone went from 22 per cent to 20 per cent of average monthly income between 2021 and 2022 (Alliance for Affordable Internet, 2022). In five out of ten Pacific SIDS with available data, the cost of a smartphone was above 20 per cent of the average monthly income in 2022, which can reasonably be considered as unaffordable (see figure II.8).

Important differences are observed in the region. In Nauru, the cost of the cheapest smartphone represented 5 per cent of monthly GNI per capita. However, in Kiribati it was ten times higher at 55 per cent – half of an average monthly income. It is important to note that smartphone prices can vary significantly from one year to another as telecom operators change their offers and this can have a big impact on affordability (see box II.3).

3. Internet use

Thus far, this chapter has looked at some of the key indicators that play a role in determining Internet use, which forms the basis for e-commerce and the digital economy. Affordable and reliable Internet connectivity allows users to access websites, send and receive emails, use instant messaging apps and social media, and buy and sell goods and services on e-commerce platforms. Given its importance, the Broadband Commission for Sustainable Development has raised the targets for

broadband Internet user penetration to 75 per cent worldwide, 65 per cent in low- and middle-income countries and 35 per cent in LDCs by 2025.⁶¹

Data on Internet use in the Pacific is scarce and mostly outdated. With this proviso, Pacific SIDS did show strong progress towards the Broadband Commission for Sustainable Development targets in the following periods: 2011 to 2020 (Kiribati and Timor-Leste), 2011 to 2018 (Fiji) and 2011 to 2017 (all remaining Pacific SIDS).⁶² Some countries have either already reached or are close to reaching their targets (see figure II.9). Pacific SIDS still lag significantly behind SIDS in general (21 per cent and above 60 per cent in 2021, respectively).⁶³ To a large extent, this can be explained by the high share of the offline population in Papua New Guinea.⁶⁴

4. Digital gender divides

Efforts to achieve gender balance across society, including in the digital sphere, contribute to broad socioeconomic progress and progress towards SDG 5: Gender Equality. Many women remain excluded from the digital economy, especially in LDCs, because of multiple barriers to mobile phone ownership and access to and use of the Internet. These barriers are complex and diverse and arise from inequality in incomes, discriminatory gender norms, as well as the education and digital skills gap.

As noted by the Alliance for Affordable Internet (2021b), the exclusion of women in the digital sphere translates to lost economic opportunities, which in turn means unrealized potential for economic growth and development as well as tax revenue for governments. This exclusion also has adverse implications for the full range of women's human rights and the overall sustainable development agenda.

Reducing the digital gender divide should be a priority for public authorities. The nature and complexity of the digital gender divide requires more research and analysis to deepen understanding of its structural barriers and drivers, and to shape deliberate and sustained policy responses needed to close the gap.

a. Mobile phone, smartphone and computer ownership

In developing countries, promoting the ownership and use of mobile phones for women (smartphones in particular) is essential to closing the digital gender divide.⁶⁵ This is recognized under SDG Goal 5.b., which aims to enhance the use of enabling technology, especially ICT, to promote the empowerment of women. Progress against this goal is measured by the proportion of individuals who own a mobile telephone (by sex).⁶⁶

There is limited gender-disaggregated data to measure and observe the digital gender divide over time. Gender-disaggregated data on mobile phone ownership only covered 60 countries for the period 2018–2020.⁶⁷ Moreover, data on mobile phone ownership do not distinguish between a smartphone (or an Internet-enabled mobile device) and a cellular telephone. Statistics from additional sources can help fill this data gap by providing gender-disaggregated data on the ownership and use of smartphones and computers.⁶⁸

At the global level, women and men are close to achieving parity in mobile phone ownership. However, gender parity for smartphones and computers still lags (see figure II.10).⁶⁹ In SIDS and LDCs, gender parity has not been achieved for any of the three devices. Notably, the gender parity score for smartphones was higher than the score for mobile phones.⁷⁰

While data for most Pacific SIDS are lacking, available data show that Kiribati achieved gender parity in mobile phone ownership and Tonga had almost achieved parity in 2019. In terms of smartphone ownership, 2021 data for Papua New Guinea show that slightly more women owned smartphones compared to men. Fiji still lagged, however. Computer ownership generally shows a greater gender divide. This suggests that, in addition to legislative and gender-responsive policy measures, promotion of affordable smartphones can play an important role in closing the gender gap when it comes to Internet use.

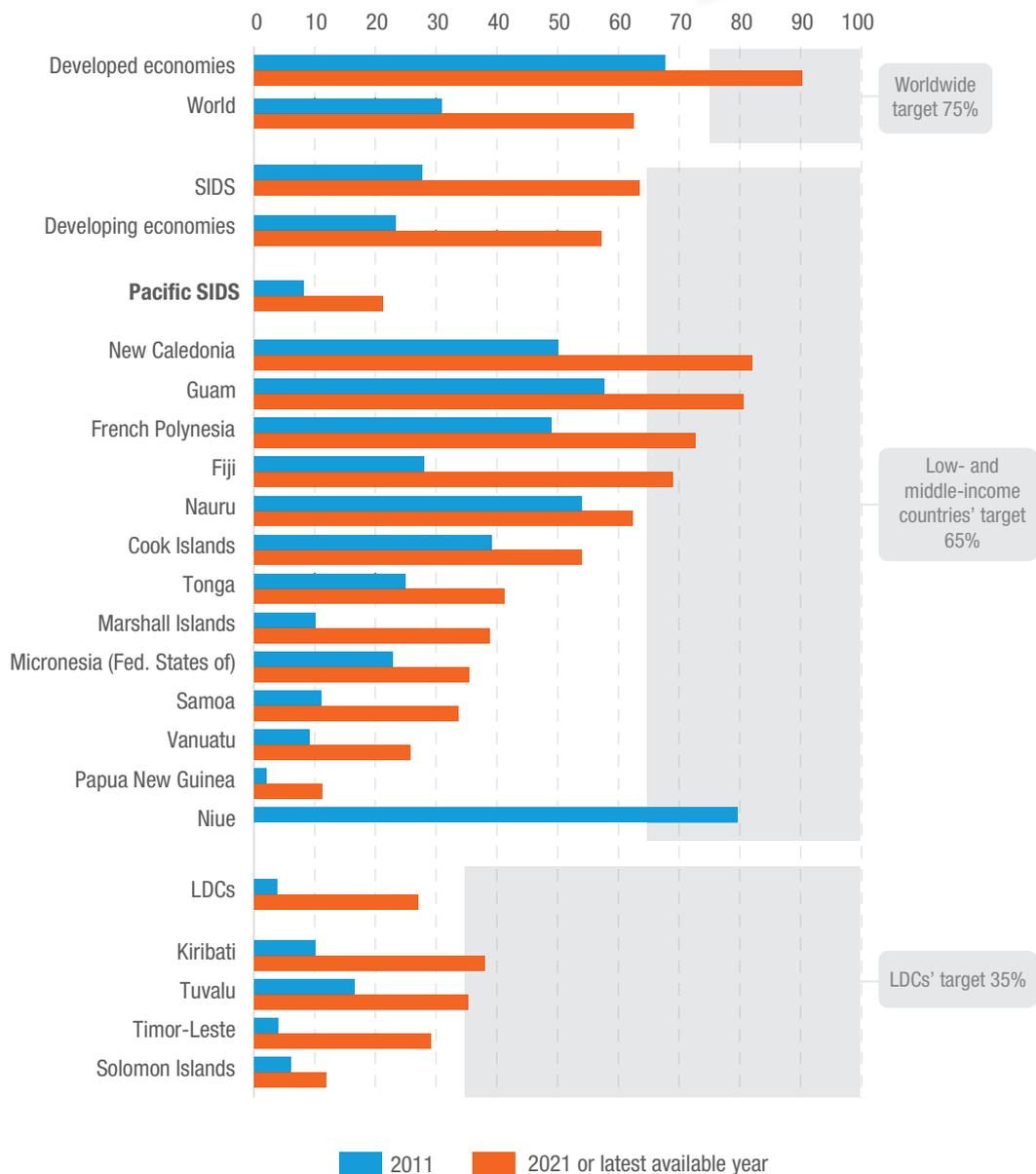
b. Internet use

Available gender parity data on Internet use show that developed economies and SIDS achieved gender parity in 2020 and 2022, respectively. However, LDCs still lagged significantly behind in 2022



Figure II.9. Progress against Broadband Commission for Sustainable Development targets for broadband-Internet user penetration, by country grouping and selected Pacific SIDS, selected years (Per cent of population)

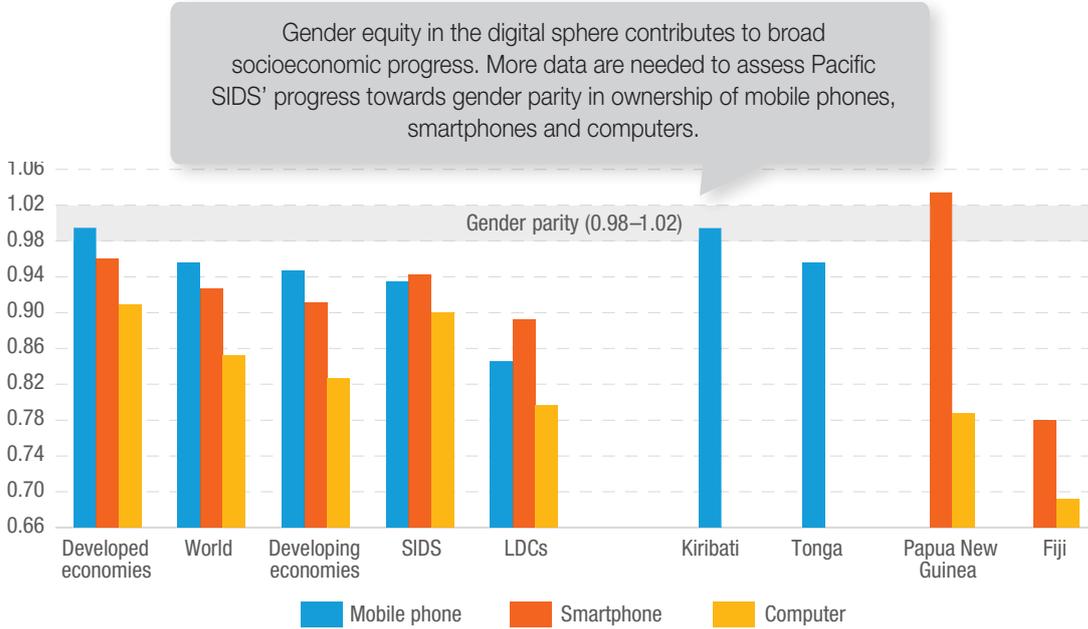
Internet use in Pacific SIDS lags far behind other regions, which means many people are excluded from the digital economy. The country groupings risks falling further behind and missing out on the benefits of digital development.



Source: UNCTAD calculations, based on ITU (2022d), Statistics: Global and regional ICT data, update of 25 January. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>; and ITU (2022f), World telecommunication/ICT indicators database 2022, July Edition. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>.

Notes: Latest year available: 2021 (world and all groups except Pacific SIDS); 2020 (Kiribati, Timor-Leste); 2018 (Fiji); 2017 (Pacific SIDS as a group, French Polynesia, Guam, Marshall Islands, Federated States of Micronesia, Nauru, New Caledonia, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu); Cook Islands (2016). Niue's latest statistics covered 2011. Country groupings are those of the source, except Pacific SIDS (UNCTAD).

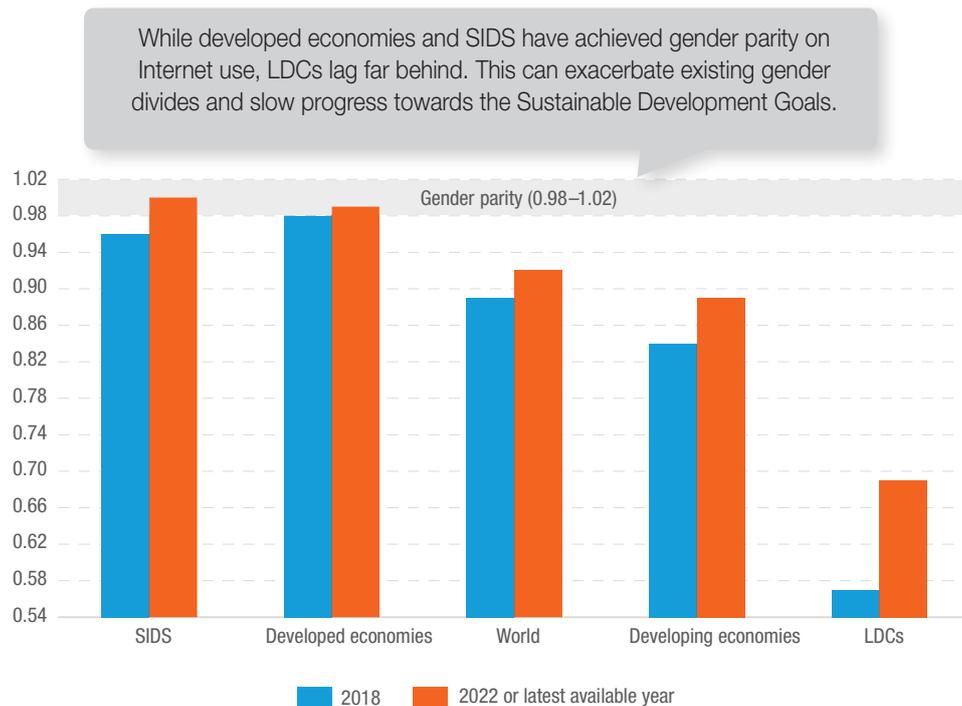
Figure II.10. Gender parity score for device ownership, by country grouping and selected Pacific SIDS, 2021 or latest available year



Source: UNCTAD calculations, based on ITU (2022b), ITU ICT SDG indicators. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/SDGs-ITU-ICT-indicators.aspx>; and Humanitarian Data Exchange (2022), Survey on gender equality at home. Available at <https://data.humdata.org/dataset/survey-on-gender-equality-at-home>.

Notes: Group medians of gender parity in ownership of mobile phone (ITU 2019 data) and smartphone/computer (Facebook 2020 and 2021 data) cover: world (40 and 125 countries respectively), developed economies (7 and 39), developing economies (33 and 86), SIDS (7 and 8) and LDCs (2 and 24). Among Pacific SIDS, ITU data were only available for Kiribati and Tonga, while Facebook had only data for Fiji and Papua New Guinea (2021).

Figure II.11. Gender parity score for Internet use by country grouping, selected years

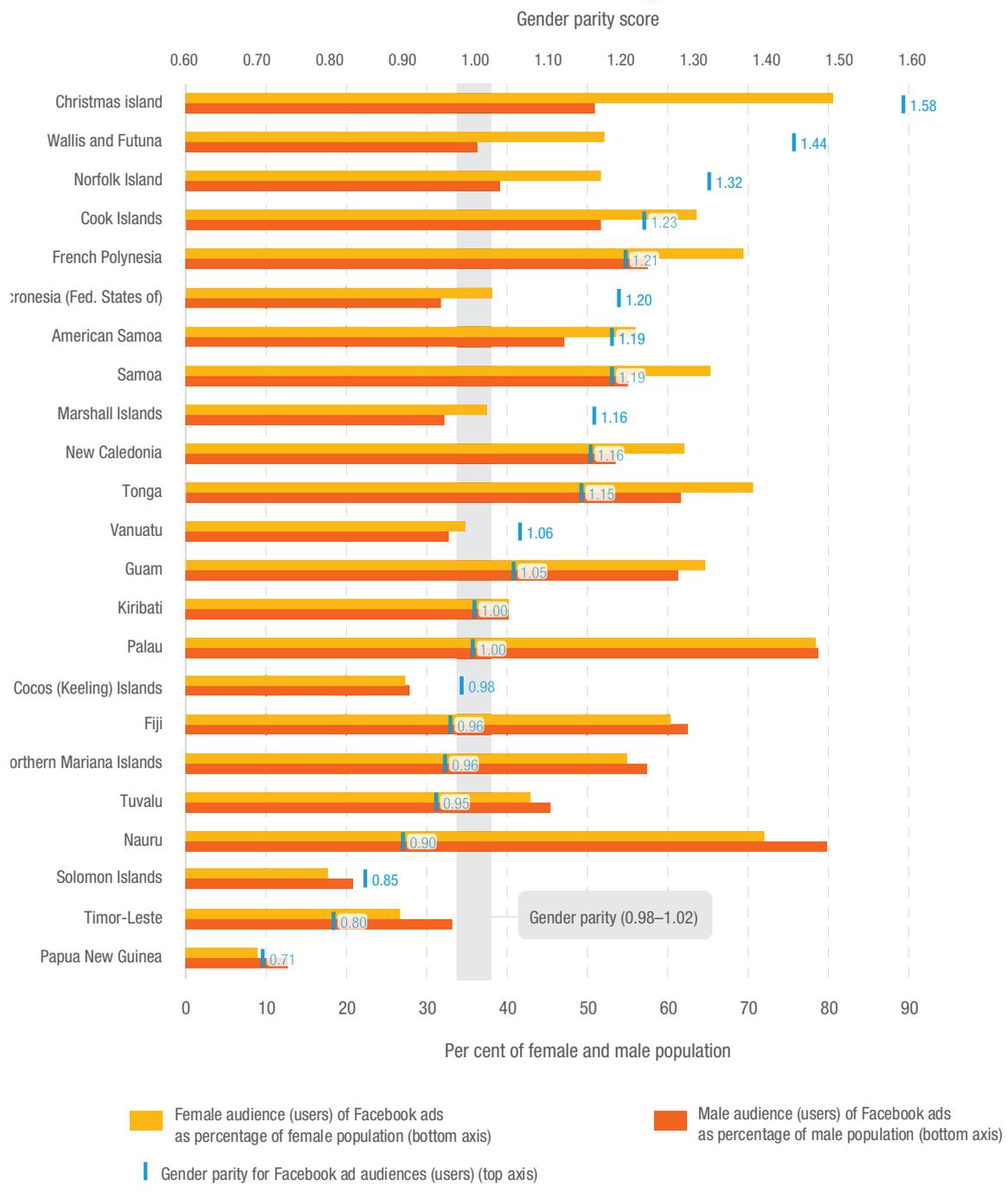


Source: UNCTAD calculations, based on ITU (2022e), Statistics: Global and regional ICT data, update of 19 September. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>.

Notes: 2022 data concern SIDS, World and LDCs. Data from 2020 were available for developed and developing economies. Country groupings are those of the source.

Figure II.12. Female and male ad audience of Facebook as ratio of female and male population (per cent) and gender parity score, Pacific SIDS and territories, 2022

For most Pacific SIDS, women engage on Facebook more than men. This could indicate that women are more likely to use the Internet to search for information, connect with friends and family, or buy and sell goods and services.



Source: UNCTAD calculations, based on Datareportal (2022), Posts tagged Oceania. Available at <https://datareportal.com/reports/?tag=Oceania>.

Note: The user numbers reported by social media platforms are typically based on active user accounts and may not represent unique individuals. For example, one person may maintain more than one active presence on the same social media platform (i.e. “duplicate” accounts).

(see figure II.11). Gender-disaggregated data on Internet use for Pacific SIDS was not available from ITU.⁷¹ However, an additional source for assessing Internet use by gender is by looking at social media data, in particular Facebook use.⁷² For the majority of these Pacific economies, Facebook's audience data suggest that relatively more women use the Internet compared to men (see figure II.12).

C. THE PACIFIC DATA GAP

The statistical and analytical work on ICT indicators for this report identified a general lack of data for Pacific SIDS, confirming findings in other reports. The Regional E-commerce Assessment (PIFS, 2020) recognized the poor availability of data on e-commerce and the digital economy in the Pacific, with ICT statistics mainly found through international databases. The assessment emphasized the importance of robust data to support the planning, monitoring and evaluation of various ICT and e-commerce initiatives. Reliable and updated data on the number of mobile and fixed broadband Internet subscribers as well as the number of Internet users are particularly important for benchmarking and the measurement of progress of the sector. As UNESCAP (2022a) has noted, a shortage of data on digital connectivity is preventing a deeper analysis and understanding of the digital divide in these geographically disadvantaged countries. Pacific SIDS were not included in their digital transformation index because of this substantial lack of data.

To illustrate this data gap for Pacific SIDS, UNCTAD analysed 11 standard ITU indicators for ICT access and use. Figure II.13 shows that, on average, data for 8 out of the 11 indicators were available for Pacific SIDS (79 per cent), lagging behind global and SIDS averages (90 and 86 per cent, respectively). When taking only the most recent data (2020–2021) into account, data were available for only 60 per cent of the indicators, compared with 80 per cent globally. For time series analysis, data for Pacific SIDS cover an average of only 59 per cent of the time series, well below the global and SIDS levels (78 and 68 per cent respectively).⁷³

The most significant gap in the ITU data set concerned mobile broadband subscriptions, with data available in the Pacific for only 40 per cent of the time series, compared with 74 per cent globally (see figure II.14). Mobile broadband subscriptions is a key indicator for e-commerce, as most Internet connections are established through mobile devices in developing economies (see section II.B.1.a). For the other key indicator relating to the number of Internet users, data for Pacific SIDS were available for only 62 per cent of the time series, compared with 81 per cent globally. When focusing only on the most recent data time point (2020 or 2021), data on Pacific SIDS are up to date for only 3 out of 11 indicators (see figure II.15), with data on Internet users available for only 10 per cent of countries.

Other sources used for this chapter also show limited data availability for Pacific SIDS. The Ookla indicator for fixed broadband connection speeds includes six Pacific SIDS, and the indicator for mobile broadband connection speeds mobile covers only two of these economies. Similarly, Facebook (Meta) data on female and male ownership of computers and smartphones includes only two Pacific SIDS, while The Mobile Economy: Pacific Islands 2019 report (GSMA Intelligence, 2019b) has data on smartphone adoption for only six Pacific SIDS. However, other indicators show stronger coverage of the region, such as the number of IXPs (Packet Clearing House, 2022), prices of smartphones (Alliance for Affordable Internet), access to electricity (World Bank), female and male audience (proxy for Internet use, Facebook (Meta)).

The general data gap for Pacific SIDS identified in this analysis would be even wider without the complementary data provided by ITU estimates. This is a serious constraint to research and analysis on e-commerce and the digital economy in the region and limits evidence-based policymaking and investment decisions. There is an urgent need to build or strengthen digital data systems in the Pacific region, including statistics that measure the digital ecosystem. According to UNESCAP (2022a), a policy priority and capacity-building focus, with commensurate allocation of funding, needs to be directed to address these data gaps. The 2050 Strategy for the Blue Pacific Continent, endorsed by Pacific Leaders in July 2022, recognizes the importance of disaggregated data and data sovereignty for improved decision-making in a well-connected region.

Regional cooperation on this issue is important. The Pacific Regional E-commerce Strategy and Roadmap (PIFS, 2021) emphasized that a regional mechanism for the collection, production,



compilation and dissemination of data would be developed and capacity-building activities for national statistics offices would be required. The Pacific E-commerce Portal was launched in August 2022 and is intended to become a one-stop shop for information on e-commerce in the Pacific (see chapter V). The statistics section of the portal was developed by PIFS in collaboration with Pacific Community and UNCTAD, and includes available data on key indicators from different international sources, including the International Monetary Fund, ITU, UNCTAD and the World Bank. The portal can act as an incentive for competent national and regional authorities to improve data collection and publication in the Pacific.

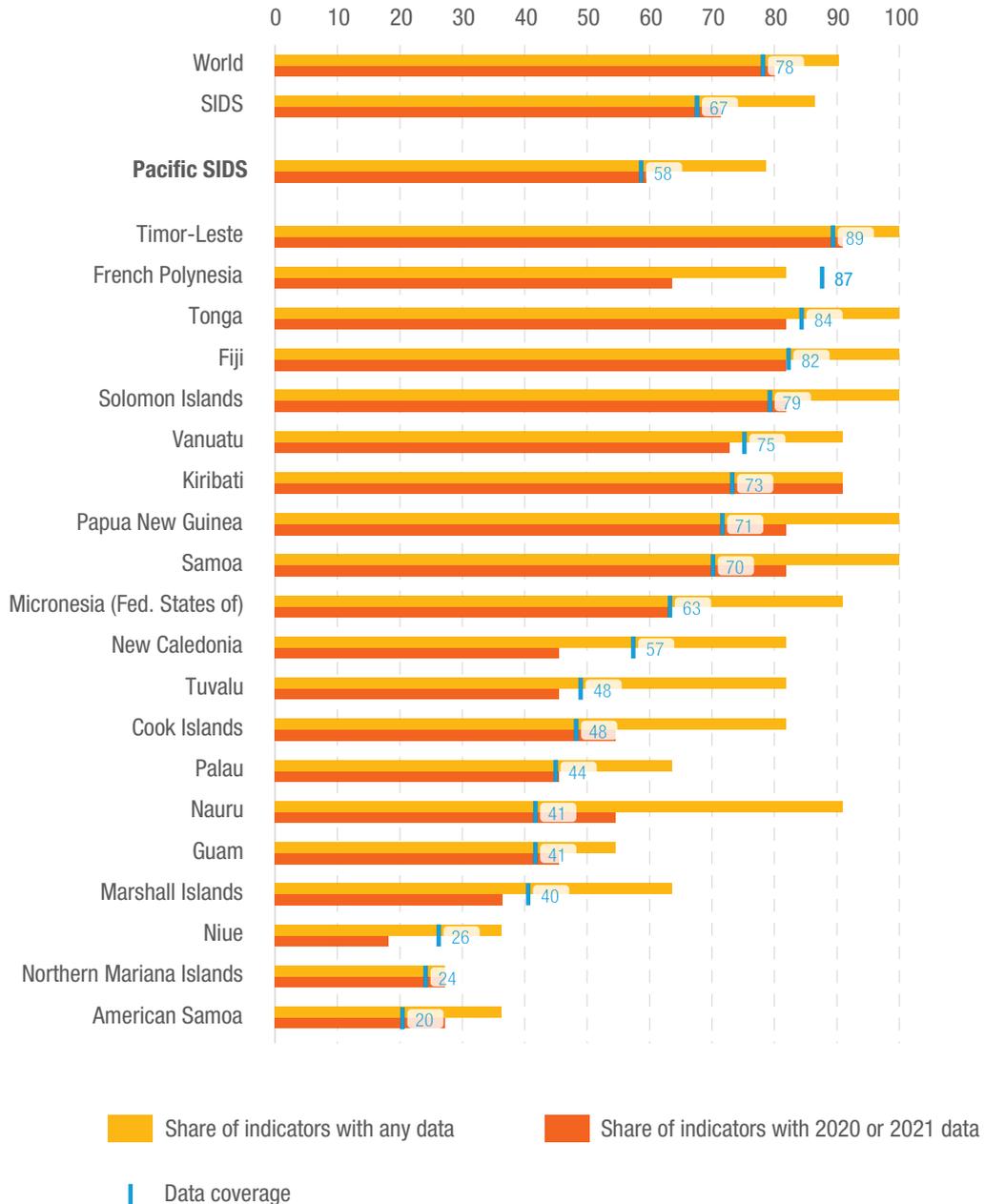
Digital infrastructure provides the foundation for individuals, businesses and governments to access digital content and services. It ensures the interconnectivity of different stakeholders in the digital value chain so that they can deliver economic and social value to users. In essence, if the infrastructure is not responding to societal and economic demands, there are negative impacts not only on the development of the digital ecosystem but also on developments related to education, health and work. As such, core physical assets such as submarine cables and data centres are increasingly indispensable to the functioning of societies and economies. Although important advances have been made over the last decade, the Pacific still lags behind most other developing regions in this area. At the same time, increasing levels of mobile broadband penetration and adoption of smartphone technologies point to an urgent need to address the current and future needs of the evolving digital economy. The high cost of Internet services in particular continues to represent a barrier for consumers and businesses in the region.

The development of national and regional digital infrastructure provides an opportunity to accelerate the growth of digital economies in the Pacific and to bring together physical and virtual technologies. However, developing reliable and resilient digital infrastructure is an immense challenge and will require moving from fragmented solutions to holistic digital infrastructure that brings the benefits of digitalization to all people and communities in the Pacific. With improvements to digital infrastructure already under way and further developments anticipated, people and businesses have already experienced the potential of digital technologies to lower costs, expand opportunities and support innovation. In this context, the next chapter discusses key drivers for value creation and capture in the emerging digital economy and explores how the region can benefit from digital platforms and e-commerce opportunities.



Figure II.13. Availability of data on ICT access and use, by selected country grouping and Pacific SIDS (Per cent)

Common indicators of ICT access and use are often unavailable in the Pacific, making evidence-based policymaking a challenge. In some Pacific SIDS, less than half of common ICT indicators are available.

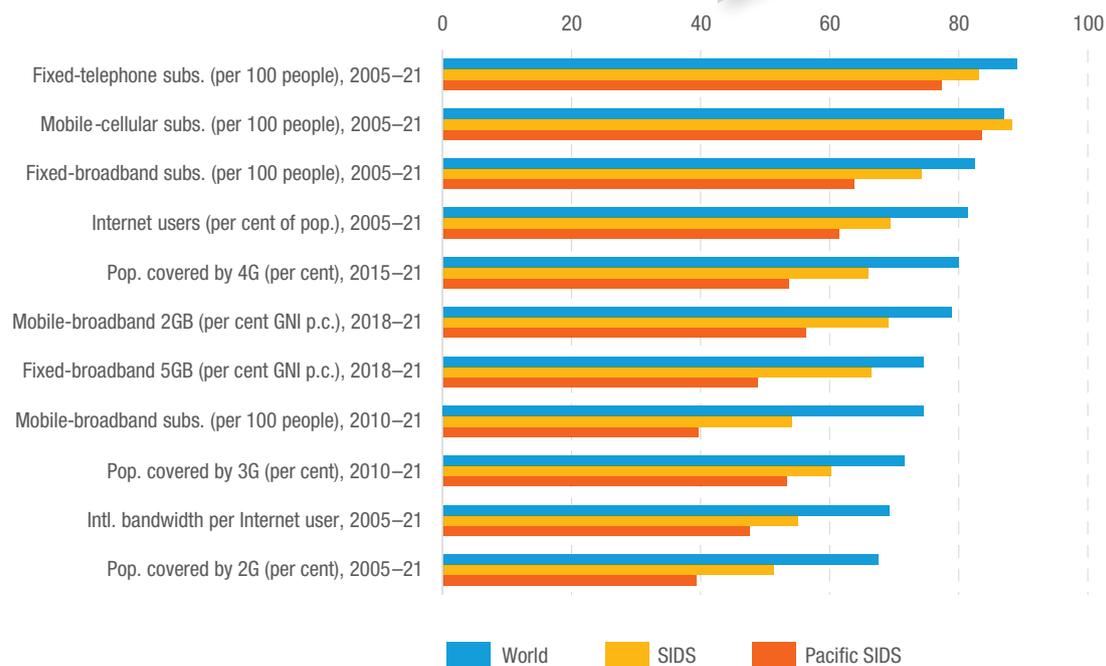


Source: UNCTAD calculations, based on ITU (2022a), ICT prices: ICT price baskets [historical data series, March 2022 release]. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/ICTprices/default.aspx>; and ITU (2022f), World telecommunication/ICT indicators database 2022, July Edition. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>.

Notes: Eleven indicators of ITU for ICT access and use were considered for this study. For indicators and periods analysed, refer to Figure II.14 or Figure II.15. Data coverage indicates the proportion of years for which data is available within the time series.

Figure II.14. Data availability for selected ICT indicators and periods, by selected country grouping (Per cent)

Pacific SIDS are below the global average on availability of ICT data from 2005 to 2021. Comprehensive data on connectivity, access to and use of digital technologies are needed to inform policymaking and to track the progress of development interventions.

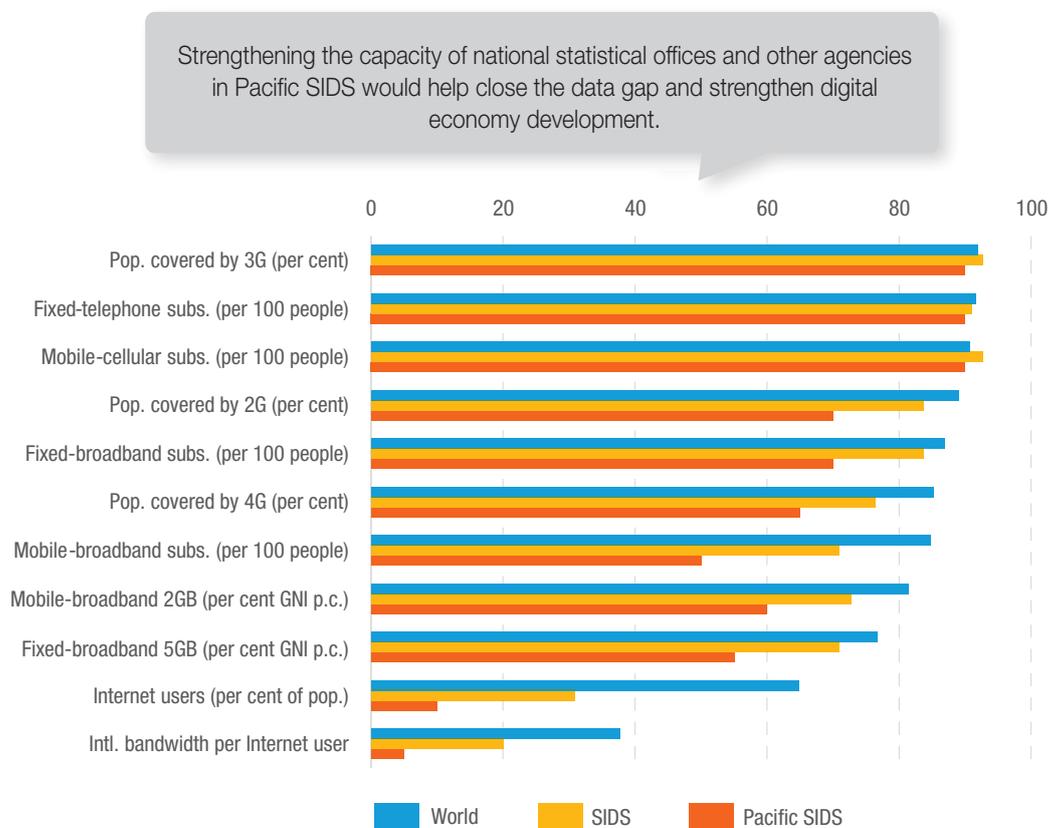


Source: UNCTAD calculations, based on ITU (2022a), ICT prices: ICT price baskets [historical data series, March 2022 release]. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/ICTprices/default.aspx>; and ITU (2022f), World telecommunication/ICT indicators database 2022, July Edition. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>.

Note: Data coverage represents the proportion of years with available data as of the total period for each indicator.



Figure II.15. Data availability for selected ICT indicators, 2020 or 2021, by selected country grouping (Per cent)



Source: UNCTAD calculations, based on ITU (2022a), ICT prices: ICT price baskets [historical data series, March 2022 release]. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/ICTprices/default.aspx>; and ITU (2022f), World telecommunication/ICT indicators database 2022, July Edition. Available at <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>.

Note: Data coverage represents the proportion of years with available data as of the total period per each indicator.

CHAPTER III

Digital platforms, e-commerce and value creation and capture

With improvements to digital infrastructure across the Pacific (as outlined in chapter I), it is likely that the region will see a significant increase in the use of digital technologies by both consumers and businesses. Although this will bring significant development benefits, prioritizing access to digital technologies will not, on its own, ensure that the gains reaped from the digital economy are equitably shared.

This chapter covers key issues related to value creation and capture in the Pacific, with a focus on digital platforms and e-commerce. It first provides a conceptual framework and then turns to the role of digital platforms in the Pacific, followed by emerging e-commerce trends and business models. The last section explores the future potential of global and local platforms in the Pacific, including implications for value creation and capture, along with broad policy recommendations aimed at preparing the region for further digitalization of its economies.

Limited data and statistics were available to carry out detailed analysis of the issues explored in this chapter. The analysis presented is based on desk research and interviews with platforms owners and operators, as well as on evidence from ongoing projects under the PDEP.

Value creation and capture in a data-driven economy in Pacific SIDS



A. THE DIGITAL ECONOMY AND DEVELOPMENT

This section introduces the main components of the digital economy and presents a framework for value creation and capture in the data-driven economy. It also explores the associated development implications and challenges related to measuring value in the digital economy.

1. The digital economy

Although broad understanding of the digital economy has evolved over time, particularly as the pace of technological change accelerates, the *Digital Economy Report 2019* (UNCTAD, 2019b) provides a useful model for understanding the main elements. The report proposes three main components of the digital economy: core aspects; digital and information technology sectors; and a wider set of digitalizing sectors. Core aspects of the digital economy (the ICT sector) comprise semiconductors, computers, telecommunication devices and digital infrastructure such as the Internet and fibre-optic cables. Digital and information technology sectors – which produce key products or services that rely on core digital technologies – include digital platforms, mobile applications and payment services. A wider set of digitalizing sectors are where digital products and services are increasingly being used, such as in finance, media, tourism and transportation.

All countries engage in some way with the three components of the digital economy, although there are significant differences in the breadth and depth of this engagement. Some regions have advanced, widespread core digital infrastructure and established digital sectors that contribute to digitalization across nearly every aspect of the economy. Other regions remain in the early stages of digitalization. In some developing countries, digitalization of the economy is mostly linked to the increasing use of the Internet and related applications by consumers and for day-to-day business processes.

In developing countries, digital payments are often the most visible sign of digitalization, with mobile banking and mobile money increasingly taking the place of cash-based transactions. B2C e-commerce – particularly for ride-hailing and food delivery – has also emerged as a key trend associated with the digital economy in several developing countries. By some measures, the growth of e-commerce in developing economies outpaces that seen in developed economies.

The COVID-19 pandemic has accelerated this trend (see figure III.1). Research conducted by UNCTAD reveals that the average share of Internet users who made purchases online increased from 53 per cent before the pandemic (2019) to 60 per cent following the onset of the pandemic (2020/2021) across 66 countries where data was available.⁷⁴ The greatest increases were seen in developing countries. In the United Arab Emirates, the share of Internet users who shopped online more than doubled from 27 per cent in 2019 to 63 per cent in 2020. In Thailand, which already had relatively high uptake prior to the pandemic, a 16-percentage-point increase meant that for the first time more than half of Internet users (56 per cent) shopped online in 2020. No corresponding data are available for Pacific SIDS.

2. Value creation in the digital economy

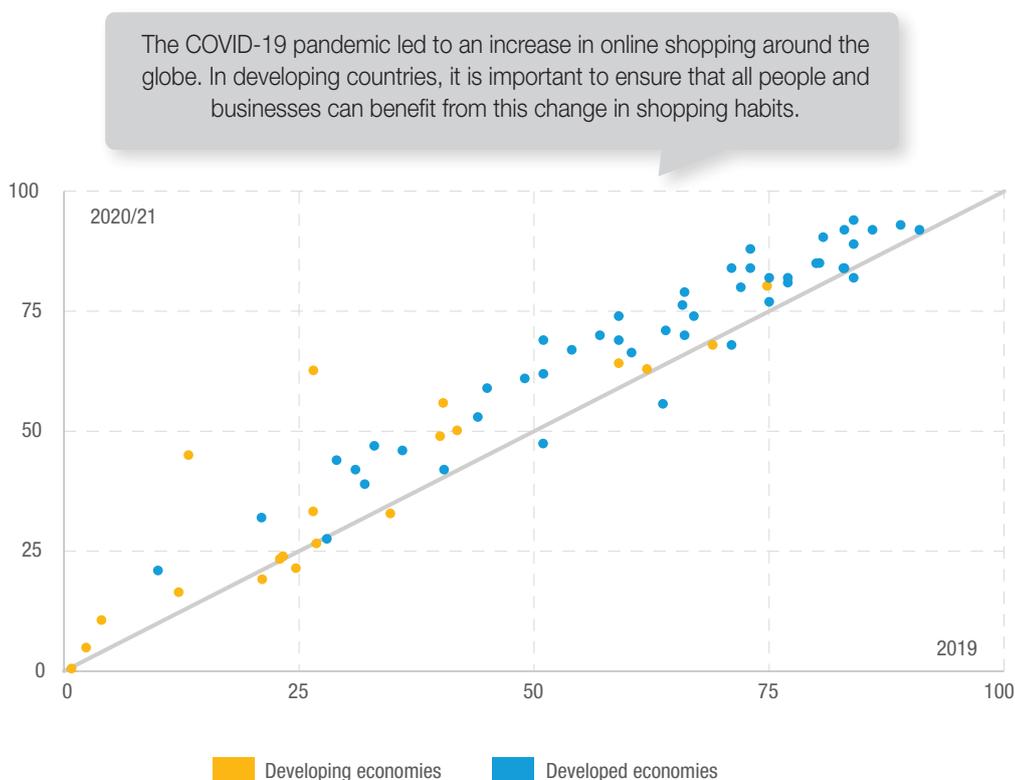
Much of the discussion surrounding the digital economy has focused on the extent to which businesses and consumers in different countries have affordable access to various technologies – including the Internet – and how broadly these technologies are used. However, observations in other regions around issues related to the digital economy, such as monopolistic behaviour by global digital platforms and the impact on labour markets, demonstrate that a framework focused on access alone is insufficient. This section provides a broad framework for creating and capturing value in the digital economy, which was first presented in the *Digital Economy Report 2019* (UNCTAD, 2019b).

a. Drivers of value creation

Although economic value has traditionally been associated with the production of goods and services, new business models in the digital economy are challenging this paradigm. Digitalization makes entirely new ways of value creation possible. Indeed, “[in] the new business models of the digital economy, two emerging and related forces are increasingly driving value creation: platformization and the monetization of the rapidly expanding volume of digital data” (UNCTAD, 2019a:25). These two drivers of value creation are summarized below as a basis for understanding how value could be created and captured in Pacific digital economies.



Figure III.1. Online shopping before and during the COVID-19 pandemic, by level of development
(Per cent of Internet users)



Source: UNCTAD (2022b).

b. Digital platforms

The core concept of a platform is to enable value-creating interactions between producers and consumers, and this means providing a participatory infrastructure for these interactions. Digital platforms offer such mechanisms online and can provide the necessary infrastructure and intermediaries to connect people. Facebook, for example, is a social media platform that connects users, advertisers, governments, companies and groups. Airbnb is a digital platform that connects property owners with guests, and ride-hailing platforms like Uber connect riders with drivers. Facilitating such exchanges or transactions has fostered innovation and provided a structure that utilizes digital technologies to generate efficient connections between global users.

This efficiency also extends to trade, with lower search costs as well as low reproduction and verification costs. Platforms have also indirectly accelerated innovation by enabling third parties to develop and build upon complementary products and services. Platform-centred businesses have an advantage in the digital economy because they can record and extract all data related to interactions that occur between the various users on a platform. Social media platforms, for example, can gather vast volumes of data related to user behaviour, and e-commerce platforms can closely track consumer spending. Digital platforms can be involved in different economic activities and sectors and the collection of digital data is an integral part of their business models.

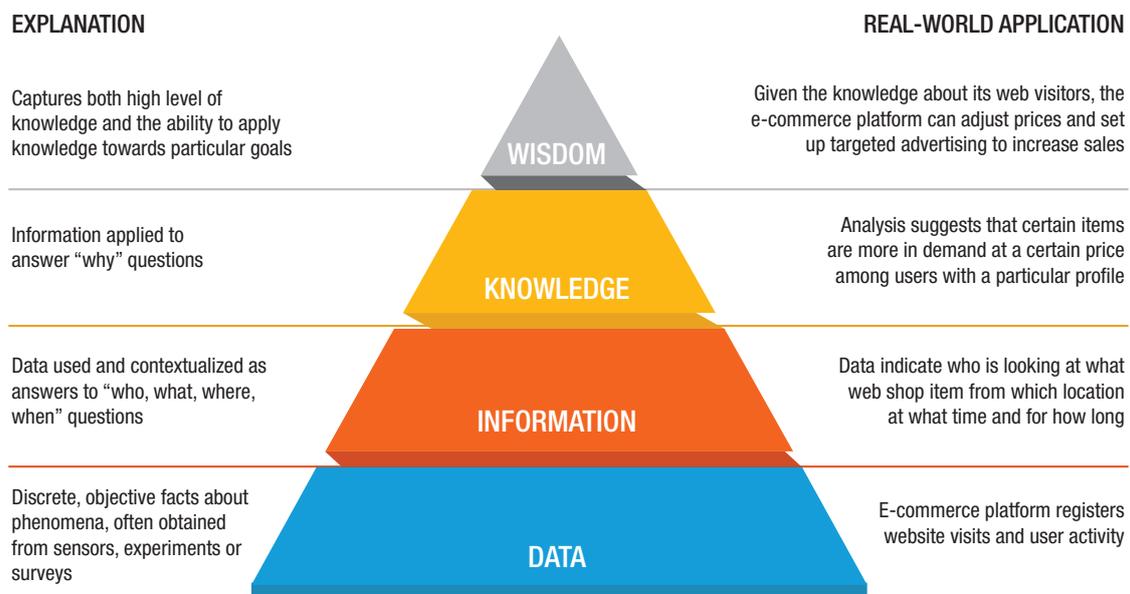
While platforms may operate across different sectors and facilitate a range of diverse activities, they share economic and governance characteristics around value capture. Larger multinational platforms generate economies of scale and scope; network effects; pricing strategies such as cross-subsidization across platform sides; and data capture and use. The increasing dominance and market power of such platforms is evolving in tandem with a rapidly changing regulatory landscape and highlights the need for nimble regulatory responses.

c. Data and digital intelligence

Firms have always collected, processed and analysed information on how their regular business operates and have used this information for a wide range of improvements, including enhanced productivity, improved customer experience, and tailored marketing and communication strategies. As the digital economy has evolved, it has become evident that the enormous amounts of data being generated could be used to provide commercially useful insights into the behaviour of consumers, at either the individual or group level. An “entirely new value chain has evolved around firms that support the production of insights from data, including data acquisition (to provide new sources of data), data storage and warehousing, data modelling and data visualization” (UNCTAD, 2019b:29).

There is often little distinction in the debate about different types of data and their uses. The data pyramid in figure III.2 therefore provides a useful framework for understanding real-world applications of data, information, knowledge and wisdom (UNCTAD, 2021b).

Figure III.2. The data pyramid



Source: UNCTAD (2021b).

As highlighted by UNCTAD (2019b), data have become an increasingly valuable economic and strategic resource. Even when digital platforms provide different products and services at no cost to merchants and consumers, transactions still generate value for platform owners. Just by using the platforms – even visiting a platform but not making a purchase – consumers provide platform owners with different aspects of their personal data such as location, preferences, relationships and personal behaviour. Although this information has little value on its own, representing nothing more than a series of isolated data points, value can be created when it is compiled in large volumes and processed to provide insights to enable data-driven decisions. This data intelligence can be used to better inform firms in their decision-making processes or to streamline and optimize production processes or supply chain logistics. Harnessing data in this way and using it to optimize processes saves time, money, energy and various other resources. It also gives those firms who successfully make use of data intelligence a significant competitive advantage.

d. Development implications of the data-driven economy

The growth of the digital economy can lead not only to many new economic and social opportunities but also to uneven impacts and negative spillovers (UNCTAD, 2019b). The digital economy can increase trade, foster innovation, create jobs and increase productive capacity. For example, e-commerce benefits businesses through greater participation in international value chains, increased market access and reach, and lower start-up and operating costs. Through the use of data generated from e-commerce, firms could also better meet the needs of consumers by offering customized products. For consumers, online shopping enables comparisons of prices, and features a wider range of products as well as more convenient options for the delivery of goods and services. Using the framework presented in the *Digital Economy Report 2019* (UNCTAD, 2019b), the potential positive impacts of the digital economy can be grouped under three broad dimensions.

Economic outcomes: Higher productivity and GDP; higher value added; increased employment; higher incomes; and greater domestic, regional and international trade.

Firm-level benefits: Lower transactions costs; more opportunities for skilled workers; greater opportunities for MSMEs; access to new domestic, regional and international markets; lower barriers to entrepreneurship; and access to new sources of financing for digital start-ups.

Consumer-level benefits: More variety and choice of goods and services at lower costs; convenience and customized or personalized products and services; and receiving goods and services more quickly due to fewer intermediaries.

Despite the potential of the digital economy to reduce inequalities between and within countries through development gains, there are several risks to consider. The dominance of global digital platforms, their control of data and their capacity to create and capture resulting value increases the concentration and consolidation of (market) power. The dominance of major platforms and data providers can distort the equal distribution of digital wealth and hinder both local value creation and capture as well as structural transformation. Digitalization can result in job losses, for example, or alternatively the accrual of value to those with higher levels of education and income. This may lead to increased inequality.

Large digital platforms may exercise their market dominance to extract monopoly or quasi-monopoly rents. In turn, this presents an imbalance of relative power between such platforms and local providers. It also risks reducing the choices for suppliers and consumers, and further eroding innovation and entrepreneurship in local economies. Dominant global platforms may leverage their monopolistic positions to reinforce their market dominance by entering new markets and integrating additional services, thus reducing competition.

Overall, the emergence of global online platforms has brought considerable benefits but it has also resulted in profound societal and economic impacts. The net impact on the economy is hard to predict but for particular groups, sectors and industries, it is likely to be uneven. The key goal then is to manage these economic forces and seize the technological opportunities through inclusive and fair practices across the whole digital ecosystem, while also minimizing the associated negative impacts.

e. Measuring value in the digital economy

Measurement of the digital economy and its impacts continues to grow in importance. This includes determining which activities can add the most value and how best to measure that value. Ideally, a country should be able to assess implications in terms of different economic variables, such as value added, employment, wages, incomes, prices and trade for the digital sector as well as for the broader sectors and industries affected by digitalization. Comparable statistical data are available mainly for the core digital sector but there are significant gaps in data for developing countries, including Pacific SIDS.

The *Digital Economy Report 2019* (UNCTAD, 2019b) noted that the transnational nature of major digital platforms also poses measurement challenges. For example, online platforms based in one country can facilitate transactions between buyers and sellers located in others. This makes it difficult for governments to obtain statistical information about the activities of digital platforms that are active in



countries where they lack a physical presence. Data on economic activity such as transactions on online marketplaces, for example, are seldom available.

Key measures of value addition in the ICT sector are well defined, with international classifications and indicators related to trade in ICT goods and services. However, there are very few internationally comparable statistics on the broad impacts of the digital economy. Although efforts have been made to measure the value added by e-commerce, or to determine digital spillover effects, these are usually one-time estimates developed by research institutions or private firms for a specific and often narrowly formulated objective.

3. Channels for value creation in developing countries

This section outlines how the digital economy can affect developing countries, focusing on the three value creation channels outlined below: platformization, e-commerce and value chain digitalization (UNCTAD, 2019b). It also covers the potential for value creation through trade in ICT goods and services, and through digitally delivered services.

a. Platformization

The growing use of digital platforms has upended the traditional model of producing goods and services through a set of linear activities that each add value. Instead, interactions on platforms have created an economic model that works in a circular manner where data and the interactions of different actors are the main resources and source of value.

Platformization does not necessarily exclude the existence of a supply chain but it does imply a shift in value creation towards the platforms themselves. This has important implications because the power of platform business models is partly related to their ability to enable firms to achieve economies of scale more rapidly. For example, it is possible for merchants on e-commerce platforms to grow their sales by harnessing the large numbers of network users but with limited requirements for building or investing in their own platforms.

Platformization will have important implications for developing countries. While both platform owners and users can create value, the distribution of value among different stakeholders tends to be highly uneven. Major platform owners are generally in a position to impose additional costs or fees on the firms using their platforms, and it is unclear if smaller firms in developing countries can reach wider markets through platforms.

b. E-commerce

E-commerce platforms are particularly relevant to value creation because they bring together a broad range of buyers and sellers, and provide opportunities for offering a greater variety of goods and services. Although a few global e-commerce platforms have benefited from economies of scale and network effects to capture significant market share, national and regional e-commerce platforms have also emerged. In developing countries, these local platforms may benefit from being able to provide more convenience for consumers through shorter shipping times, tailored payment options, products more suited to local markets and interfaces that provide greater affinity with linguistic and cultural nuances.

In some developing countries, the number of firms able to take advantage of these new platforms has expanded, with some firms shifting from generic production to building specific branded products for target customer segments. Despite the potential of e-commerce platforms to enable MSME access to new markets and consumers, more research is needed to understand how value is created and captured by various actors, particularly in those countries where global firms have a significant presence. Small firms in developing countries may be able to join platforms because of relatively low barriers to entry. At the same time, it is important to consider both the risk of platform lock-in and governance driven by the platforms themselves.



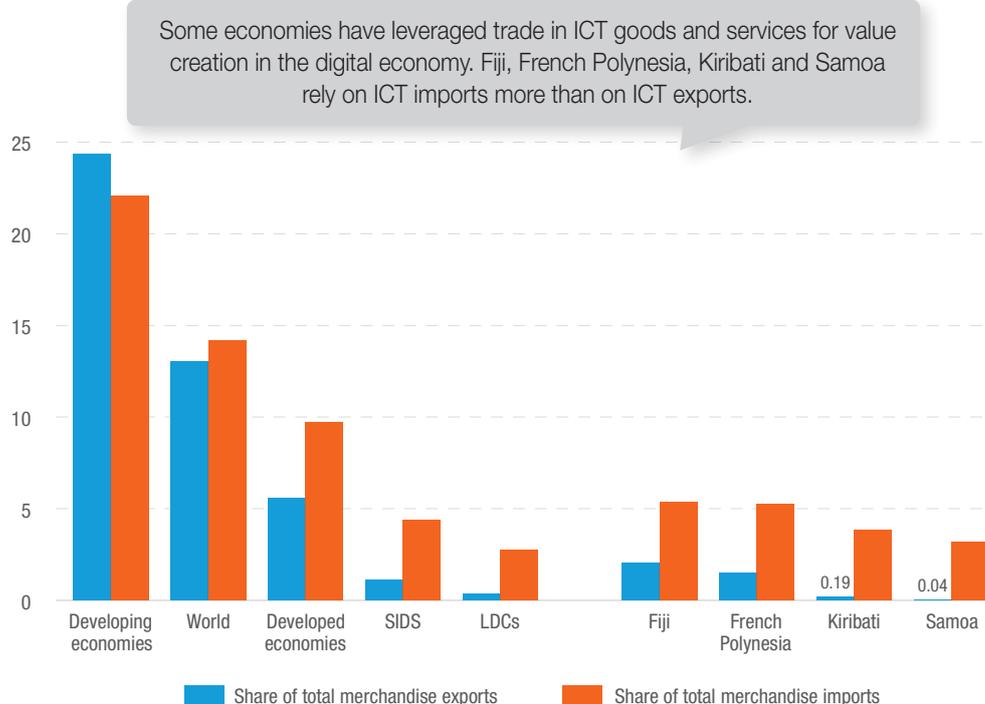
c. Digitalization of value chains

Increased digitalization is also affecting how value chains are governed, as data is now embedded in many value chain processes. For firms in most developing countries, modularized and servitized value chains are potentially less costly to administer and control (UNCTAD, 2019b). In addition, digitalization can reduce transaction costs in production. However, as goods and services become standardized and datafied, evidence suggests that the control of production shifts from smaller firms to leading supply chain organizers and retailers, as well as to major platform companies. The majority of countries operating in the global data value chain are unfavourably positioned as data suppliers. Many countries do not possess the capabilities nor the necessary digital infrastructure to monetize data. This imbalance could perpetuate the dependency on and centralization of value and data in only a few global platforms.

d. Value addition in the ICT sector, trade in ICT goods and services, and digitally delivered services

In some economies, value addition through manufacturing of ICT products or provision of telecommunication and computer services is significant. Employment in the ICT sector itself, as well as in occupations linked to the broader digitalized economy, also contributes to value addition. Some economies have leveraged trade in ICT goods and services for value creation. In the Pacific, available data indicates more of a reliance on ICT imports than on ICT exports (see figure III.3).

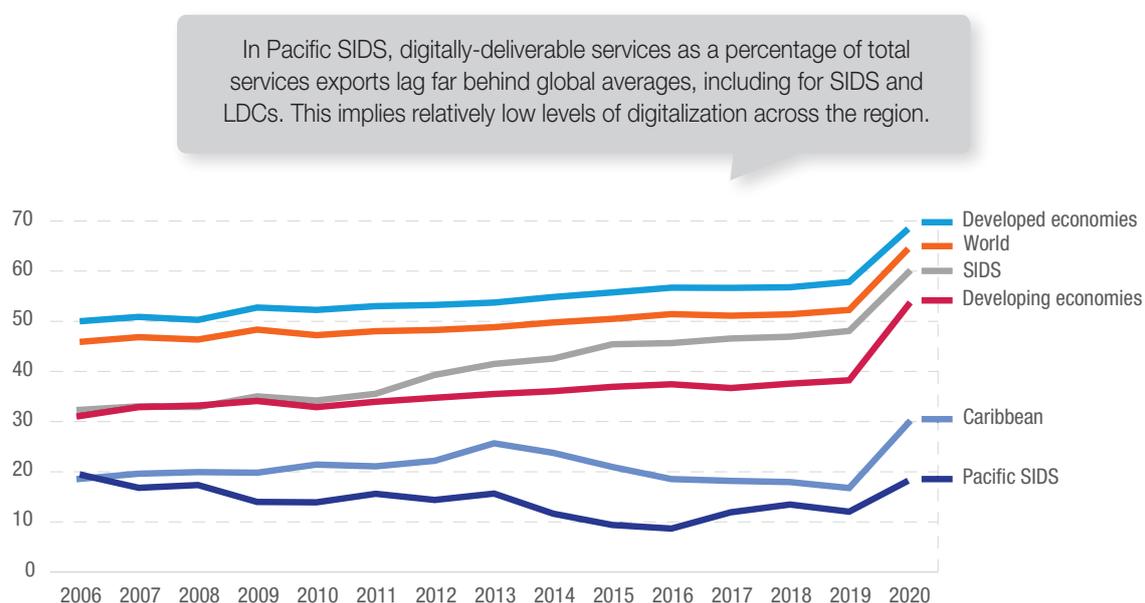
Figure III.3. Share of ICT goods in total merchandise trade, by country grouping and selected Pacific SIDS, 2021 or latest available year (Per cent)



Source: UNCTADstat (2022), available at <https://unctadstat.unctad.org>.

Notes: Country groups are of the source. 2021 concerns world and all the groups, Fiji and Samoa. 2020 data concern French Polynesia and Kiribati.

Figure III.4. Share of digitally-deliverable services in total services exports, by country grouping, 2006–2020
(Per cent)



Source: UNCTAD calculations, based on UNCTADstat (2022), available at <https://unctadstat.unctad.org>.

Note: World and country groups are of the source, except Pacific SIDS.

The digital economy also provides opportunities for more services to be ordered and delivered digitally. These digitally-deliverable services include insurance and pension services, financial services, computer and information services, and audiovisual services.⁷⁵ From 2005 to 2019, exports of digitally-deliverable services grew at a global average nominal rate of 12 per cent per year and at a rate of as much as 21 per cent in Asia (UNCTAD, 2022d). Although these services form a larger percentage of total services exports in developed countries compared with developing countries, all countries experienced significant growth in 2020, driven by the COVID-19 pandemic (see figure III.4). For Pacific SIDS, the proportion of digitally-deliverable services as a percentage of total services remains lower than in other country groupings, including LDCs and SIDS. This implies relatively low levels of digitalization across the region. This view is supported by the region's higher reliance on digitally-deliverable imports than on digitally-deliverable exports (see figure III.5).

B. DIGITAL PLATFORMS IN THE PACIFIC

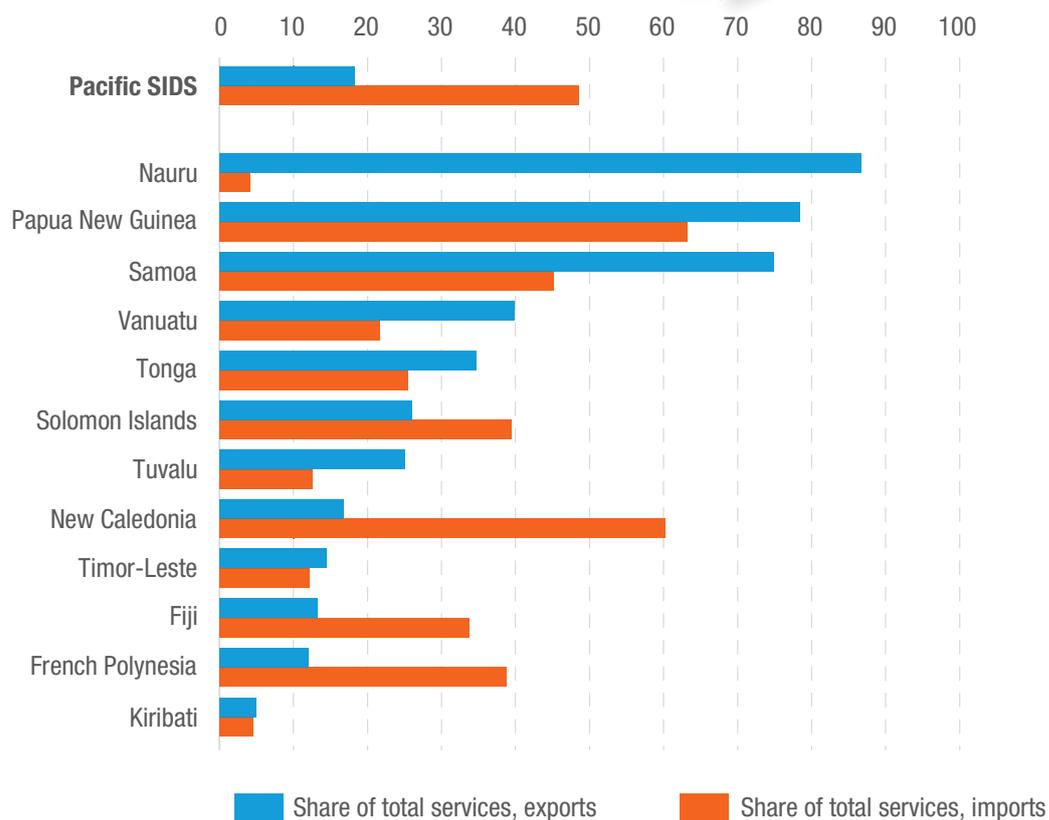
This section covers the growing prominence of the platform economy and examines the types of digital platforms present in the Pacific. Limited data and research material on digital platforms in the Pacific means the picture is inevitably incomplete. The information in this section serves as a starting point for understanding the role digital platforms currently play and will continue to play in the region.

1. The platform economy

A major feature of the digital economy is the rise of digital platforms that focus heavily on data and digital intelligence. Although platforms provide several benefits to consumers and businesses,⁷⁶ the rise and market dominance of a few global digital platforms have significant implications for developing countries in the early stages of digitalization. These platforms wield enormous influence and employ various strategies to strengthen and consolidate their market positions, including acquisition of existing or potential competitors and vertical integration into other sectors.

Figure III.5. Share of digitally-deliverable services in total services exports and imports, Pacific SIDS, 2021 or latest available year (Per cent)

The digital economy provides opportunities for more services to be ordered and delivered digitally in Pacific SIDS. These digitally-deliverable services include insurance and pension services, financial services, computer and information services, and audiovisual services.



Source: UNCTAD calculations, based on UNCTADstat (2022), available at <https://unctadstat.unctad.org>.

Notes: 2021 data concern Fiji, Nauru, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu and Vanuatu. 2020 data concern Pacific SIDS as a group, French Polynesia, Kiribati and New Caledonia. Pacific SIDS are the weighted average of the listed countries in the figure.

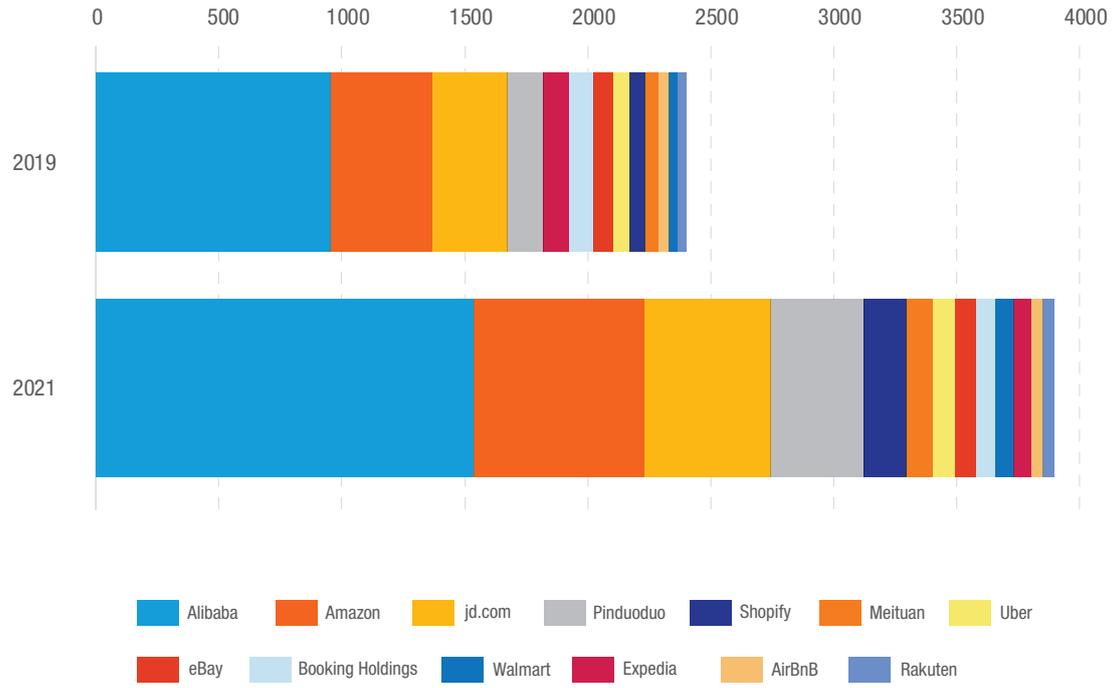
Globally, the biggest online platforms tend to benefit the most from the digital economy. The top consumer-focused e-commerce businesses, for example, significantly increased their revenues during the COVID-19 pandemic.⁷⁷ In 2019, these companies made sales worth \$2.4 trillion (see figure III.6). Following the onset of the COVID-19 pandemic in 2020, this rose sharply to \$2.9 trillion (not shown), and a further one-third increase followed in 2021, taking total sales to \$3.9 trillion (in current prices). The shift towards online shopping has further entrenched the already strong market concentration of online retail and marketplace businesses.

2. Digital platforms in the Pacific

Increasing levels of economic activity in the Pacific region occur on digital platforms. This involves digital payment platforms, social media platforms, messaging platforms, goods e-commerce platforms and e-commerce platforms oriented to services focusing on the tourism, entertainment and advertising industries. Remittances carried out on digital payment platforms play a particularly important role in some economies.

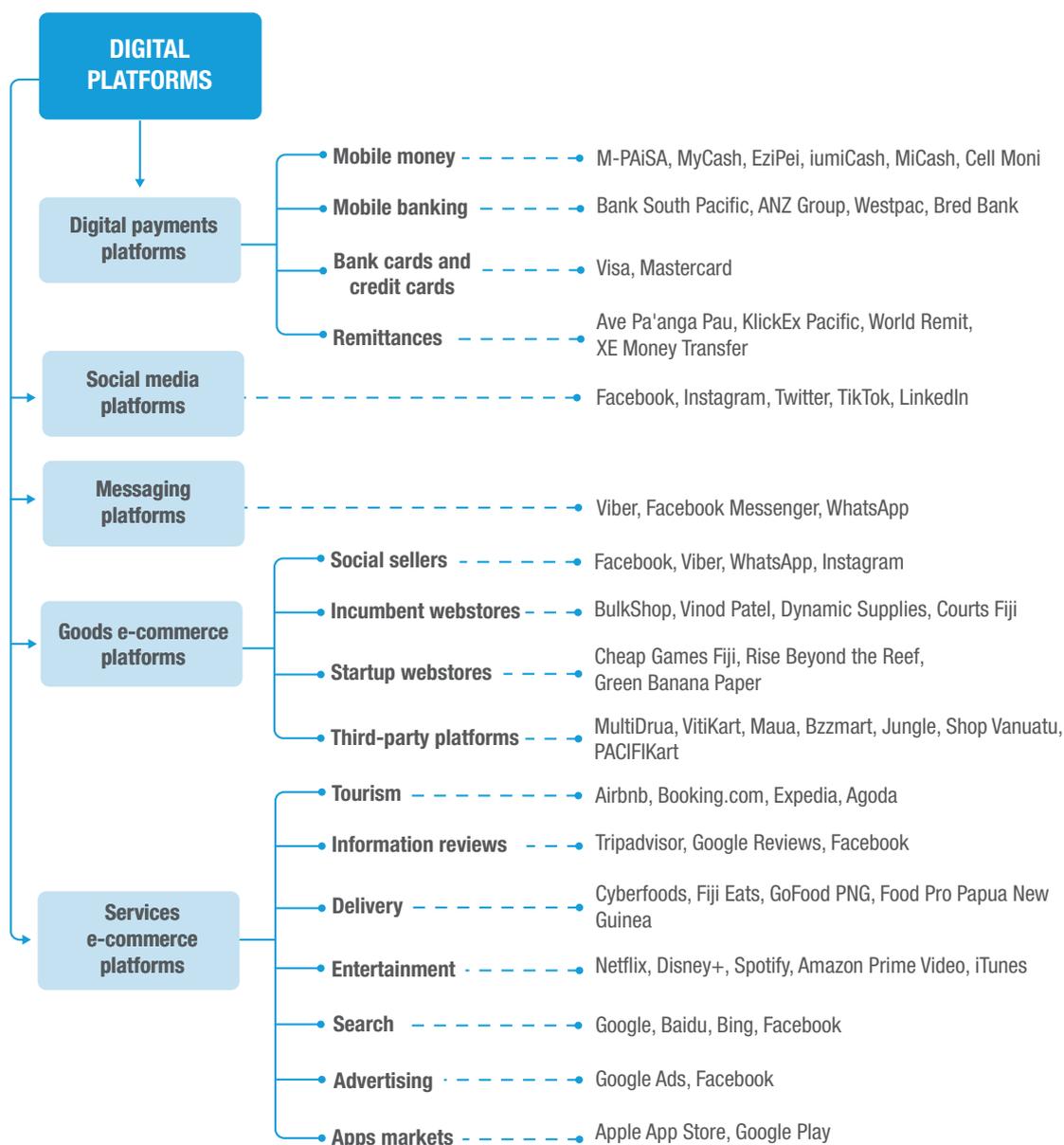
Figure III.6. Sales by major consumer-focused e-commerce businesses before and during the COVID-19 pandemic
(\$ billions, current prices)

The top consumer-focused e-commerce businesses significantly increased their revenues during the COVID-19 pandemic. The shift towards online shopping has further entrenched market concentration of online retail and marketplace businesses.



Source: UNCTAD (2022b).

Figure III.7. Snapshot of types of digital platforms in the Pacific



Source: UNCTAD.

The major types of digital platforms currently being used in the Pacific region are summarized in figure III.7. Given the lack of statistics and data on the use of these platforms, it was challenging to assess their role and impact in the region. The findings presented are based on desk research, interviews with platforms owners and operators, and discussions with development professionals in the region.

Digital payment platforms

Digital payment platforms in the region offer services related to payment by credit cards, debit cards, mobile banking and mobile money wallets. Very few people in the region have credit cards and most bank account holders still have cash cards that can only be used with point-of-sale devices and automated teller machines. In more developed countries in the region, these are slowly being supplanted by chip and pin debit cards that can be used online. Although mobile banking is offered by most major banks

in the region, uptake by customers remains low, with customers generally preferring to visit physical branches to carry out transactions or to withdraw cash. Mobile money wallets are emerging in several markets. Digital payment platforms are covered in more detail in section III.B.3.

Social media platforms

The dominant social media platform used in the region is Facebook – and to a lesser extent Instagram – both of which are part of parent company Meta. In most countries, Facebook has evolved to become the primary online source for news, information and online marketing, and is used as an outreach tool for individuals, businesses and organizations. For example, the number of Facebook active user accounts represents approximately 60 per cent of the population in Samoa (users may have more than one account) with other countries in the region also exhibiting similarly high usage rates.⁷⁸

Messaging platforms

Messaging platforms have been widely adopted in the Pacific region. In addition to day-to-day communication with friends, family and work colleagues, these platforms have evolved into informal commercial tools that bring together buyers and sellers. Informal and formal sellers use one or more messaging apps to communicate product information to buyers and to arrange collection and payment. Viber has established itself as the dominant messaging app in the region, while other instant messaging applications such as WhatsApp and Telegram have had minimal penetration. Facebook Messenger is also widely used for communication in the region.⁷⁹

Goods e-commerce platforms

In most Pacific SIDS there are no goods e-commerce platforms. This is true for both B2C and business-to-business (B2B) platforms. In the more developed economies of Fiji, Samoa and Papua New Guinea, there are a few goods e-commerce platforms that host merchants. Merchant numbers on these platforms are relatively low, ranging from approximately 5 to 100 merchants.⁸⁰

The most promising goods e-commerce platforms in the Pacific region appear to be those where individual merchants can sell their products directly to consumers, such as VitiKart (Fiji) and Maua (Samoa); and food delivery platforms that allow restaurants and food retailers to benefit from a third-party delivery provider. The large goods e-commerce platforms primarily sell food, household items, electronics and other consumer products, while smaller niche platforms sell artisanal products such as soap and jewellery. More analysis of the goods e-commerce platforms will be covered in Section III.C.

Services e-commerce platforms

The number and scale of services e-commerce platforms in the Pacific remains relatively low, with activities concentrated in a few large domestic markets. Service-based platforms are characterized by low entry costs and resource requirements, but uptake has not been widespread in the Pacific region. Most global service platforms, such as Uber, Didi Chuxing and Upwork, are not active in the region. Notable exceptions are found in tourism, entertainment and advertising.

Tourism platforms

The presence of global tourism e-commerce platforms in the region reflects the importance of the sector for some Pacific economies. Fiji and, to a lesser extent, Vanuatu, Samoa and Tonga have established themselves as significant tourism destinations. Most major hotels in these countries feature prominently on a range of platforms including Booking.com, Expedia, Agoda and more.

Airbnb also has a presence in almost every Pacific country, with most properties listed in the countries that receive the most tourists. A generic search in September 2022 brought up 685 Airbnb properties in Fiji but only 40 properties in Solomon Islands. This dynamic is also evident with platforms focusing on formal hospitality businesses, such as Booking.com (see table III.1).

Tourism is a major source of income for several economies in the region and many tourists who visit the Pacific are from areas of relatively higher e-commerce usage. For these reasons, tourism-based e-commerce platforms are seen as an entry point for digitalization. In 2021, the Government of Vanuatu launched a national booking platform with support from the Government of Australia. The platform brings together merchants from different parts of the tourism industry value chain (accommodation providers, tour operators and restaurant owners) to advertise and manage their business listings through



one e-commerce tourism hub. A by-product of the large numbers of tourists visiting certain destinations in the region is that information and review platforms such as Tripadvisor also cover many of the most popular hospitality venues in the region.

Entertainment platforms

Improvements in broadband connectivity and lower related costs in some countries in the region – such as Fiji – are creating new opportunities for entertainment platforms. These platforms typically do not depend on large user bases in any particular market and companies such as Netflix, Disney +, Spotify and a number of other streaming services have started making inroads in the region. Telecom Fiji, for example, markets its broadband packages as being ideal for watching Netflix.⁸¹ However, it is likely that widespread uptake of these data-intensive entertainment platforms will be limited to the few countries in the region that have affordable broadband and average incomes in line with the subscription costs. It should also be noted that the launch of these streaming services is often dependent on local partners able to host the service on their network.

Online advertising and search platforms

Online advertising and search functions are also dominated by a small number of global players. Facebook's dominant position in the region means that it plays a central role in advertising for both formal and informal actors. Large commercial players invest significantly in targeted advertising on the platform, while informal businesses also seek to attract customers by advertising their goods and services across a wide variety of Facebook groups. Google Ads is another major player in regional advertising, in part because of the dominant position of the Android App store, which caters better to lower-cost phone models that are popular in the region.

3. Digital payments platforms

Although digital payments solutions in the Pacific region are still emerging, the past few years have seen significant acceleration. The COVID-19 pandemic in particular increased awareness of the benefits of digital payments and mobile money, which have the potential to serve as a platform for enhancing digital literacy and further digitalization of economies. Currently, only Fiji and Papua New Guinea have one or more online payment gateways due to the requirement by most banks in the region to have a minimum number of transactions per year.⁸² The odds of reaching these thresholds are low in relatively small markets because not many customers have the cards required to purchase goods and services online.

This gap in the market is partly being filled by mobile money wallets, primarily operated by Vodafone and Digicel – the two main mobile network operators (MNOs) in the region. These tools were initially developed as a means of transferring money using phone credit and have now been launched in most countries in the region.⁸³ They have the advantage of being able to leverage the large customer bases and extensive agent networks of parent companies. Some mobile money products, such as M-PAiSA in Fiji and Cellmoni in Papua New Guinea, have gone a step further and developed features that allow full integration with e-commerce platforms using a two-step verification system that mimics how credit

Table III.1. Number of hotels on Booking.com for selected Pacific SIDS, September 2022

Country	Number of hotels on Booking.com
Fiji	117
Vanuatu	54
Papua New Guinea	36
Samoa	18
Tonga	8
Solomon Islands	6
Tuvalu	0
Kiribati	0

Source: UNCTAD, based on Booking.com platform, search conducted in September 2022.

Note: There may have been results that did not show up due to being fully booked or unavailable for other reasons. The search was meant to provide a general idea of how many hospitality businesses in the Pacific use global digital platforms.

cards operate. However, these remain concentrated in a few larger markets and many of the smaller countries do not currently have payment tools that are compatible with e-commerce.

Mobile money products are capturing a greater market share in their existing markets and MNOs are developing new mobile money services even in countries with existing products. For example, in Solomon Islands, the leading MNO – Our Telekom – plans to roll out a mobile money wallet in 2023 even though two mobile money wallets currently exist (EziPei and iumiCash). Early mobile money wallets in the region faced several challenges. This resulted in very gradual uptake but also allowed MNOs to refine their strategies and develop a pool of people with the required skill sets. The two main MNOs in the region drew on the experience and rolled out improved products with more features and at a lower cost than the original versions.

Some governments in the Pacific, notably Fiji, also embraced mobile money wallets as a platform to cost-effectively collect fees and disburse welfare payments during the COVID-19 pandemic. While this is a step in the right direction, there is room to do more. M-PAiSA found that the vast majority of customers who received assistance chose to withdraw the full amount in cash from a Vodafone outlet, resulting in large queues at the peak of the pandemic.⁸⁴ Measures to encourage recipients to spend or transfer money digitally would help build digital literacy and introduce people to the benefits of digital financial services.

Remittances

Remittances are a large source of income in Pacific SIDS, averaging 4.5 per cent of total GDP in 2020.⁸⁵ This trend is largely explained by the region's high emigration rates and seasonal employment. Remittances are an important source of finance and foreign exchange, with countries such as Tonga and Samoa receiving 39 per cent and 25 percent of their GDP, respectively, in remittances in 2020 (see annex table 2). Digital transformation has reshaped overseas money transfers and there is strong interest in how digital platforms can continue to make these payments affordable, agile, reliable and accessible to all.

The cost of sending remittances in the Pacific remains high. For Pacific SIDS with available data (Fiji, Samoa, Tonga and Vanuatu), the average cost of sending remittances (expressed as a proportion of \$200 worth of remittances) was 7.97 per cent in Q2 2022 – higher than the global average cost of 6.01 per cent in the same period.⁸⁶ The least expensive way to send and receive is through mobile money services (World Bank, 2022).⁸⁷ For Pacific SIDS, the cost of sending remittances by type of service provider was cheaper via money transfer operators (6.90 per cent) as opposed to banks (10.13 per cent).⁸⁸ No statistics are available on mobile money transfer costs in the Pacific.

The general view in the Pacific is that the cost of remittances remains high due to the low value of transactions in addition to obligations related to anti-money-laundering and combatting the financing of terrorism measures for both the sending and correspondent bank. Nevertheless, the rise of digital platforms and increasing use of mobile-based payment channels are likely to reduce remittance costs and potentially increase the role of remittances in some Pacific economies. A shift towards online transactions and digital remittance channels is emerging, with policymakers seeking to provide an enabling environment that fosters digitalization of remittances but also reduces potential risks.

Demand for digital remittances will continue to increase with the convenience, reduced costs and growing popularity of payments through digital platforms. Remittances have the potential to advance inclusive societies by contributing to improved food security, health, education, housing and sanitation, in addition to financial inclusion outcomes. By expanding the source of revenue to migrants' families, the digitalization of remittances could help bring about a host of economic and social benefits. This would provide impetus towards achieving several of the SDGs, including on quality education, decent work and economic growth, and reduced inequalities. Low-income populations living in rural areas and those in vulnerable situations – such as women and girls, youth, persons with disabilities, indigenous communities and other marginalized groups – could use digital platform payments to improve economic and social outcomes.



C. E-COMMERCE IN THE PACIFIC

E-commerce is emerging as a key aspect of the digital economy in the Pacific region. This section summarizes emerging e-commerce trends and business models in the region and proposes a model for understanding where businesses in the region are on their e-commerce development paths.

While the trends explored below provide a picture of the e-commerce landscape in the region, more robust data and statistics on the level and depth of e-commerce activity in the region would be required to inform effective policymaking. This research could be carried out by governments, academic institutions (including research universities), development partners and other organizations. The e-commerce platforms themselves can also play a key role by providing researchers with access to relevant data and information, as is the case with some global platforms.

1. Regional trends

E-commerce – the sale or purchase of goods and services over the Internet – has the potential to be a powerful driver of inclusive growth, trade and innovation. Although official statistics and data on the level of activity are not available, research carried out by UNCTAD for this report revealed relatively low levels of e-commerce activity across the Pacific region. The online commercial activity that does take place tends to occur on social media or through communication platforms, with cash on delivery as the primary payment model. Select regional trends are highlighted below.

a. Global business-to-consumer e-commerce platforms have yet to penetrate Pacific markets

Global B2C e-commerce platforms include some of the most familiar company names in the world but the Pacific is one of the few remaining regions where they have yet to build a significant customer base. Transaction data are difficult to obtain but most products on popular platforms such as Amazon and JD.com do not offer delivery to the Pacific and, where they do, delivery costs often exceed the cost of the item. Larger remote markets, such as Australia, have local versions of Amazon and eBay to reduce logistical hurdles but there is no such equivalent in the Pacific.

The lack of market penetration in the Pacific region could be because third-party e-commerce platforms depend on high sales volumes and optimized payments and logistics solutions to deliver value to their marketplace merchants and to provide cost savings and convenience to consumers. Implementing a high-volume e-commerce model in the Pacific would be difficult for any company but particularly for those from outside the region. Long distances between customers in the Pacific region and producers or warehouses in North America or Asia, and low numbers of flights to and from the region, mean that airfreight prices are high. Sending small packages by sea – even from neighbouring regions – takes over a month and features high transaction costs.

b. Most business-to-consumer and consumer-to-consumer online commercial activity takes place on social media

Significant commercial activity in the region occurs on Facebook, where various groups bring together buyers and sellers in informal online marketplaces (see also box III.1). Every country in the Pacific has at least one Facebook buy and sell group with subscriber numbers that exceed 10 per cent of the national population.⁸⁹ These can be either product- and sector-specific, region- or city-specific, or general groups where any goods or services can be advertised. For example, a general buy and sell group in Honiara, Solomon Islands, had 87,000 members in October 2022 and hundreds of posts per day.⁹⁰ Similarly, the group Cars for Sale in Fiji had 124,000 members and nearly 5,000 posts in September 2022.⁹¹ While these are among the larger Facebook groups in each country, they are not outliers. Across the region, Facebook hosts a multitude of dynamic buy and sell groups with extremely large followings. Fiji alone has over a dozen groups, each with more than 50,000 members.

Facebook has a strong presence throughout the region as a convener of news, information and commercial activity. In 13 Pacific SIDS, the number of Facebook user accounts exceeds 40 per cent of the total population (see figure III.8).⁹² This widespread presence, coupled with the lack of dedicated international or regional e-commerce platforms, means that Facebook has also become a key platform for businesses. Businesses throughout the region tend to prioritize their Facebook



page and presence above their dedicated business web pages and use Facebook primarily as a way of keeping customers updated about new products and services. Some entrepreneurs and small businesses also use communication platforms like Viber and WhatsApp to advertise their products and to meet and negotiate with customers.

Box III.1. Social media provides an avenue for online business for microenterprises in Solomon Islands

Salita Bako is an avid gardener in Auki, the second largest city in Solomon Islands. She specializes in growing tropical anthurium plants and this year decided to try and use her skills to supplement her income. Earlier in the year she had propagated anthurium plants that had now rooted, matured and were ready to sell.

Salita had never sold goods online but as a long-time member of a number of buy and sell groups on Facebook, she knew exactly what to do. Despite living in Auki, she knows that the Buy and Sell in Honiara group is among the largest in the country and would include plenty of people in Auki. She took a number of photos of the flowering anthurium plants and posted them on the group with the title Anthurium Flowers. As a description, she added simple instructions in Pidgin: “inbox if you interested”.

That same day, Salita was contacted by 10 people asking her for the prices of the anthuriums, how many she had available, where they could be collected and more. She replied to some questions in the comments section of the post but sent prices by private message to each prospective customer.

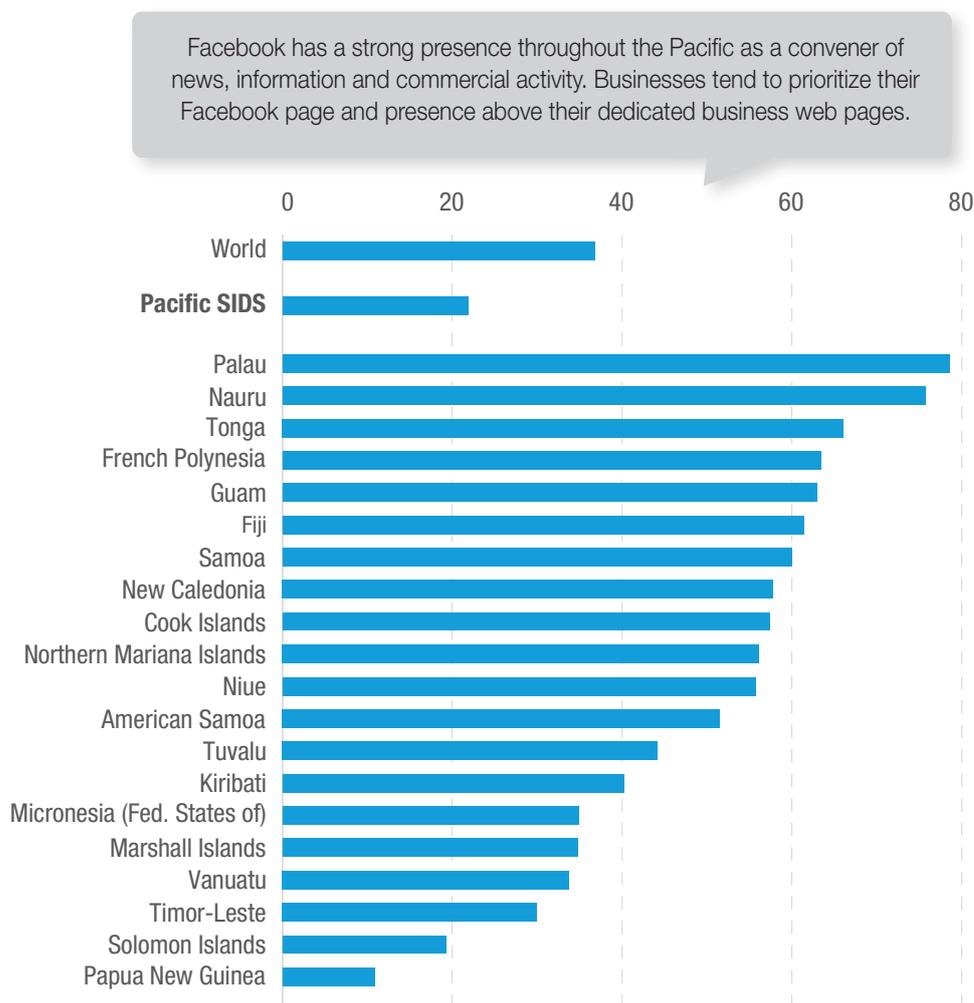
Facebook group forums show the identity of the interested parties and many of them knew each other. Two even started a short parallel conversation in the comments of the Anthurium page. “Payim den sharem”, said one contributor to another, receiving a highly amused response. Within two days Salita was contacted by 24 buyers and had to regretfully inform the last potential buyers that she had sold out.

The sheer number of users on these buy and sell groups means that they are a highly effective way for informal merchants to sell their goods with almost no transaction costs. The fact that Solomon Islands has few delivery options outside of Honiara and no digital payment tools means that there are few incentives to shift to dedicated e-commerce platforms, which are likely to have fewer users and higher transaction costs. As e-commerce develops, however, Facebook forums can be especially effective in supporting the growth of future Pacific e-commerce businesses, allowing aspiring entrepreneurs to develop commercial, digital and financial skills. Additional support, including through training in digital skills, financial literacy and entrepreneurship, would add a significant boost to MSME growth through e-commerce.

Source: UNCTAD, based on interview with Salita Bako.



Figure III.8. Facebook user accounts, by selected country groupings and Pacific SIDS, 2022⁹³
(Per cent of population)



Source: UNCTAD calculations, based on Datareportal reports (global and per country), available at <https://datareportal.com/library> (accessed 16 February 2022).

Note: The user numbers reported by social media platforms are typically based on active user accounts and may not represent unique individuals. For example, one person may maintain more than one active presence on the same social media platform (i.e. "duplicate" accounts).

c. Global business-to-business e-commerce platforms are emerging in selected industries

Platforms selling directly to customers have made few inroads in the Pacific and have not developed into a competitive alternative to brick-and-mortar retail stores. However, wholesale e-commerce platforms have emerged in some regional markets. Some retailers in Fiji, for example, source cheaper alternatives to branded products from Alibaba, primarily in the electronics and hardware sectors. The B2B e-commerce platform connects overseas manufacturers with domestic suppliers and offers a service guarantee that gives Pacific merchants the confidence to pay directly via bank transfers. The platform is then able to arrange shipping through logistics companies with agents based in Fiji. By focusing on larger transactions, B2B platforms such as Alibaba are able to overcome some of the cost constraints inherent in operating in the small markets of the Pacific.

One notable example of a B2B platform that is active in the Pacific region is the Japanese Used Motor Vehicles Exporters Associations auction platform.⁹⁴ Approximately 85 per cent of vehicles in the Pacific are imported secondhand, mostly by local car dealers, with the vast majority coming from Japan.⁹⁵

This volume of trade is made possible by such digital platforms that allow customers to place bids through agent sites and participate in every vehicle auction in Japan. Through the platform, customers can access specifications, photos and independent inspection reports as well as historical data for the particular make and model of the vehicle. Other online platforms such as Trade Car View, Be Forward and SBT Japan also provide opportunities for consumers to search for and purchase used cars from Japan for delivery in the Pacific. These investments in digital platforms have generated substantial trade flows, with two dedicated car carrying vessels stopping in most islands in the region.⁹⁶ Vehicle import data for Fiji is available through the Fiji Revenue and Customs Service and these figures illustrate the scale of the trade.⁹⁷ In the third quarter of 2021, Fiji imported 1,200 vehicles and over half were secondhand.

2. Emerging business models

The types and models of e-commerce emerging in the Pacific look quite different from traditional models present in other regions at similar levels of development. The notable absence of global e-commerce platforms in the Pacific has left a vacuum that local merchants and digital platforms have filled in different ways. Five broad trends have emerged: informal businesses seeking to build on the use of social-media-based trade; retail leaders developing stand-alone web shops; online marketplaces that seek to replicate and localize the services of global platforms; online marketplaces for domestic markets; and niche platforms focused on exports.

a. Informal businesses leveraging social media to transition to formal business

There are early signs that some of the most successful sellers on social media are beginning to transition to the formal economy. One example is Cheap Games Fiji, whose founders started selling used video games on Facebook that relatives had brought back to Fiji. As demand grew, the founders established their own Facebook page and started deploying social-media-based advertising and search engine optimization strategies. This helped increase sales and they realized that the Facebook platform was insufficient to run a fully fledged business. Cheap Games Fiji then developed a dedicated web shop and began integrating global wholesalers into their supply chain.

Social media platforms will continue to be valued for fostering online inclusion and serving as an entry point for many online sellers (see also box III.2). They offer a low-risk way of identifying demand and testing strategies to meet it. They are increasingly a key driver of enhancing online entrepreneurship opportunities and digital skills development.

Enterprises' and individuals' transition from informal social media platforms to e-commerce platforms will take time. There are still only a few examples of Pacific businesses that have achieved the scale required to succeed as a formal online business. Typically, informal businesses that transition to dedicated online platforms have an established customer base and product line along with the digital literacy required to launch the platform. In countries with well-established digital financial services, businesses can reduce their costs and improve their service by using dedicated e-commerce back-office services like Magento, Shopify or WordPress. Even with dedicated web shops, however, social media platforms continue to be of value in terms of marketing and customer base potential.

b. Retail leaders developing stand-alone web shops

Throughout the Pacific region, dedicated online stores that complement a brick-and-mortar business have been among the first formal e-commerce businesses to emerge. Retailers with an online presence are typically industry leaders and have the global exposure and resources required to develop their own online platforms as well as the expertise needed to integrate enterprise resource planning and stock management systems into e-commerce platforms.⁹⁸

Several sophisticated online stores have been established in the region despite the overall e-commerce ecosystem being relatively underdeveloped. Examples include Bulk Shop⁹⁹ in Solomon Islands, Dynamic Supplies¹⁰⁰ in Vanuatu and Vinod Patel¹⁰¹ in Fiji. These online stores feature thousands of products in countries without widespread use of digital payment tools or efficient nationwide delivery logistics solutions, and are part of a broad trend of incumbent retailers who have developed impressive online presences well in advance of broad market demand.



Box III.2. Makeki Online leverages social media in Samoa to grow customer base for standalone web shop

Makeki Online was established in 2014 with the goal of offering Samoans services similar to those offered by global e-commerce platforms like Alibaba and Amazon. However, it has had to adapt its business model to the realities on the ground in Samoa, and its journey illustrates a number of the challenges faced by digital entrepreneurs across the region.

One of the primary challenges for independent platforms is the huge influence that Facebook wields in the region. Makeki Online's founder Nitrous Mose laments the fact that most people in Samoa equate the Internet with Facebook only, which makes it difficult for independent platforms to gain traction. Rather than fight this, Nitrous and his team have tried to build up a customer base on their Facebook page and will seek to harness the loyalty of customers on a dedicated platform or app when the time is right.

The business currently has over 12,000 followers and its website is under construction. While Nitrous is excited at the prospect of establishing a dedicated e-commerce platform, he is also aware of the difficulty of getting people to shift browsing habits. Even when Makeki's platform is operational, the plan is to ensure that its Facebook group remains active to gradually ease customers to the new format and to attract new customers who might not know about the website.

A second challenge it is facing is the lack of online payment solutions in Samoa. The lack of a credit card payment gateway and low uptake of mobile money solutions make (lack and low uptake) it very difficult to settle transactions on the platform itself. This makes it challenging to put in place the commission-based business models that have allowed global platforms to grow so rapidly.

The Makeki Online team currently generates most of its revenue through advertising and working with merchants on a commission basis to promote new products and deals. It will try to use locally available mobile money wallets but even Nitrous is not convinced that people will use them because it is just not as simple as taking out your card, entering the details and pressing 'pay'. As a result, the avenues available to Makeki Online to grow the business remain limited.

Source: UNCTAD, based on interview with Nitrous Mose, founder of Makeki Online.

Anecdotal accounts suggest that the turnover on these single-merchant web shops has been relatively low.¹⁰² These early moves into the e-commerce area may seem premature in countries with modest digital financial services and limited smartphone penetration. However, the potential benefits of entering the digital space early need to be weighed against the costs of developing these platforms. Unlike with online marketplaces, single-merchant web shops do not need external buy-in from merchants to create a fully functional web offering. Once the investment in enterprise resource planning software has been made, uploading product information onto the web shop and reconciling stock is relatively simple.

For businesses that have embarked on this path, online sales may be the only obvious avenue for growth in the small markets and limited urban centres of the Pacific. Adding complementary services to their core business appears to be one way that businesses have identified to grow their market share. Early investment in web shops also positions these businesses to capitalize on future growth opportunities in the digital economy.

c. Replicating and localizing the services of global e-commerce platforms

Some local e-commerce platforms have tried to meet the needs of informal businesses that predominantly use social media platforms by developing alternative local e-commerce platforms that offer a similar environment but are tailored to the unique needs of informal merchants. The most prominent of these is the Maua app in Samoa, which was developed with much of the same functionality and feel as Facebook to ensure that target customers and merchants would be comfortable using it. While the app can accommodate most products and services, it was initially designed to give small local vendors in the agricultural and food sectors a digital presence and platform to sell their products. The app allows



merchants to pre-sell their products, and they then harvest or produce based on customer orders. This results in less waste and reduced time spent at markets or independent stalls.

Hello Vanuatu – a recently developed digital platform based in Port Vila – has gone one step further. In addition to e-commerce features developed with local producers in mind, it offers many features inspired by global media platforms and allows users to chat, and share photos and experiences. It is in some ways a basic version of the app-for-everything trend seen in other regions (WeChat in China and LINE in Southeast Asia). It even offers access to local lenders to fund purchases. Unlike many global platforms, Hello Vanuatu's target audience is exclusively local – the app is in Bislama (Vanuatu Pidgin English) and requires a Vanuatu telephone number to register.

d. Online marketplaces for domestic markets

While some platforms have looked to build on local trends (see also box III.3), others have instead sought to replicate successful e-commerce business models from other regions. The absence of global online marketplaces (such as Amazon or Alibaba) has left clear niches that local businesses in more mature markets have sought to occupy, particularly for goods- and food-based platforms. These have primarily emerged in Papua New Guinea and Fiji, which are both larger markets with more developed digital financial services.

Box III.3. International remittances drive new e-commerce business models in the Pacific

While most web shops in the Pacific follow a familiar model that offers products to domestic online customers, some have looked to capitalize on financial trends that are unique to the region. International remittances account for a significant proportion of GDP across the region, with the highest being Tonga at 39 per cent of GDP and Samoa at 25 per cent of GDP in 2020.¹⁰⁵ Because of the underdeveloped nature of many Pacific financial systems, sending money home to relatives can be very costly for diaspora communities, with commissions averaging 10 per cent of the transaction amount. This has led to the emergence of web shops and platforms that allow customers abroad (typically in Australia, New Zealand and the United States) to use foreign credit or debit cards to purchase goods from retailers located near their families in the Pacific. The family can then physically collect the goods from the local retailer.

This model of purchasing from outside the region and picking up inside the region is a unique form of e-commerce. In Fiji and Tonga, for example, PacifiKart is widely used in this manner, while Samoa has several online shops that allow diaspora members to buy products for their families. The most common items purchased by the diaspora for their families in Samoa and Tonga are food, white goods and hardware. The focus on food suggests that people abroad use these services as a way of providing regular support to their families rather than one-off payments or gifts. The remitter can avoid the transaction costs typically associated with sending money home, while also having a say in what the funds are spent on.

Source: UNCTAD.

Online marketplaces, such as Jungle and BzzMart in Papua New Guinea and VitiKart in Fiji, have each onboarded over 20 merchants – mostly well-established local retailers – and offer multiple payment options (credit and debit card, mobile money or cash on delivery) as well as the option for either delivery or collection. Most online marketplaces in the region are well-financed corporate initiatives. In some cases, they also receive government support in the form of subsidies¹⁰³ and tax breaks, and advertise extensively across multiple channels including television and on the Internet. VitiKart, for example, was established in 2020 by Vodafone and sells physical goods across a range of food and non-food categories, and delivers items throughout Fiji. It primarily encourages payments through M-PAiSA – the mobile wallet operated by their shared parent company Vodafone – as well as credit and debit cards issued by Visa and Mastercard.

Both Papua New Guinea and Fiji also have food delivery platforms featuring most of the best-known venues in the cities where they operate. Fiji Eats – a food delivery business where orders can be placed online – has an app offering most of the features of globally recognized brands. It has also



incorporated a sophisticated delivery mechanism, with the online application alerting nearby affiliated taxis and providing them with precise collection and delivery instructions.

While it is difficult to gauge the commercial viability of these platforms, one indicator that can be used to assess the evolving appetite for online marketplaces is the number of merchants onboarded. Since mid-2021, the more established platforms in the region have roughly doubled the number of merchants that sell goods on their platforms.¹⁰⁴ This suggests that merchants are increasingly aware of the potential of e-commerce to grow their business and that second-tier merchants are starting to make their initial forays online. Some of the growth could be attributed to changing consumer and business behaviour in some countries due to movement restrictions during the COVID-19 pandemic.

e. Niche e-commerce platforms focused on exports

Export-focused e-commerce businesses have also started to emerge in the Pacific, providing local producers ways to access regional and international markets. Whereas platforms focused on domestic markets like Maua (Samoa) and Hello Vanuatu have a strong agricultural and food focus, export-focused platforms focus on higher-priced durable goods, particularly handicrafts and boutique products like soap, earrings and artwork. These niche e-commerce businesses often place an emphasis on sustainability and the unique Pacific aspect of their products. At the same time, they recognize that it may not be feasible to compete on price with larger producers in other regions. Rise Beyond the Reef – a social enterprise that provides jobs to rural women artisans in Fiji – provides shipping options to most countries in North America, South America, Europe and the Middle East. Green Banana Paper in the Federated States of Micronesia uses locally sourced banana trunks and converts them into durable and eco-friendly vegan wallets, and ships globally using the United States Postal Service.¹⁰⁶ These platforms have primarily emerged in tourism destinations.

In some instances, these niche e-commerce businesses are based on groups of producers in a particular region, with the online platform developed to give producers an online presence both for their existing customers and to attract new customers. Examples include the Fiji Community Market e-commerce platform, which emerged from a monthly flea market in Suva selling handicrafts from local artisans; the MultiDrua e-commerce platform whose founders started on Facebook and then developed their platform to market locally made Fijian products primarily to international markets; and Shop Vanuatu which is a platform for local artists and artisans targeting primarily foreign customers. A selling point for these export-focused e-commerce platforms is that they allow smaller merchants to overcome the significant payment and logistics hurdles that exist in the region.

3. E-commerce development ladder

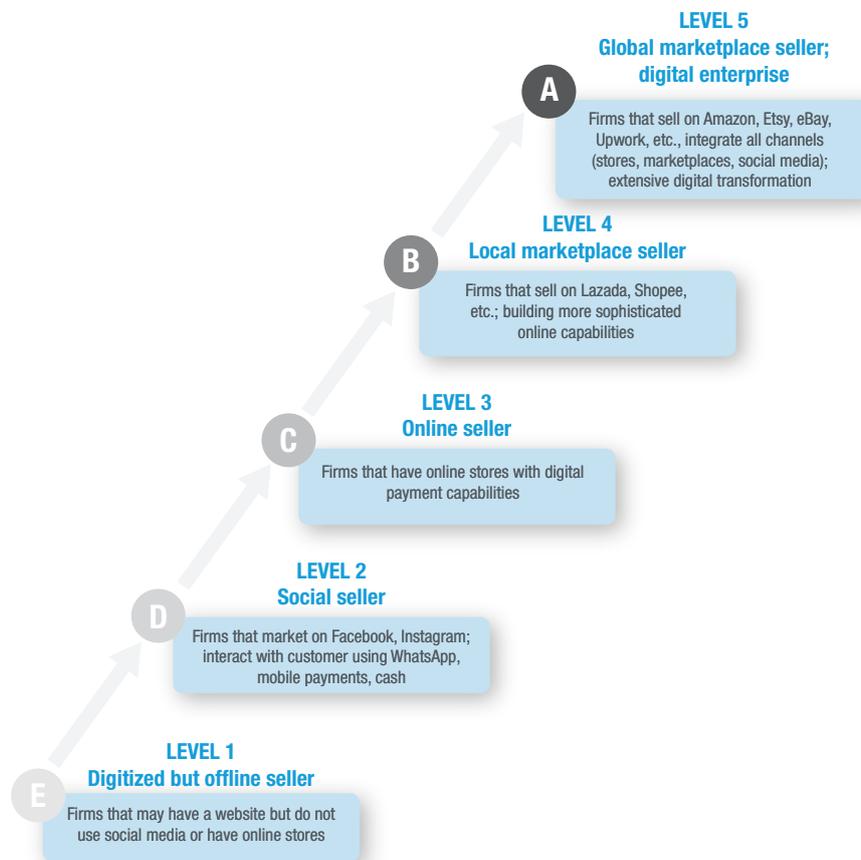
From multinational firms selling thousands of products a day to a small firm advertising and taking orders via social media, the diversity of e-commerce business models is very broad. Nextrade Group (2021) has mapped out five stages of growth for any firm engaging in e-commerce, which provides a useful framework for understanding where firms stand in the Pacific region (see figure III.9).

The first thing to note is that most MSMEs in the Pacific would not appear on the global model for e-commerce development because they do not have a digital presence. Although statistics on the percentage of MSMEs that use the Internet in the Pacific are not available, the region has generally low digitalization of MSMEs.

For MSMEs that do have a digital presence, they most likely operate at either Level 1 (digitized but offline sellers) or Level 2 (social sellers). In the Pacific, few MSMEs have websites and there is more of a focus on establishing a presence on social media. More firms in the region may therefore operate as social sellers rather than as digitized but offline sellers. These Level 2 sellers include MSMEs that have a web presence via social media platforms such as Facebook or Instagram or use digital communications tools such as Viber or WhatsApp to engage with customers. In the Pacific context, these social sellers would also include the many individuals and informal businesses selling goods and services via social media and communication tools.



Figure III.9. Global e-commerce development ladder



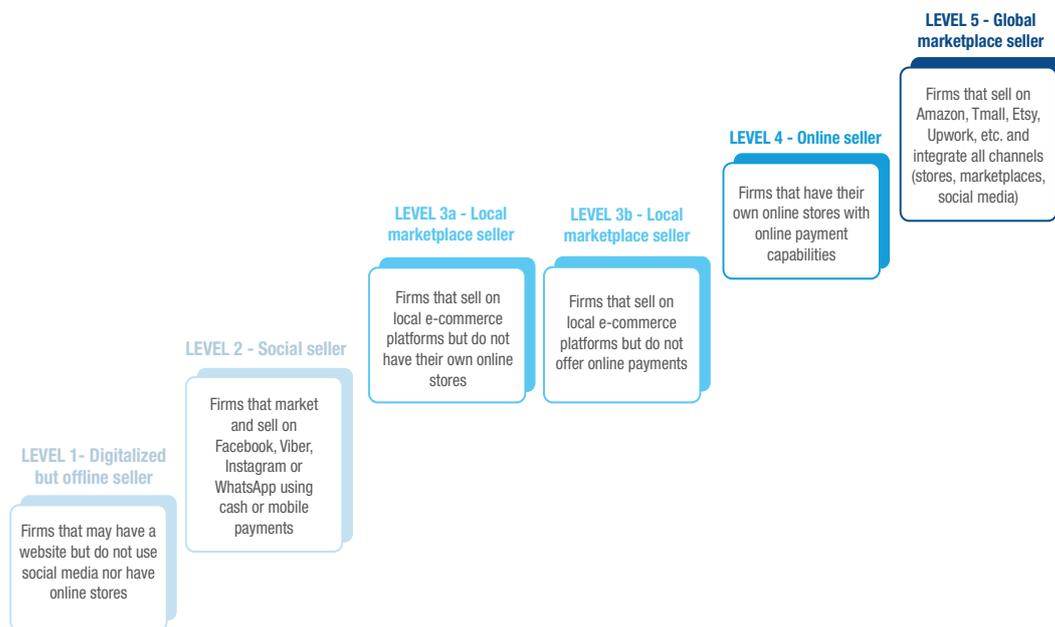
Source: Nextrade Group (2021).

Relatively few MSMEs in the region have dedicated online stores and offer digital payment capabilities to qualify as Level 3 firms. Examples include Bulk Shop (Solomon Islands) and Dynamic Supplies (Vanuatu). It is important to note that even Level 3 sellers in the Pacific with the ability to accept online payments are more likely to conclude many of their e-commerce transactions with payments in cash. This is one indication that technology may not be the biggest barrier to the uptake of e-commerce in the region. Limited use of digital payments combined with low levels of trust in online transactions often result in a preference to meet sellers in person or to pay cash on delivery. Limited consumer and data protection legislation in the region reinforces this lack of trust. Of the 13 Pacific SIDS included in the UNCTAD Global Cyberlaw Tracker, just five have legislation on electronic transactions, six have cybercrime legislation in place and only one country has information on an existing consumer protection law.¹⁰⁷

Vendors on e-commerce platforms such as VitiKart (Fiji) or Jungle (Papua New Guinea) are also likely to offer cash on delivery as an option. The e-commerce development ladder depicted in figure III.9 is linear in nature and implies that Level 4 sellers use digital payment solutions for all online transactions (as is common in some developing markets). Firms that sell on local e-commerce platforms but conclude a significant proportion of orders via cash on delivery would therefore fall between Level 3 and Level 4 on the global model for e-commerce development. Very few firms in the region sell on global marketplaces such as Amazon to qualify as Level 5 global marketplace sellers.

Adapting the five stages of the global model for the Pacific would mean moving Level 4 (local marketplace sellers) immediately after Level 2 (social sellers). This is because, in the Pacific, it is more

Figure III.10. The e-commerce development ladder adapted for Pacific small island developing states



Source: UNCTAD, adapted from Nextrade Group (2021).

likely that firms will seek a presence on existing third-party online marketplaces before developing their own standalone webstores – this is particularly the case for MSMEs. Some of these third-party marketplaces specifically pitch this value proposition of not needing to develop a standalone webstore if they join the marketplace to prospective merchants. Level 3 in the adapted Pacific model (local marketplace seller) would also have two distinct categories: (i) one for firms that sell on local e-commerce platforms but do not have their own stores; and (ii) firms that sell on local e-commerce platforms but do not embrace digital payments as part of their overall business model. This adapted model is shown in figure III.10. In the Pacific region, it may also be the case that social sellers would represent the first stage of e-commerce development for MSMEs and that some firms selling online may never develop their own websites.

D. VALUE CREATION AND CAPTURE IN THE PACIFIC

Section C explored the emerging context of online stores and e-commerce platforms in the Pacific and how social media is used to advertise and sell goods and services, particularly in countries that do not have formal online marketplaces. With the emergence of these platforms, it remains to be seen how value is distributed among platform owners and merchants. The same applies to broader impacts on jobs, inclusion, competition and trade flows. This section examines the general implications of global platforms and those related to the Pacific region. Although social media and messaging platforms are widely used in the region, the focus in this section is on e-commerce platforms.

1. The role of global platforms

Global digital platforms, including e-commerce platforms, can play an important role in e-commerce in developing countries. With their scale, reliability and proven business models, these platforms may be able to provide firms in developing countries with greater opportunities to connect with customers in different domestic, regional and international markets. This can lead to improved efficiency and increased market access for firms of all sizes. Global e-commerce platforms can also reduce start-up and operating costs for MSMEs and digital entrepreneurs. They can provide brand awareness,

operational reliability and storage and logistics infrastructure that would otherwise be difficult for many small businesses to develop on their own.

By reducing transaction and search costs, as well as other sources of friction, digital platforms enable those offering goods or services to connect more easily with potential customers (UNCTAD, 2019b). This may allow MSMEs in developing countries to offer deeper specialization and develop a decent customer base. For consumers, global e-commerce platforms enable comparisons of the price and features of a wider range of products and services, and offer more convenient delivery of goods and services. Although difficult to measure, this likely has positive economic and social impacts.

The balance between domestic trade, imports and exports facilitated by global e-commerce platforms is an important consideration. From a development perspective, global e-commerce platforms should be leveraged not only for buying and importing foreign products but also for supporting domestic production and exports (UNCTAD, 2019b). Although statistical data are not available in most markets, there are indications that global e-commerce platforms have been more effective in facilitating imports of foreign products than in enabling domestic products to be exported (UNCTAD, 2015a). This is particularly instructive for the Pacific region, where many global e-commerce platforms have yet to take hold and the local e-commerce platforms are generally used for domestic trade.

As noted earlier in this chapter, there is a notable absence of global e-commerce platforms in the Pacific. However, the distinction between different types of platforms is becoming increasingly blurred, with Facebook being used throughout the region as a platform for connecting informal and formal businesses with potential customers. Given the evolving nature of the e-commerce landscape in the region, it is important to be aware of the implications of global platforms operating in this unique environment.

For the Pacific region to fully leverage global e-commerce platforms, entrepreneurs and businesses would need access to the full suite of services offered by these firms, including cross-border payments and any storage, warehousing, logistics and delivery services. For example, global e-commerce platforms may provide integrated payments solutions but many companies in the Pacific do not have a foreign bank account so are unable to use these services.

The Pacific region could benefit from global digital platforms serving as infrastructure on which innovation and digital enterprises could be developed. This trend is already happening with social media platforms, notably Facebook. Facebook is a familiar platform with relatively high user literacy among Pacific populations, and has thus emerged as an important platform for buyers and sellers to interact. Facebook as an e-commerce intermediary is particularly important for rural populations and groups with relatively low levels of digital literacy, and mobile phones with basic functionality.

For many businesses and consumers in the Pacific, Facebook is a way to introduce the potential benefits of e-commerce. By experiencing the benefits of a global digital platform, businesses and entrepreneurs could be encouraged to further innovate in the digital space. This can be a building block for local digital entrepreneurship and for transitioning to digital payments and dedicated e-commerce platforms. The use of global e-commerce platforms could also create employment opportunities in the Pacific. In addition to jobs in fulfilment and delivery, there would be a need for digital marketers, product content writers, photographers and customer service agents. This would provide immediate employment opportunities and have positive knock-on effects for the economy. For example, the success of small businesses on global e-commerce platforms could encourage local entrepreneurs to develop related business services such as website development and business development consultancies.

Although global digital platforms offer many potential benefits, it is important to be aware of the risks identified in Section A. These include potential market dominance; control of data and digital intelligence; and strengthening their market position through acquisitions, vertical integration or entry into other sectors. This is particularly relevant to the global digital platforms that are already present in the region, such as Facebook and Airbnb. Weighing the development implications of these global digital platforms will increase in importance as the Pacific region continues along its digital development path. The role of local e-commerce platforms is an important part of this discussion. In countries with local e-commerce platforms, such as Fiji and Papua New Guinea, policymakers may consider the trade-offs of encouraging the entry of global e-commerce platforms vis-à-vis supporting



the continued growth of local platforms. For countries where global and local e-commerce platforms are not present, policymakers may consider policy actions that maximize the development benefits of digital platforms – whether global or local – and also mitigate the risks.

2. Local e-commerce platforms

As discussed above in this chapter, some global social media and messaging platforms are used for commercial activity in the Pacific. In addition, a few businesses in the region have established online stores. This section focuses on the growth potential of local e-commerce platforms such as VitiKart and MultiDrua (Fiji), Shop Vanuatu, Jungle and BzzMart (Papua New Guinea), and Maua and Samoa Market (Samoa).

a. Features of local e-commerce platforms

Most local e-commerce platforms in the region are either corporate diversification initiatives or side hustles for people with full-time jobs. Notably, several of the existing platforms appear to have been developed with a strong desire to support small businesses, farmers or artisans, rather than a strict business opportunity to maximize profit. Unlike in other regions, local platforms do not seem to pursue a business strategy of rapid growth and increased valuations with the goal of being acquired by a larger company. The payments for some platforms terminate outside the region but this appears to be a workaround due to the lack of access to payment gateways rather than a desire to move profits outside the region.

Several local e-commerce platforms could also be characterized as being in the experimentation phase, with generally low user numbers and testing of different models. Some platforms are supported by international development partners. Anecdotal evidence suggests that e-commerce platforms in the Pacific currently struggle to attract the critical mass of customers necessary to generate a profit. The business case for e-commerce in other regions – higher sales volume from new online customers outweighing the associated operations costs – is difficult to achieve in the Pacific region given the extremely small size of consumer markets.

The challenge of small consumer markets is exacerbated by high delivery logistics costs, particularly for last-mile delivery. Reaching potential customers is extremely challenging for countries such as Solomon Islands, where the population of approximately 721,000¹⁰⁸ is spread across more than 300 populated islands. These challenges in the Pacific mean that the customer base for existing local e-commerce platforms is generally concentrated in a limited number of urban areas. Even in the larger economies of Papua New Guinea, Fiji, Solomon Islands and Samoa, most online commercial activity takes place in the capital cities.¹⁰⁹

Most, if not all, e-commerce platforms in the Pacific offer cash on delivery as a payment option. Many consumers have no way of making online payments because they do not have access to bank accounts, debit and credit cards or online payment methods such as mobile money or e-wallets (UNCDF, 2021c). In addition, lack of access to online payment gateways restricts the number of businesses that can conduct online sales (UNCDF, 2021b). Solutions are being rolled out but uptake has been slow, although some improvements were seen during the COVID-19 pandemic when contactless payments became more of a necessity.¹¹⁰

On the merchant side, challenges accessing international payment gateways in the region and the reticence of local and regional banks to support online payment mechanisms continue to be barriers to the growth of e-commerce platforms (UNCDF, 2021b). It is likely that cash on delivery (or on pickup) will remain the preferred payment mechanism for e-commerce in the Pacific at least in the near future.

Local e-commerce platforms are also characterized by extremely low online conversion rates (the number of sales generated per visit). Informal discussions with platform managers in the Pacific suggest that conversion rates are 1 per cent or lower.¹¹¹ This suggests that customers are using online stores and e-commerce platforms to learn more about products and confirm availability, but that they prefer to conclude the transactions in person, by either visiting a physical location or paying cash on delivery.

One online store in Fiji noted that actual sales were 10 times the amount indicated by its online statistics. This means that 9 out of 10 customers that made a purchase did so by paying offline, reflecting a



general reluctance by customers to complete the checkout process online. When customers reached the checkout stage, they tended to switch to messaging apps to reconfirm the price, terms and warranty before agreeing on a time to collect the goods and pay with cash or card.¹¹²

Although some local e-commerce platforms in the Pacific have attempted to implement a commission-based structure for platform merchants, this has yet to take hold as the de facto business model. While businesses in mature e-commerce markets tend to see online sales as a way to attract new customers, platform merchants in the Pacific tend to view online sales as an added service for existing customers. This makes the business case for a commission-based structure more challenging, as platform merchants do not believe that overall sales revenue will increase significantly through their presence on e-commerce platforms. As a result, local e-commerce platforms struggle to attract merchants with a commission-based structure. One food delivery platform in Fiji attempted to incorporate a commission-based structure into the price of the food it was delivering but only four of the 24 restaurants on the platform accepted this structure.

In general, organization of deliveries remains the responsibility of platform merchants, with goods typically packaged at their own retail premises. The existing e-commerce platforms in the region provide very limited storage and delivery logistics services to merchants. This is inefficient for both the platform owner and the merchants. The platform often loses sales (and potential commissions) to merchants when customers choose to pay on delivery (or collection), and the merchant must dedicate staff to locate, package and send small volumes of goods.

Furthermore, MSME capacities to manage a presence on e-commerce platforms efficiently remains limited. Many small businesses in the region use basic enterprise resource planning systems that are not compatible with e-commerce platforms and some businesses continue to use paper documents or Excel sheets to track stock and sales. Product descriptions and photos must be manually uploaded onto the e-commerce platform and stock levels regularly adjusted to reflect sales at the physical premises. One e-commerce platform often sends its own employees to merchants to help with the job of uploading all their products onto the platform, along with the relevant images.

Evidence of platforms leveraging digital intelligence to drive decision-making and strategy at the firm level remains limited. Leading firms, particularly telecom operators, may use data analysis tools to inform business strategy and create value, but MSMEs are generally not taking advantage of these options. One fledgling area of business digitalization in the region is business process outsourcing. Companies like Mindpearl and Centrecom have business process outsourcing centres in Fiji that service customers around the globe, primarily with customer service solutions.

b. Growth potential of local platforms in the Pacific

Unlike in other regions, local e-commerce platforms in the Pacific generally do not face competitive pressure from global platforms. Some countries in the region have no B2C e-commerce platforms, providing a unique opportunity for local digital entrepreneurs. In markets with local e-commerce platforms, barriers to entry remain low and markets are relatively unsaturated. In general, significant opportunities exist for local e-commerce platforms to enter new markets, offer new services to consumers and test new business models.

In Solomon Islands, a digital entrepreneur is testing a new e-commerce business model whereby deliveries would primarily take place between two cities located on different islands. Orders would be aggregated, with bulk shipment occurring at regular intervals (instead of each individual order being shipped). These types of unique business models, necessitated by the distinct geography and operating environment, offer opportunities for entrepreneurs and firms to apply their local know-how. This knowledge of local markets, lifestyles and consumer preferences is likely a significant competitive advantage for local platforms vis-à-vis global platforms. E-commerce solutions developed in the region will likely be heavily adapted and customized to the local environment, including hyperlocal solutions at the province or city level.

Local e-commerce platforms could also be leveraged as a tool for integrating urban and domestic markets in the Pacific region. Archipelago states face pervasive challenges in developing the private sector because of vast distances between markets and high barriers to buyer-seller discovery and trade. With many people living in rural areas, businesses are forced to limit operations to their



immediate surrounds. In this environment, digital marketplaces and merchant e-shops could facilitate buyer–seller discovery and trade. Although challenging to measure, increased domestic trade and integration of domestic markets would likely create significant value for multiple actors.

The presence of Facebook as a platform for news, information, social connections and commercial activity has implications for the development of local e-commerce platforms. Given its widespread use, Facebook may constrain the growth of some e-commerce platforms and online stores. Switching costs means it is difficult for consumers and businesses to move to a new platform to market their products and services. One opportunity that e-commerce platforms may be able to provide to merchants that is less readily accessible from Facebook is digital intelligence on customer behaviour and preferences. This will require more sophisticated local e-commerce platforms, as well as increased capacity to develop digital intelligence from raw data generated by customers. Most local e-commerce platforms currently have limited capacity to turn platform data into useful information for merchants.

One way for local e-commerce platforms to grow is through vertical integration. Offering additional services such as packaging, storage and delivery could help attract more merchants. With a shared warehouse model, for example, local e-commerce platforms could provide an incentive to attract smaller retailers that might not have adequate storage facilities. Some small specialist retailers may even rely on e-commerce as their primary avenue for generating sales and not need any storefront or storage capacity. Centralized warehouse depots could also be advantageous for customers who may prefer to pick up their items from convenient collection points or a central depot. This would be particularly relevant in rural markets, where last-mile delivery is often infeasible. Leveraging hyperlocal transportation, including small boats and existing ferry services, may provide opportunities for platform owners to develop more sustainable business models.

This vertical integration approach could also be applied to e-commerce exports. E-commerce platforms that prioritize sales to foreign markets could offer clients a drop shipping option that involves shipping goods in bulk to the destination market or a regional hub and then arranging a pick-and-pack service with a local warehouse. Some global freight companies have begun offering limited pick-and-pack and distribution services in the Pacific but they are primarily focused on larger businesses. Opportunities for MSMEs engaged in e-commerce to utilize a third party to pick, pack and dispatch parcels remains limited. A challenge for local e-commerce platforms is that there are few global examples to follow that are relevant for the Pacific region. Business models that have proven successful in other regions cannot always be implemented in the Pacific because of the unique challenges and small markets. As platform owners in the region continue to innovate and experiment, successful business models that emerge could be strengthened and replicated.

The growth potential of local e-commerce platforms is not currently constrained by global platforms. However, the potential benefits that global platforms could bring to the region should be considered. This would be particularly relevant for countries with extremely small markets and limited resources to establish fully fledged e-commerce platforms. For example, the presence of global e-commerce platforms in Tuvalu (population 11,300) or Palau (population 18,000)¹¹³ could provide an opportunity for small businesses to export their goods to international markets. The resources and infrastructure provided by global e-commerce platforms would remove some of the major barriers experienced by local e-commerce platforms, including how to achieve long-term stability without external funding support.

One instructive example is that of Rwandan coffee sales in China. By leveraging Tmall Global – an Alibaba Group cross-border import platform – sales from Rwandan coffee brands in China increased by 400 per cent in 2020.¹¹⁴ The global e-commerce platform in this instance provided market access to Rwandan businesses that might otherwise not have had such an opportunity. Global e-commerce platforms could potentially provide similar opportunities to Pacific producers of products such as kava and coconut oil. Pacific Trade Invest – the leading trade and investment promotion agency in the region – has been exploring ways to meet Chinese market demand for Pacific products via digital platforms.¹¹⁵

For some countries in the Pacific, global platforms may be the best way to reach large consumer markets in other regions. The characteristics that make it challenging for local e-commerce platforms to thrive in the region – small geographically dispersed markets that make scaling a challenge – could work in favour of Pacific SIDS when it comes to participating on global platforms. Global platforms



could enable domestic products to be exported to large markets where there may be strong demand for unique Pacific products. At the same time, small markets in the region could help deter the influx of imported foreign products experienced in other regions.

3. Policy areas for value creation and capture

Given that the digital economy is only beginning to emerge in the Pacific, there is limited evidence of its effects on value creation and distribution. As e-commerce ecosystems and business models evolve in the region, it is possible that the distribution of benefits becomes substantially altered, as has been the case for advanced economies. Many industrialized countries are grappling with how to achieve a more equitable distribution of the value created by the digital economy. Although this rebalancing is still some way off in the Pacific region, it is an issue that policymakers, digital platform owners and users will have to address in the future.

This section covers some policy areas to consider as governments in the Pacific seek to create and capture value from the digital economy. The experiences from other regions that are further along the path of digitalization point to potential risks such as job losses and reduced competition in some sectors or industries. Addressing these future implications will require the adaptation and adoption of policies, laws and regulations in several areas.

a. Digital entrepreneurship

Entrepreneurs in the Pacific seeking to enter the digital space face various challenges related to underdeveloped digital infrastructure, scarce investment capital and limited access to workers with the relevant skills. While policy tends to focus on technical and ICT skills taught at universities, there is less focus on enhancing entrepreneurial knowledge related to starting, running and scaling a digital enterprise. There are few mentors or experienced digital entrepreneurs – especially women entrepreneurs – to pass on their knowledge. There is a similar dearth of software developers, designers and data scientists in the region. There is no meaningful base of innovation hubs, business accelerators or incubators in the Pacific. Such challenges are exacerbated by small consumer markets and the limited demand-side economies of scale for digital enterprises.

In this context, policymakers should target their actions and measures to the specific dynamics of the entrepreneurship landscape because the needs of digital entrepreneurs are likely to be very different from MSMEs in general. In some Pacific SIDS, for example, the most effective support could be teaching vendors how to post items for sale on social media. For others, it may be supporting platform merchants with basic technology tools to track their stock. In the future, Pacific policymakers could consider supporting the creation of regional platforms or the entry of global platforms to support export-oriented small and medium-sized enterprises (SMEs).

b. Data policies

Countries with limited capacity to transform digital data into digital intelligence are constrained in their potential to capture economic value from data. Evidence to date suggests few firms in the Pacific are leveraging data-derived intelligence to drive decision-making and strategy at the firm level. User numbers on digital platforms remain relatively low and much of the focus of platform owners is on how to attract more customers rather than how to increase engagement of existing customers. This is an important distinction. In more developed markets – in both developed and developing countries – companies leverage data intelligence to increase engagement from a critical mass of users. With most platforms in the Pacific yet to attract such a critical mass, the value of digital intelligence is lower than in regions with higher numbers of users.

Much legislative and regulatory work remains to be done. Policymakers in the region can lay the groundwork for fair data policies by putting in place policies that clarify ownership and control of data (including personal data) and strengthen data protection and privacy. Key questions for governments include how to build consumer trust and protect data privacy; how to regulate cross-border data flows; and how to build appropriate capabilities to harness digital data for development. Given the Pacific region's level of digital development, policies should also focus on equipping workers with the skills to convert data, including data emerging from digital platforms, into information and knowledge.¹¹⁶



c. Competition

Competition policy can play a major role in the creation and capture of value in the digital economy. For the Pacific region, it is important for policymakers to consider the potential market impact if existing retailers and businesses also become the dominant players in the digital space. This is a very real possibility, given the market power and resources at their disposal and the relatively weak innovation ecosystem that would produce viable competitors. This trend is already evident to some extent in the mobile money space, where leading telecommunication providers in some countries have cornered the market at the expense of smaller start-ups. Updating competition policy for the digital economy is therefore an imperative, particularly given network effects and the tendency towards market concentration. In general, promoting competition that ensures MSMEs have open access to digital platforms under fair terms and conditions should be pursued.

With e-commerce platforms in the region still in the market establishment and exploration phase, it appears that no particular retailer or business has secured an unfair market advantage. Overall, the fledgling digital platforms space in the region is characterized by experimentation with different business models. However, given trends in other regions, the question arises whether current retailers in the Pacific will leverage e-commerce to further cement their status and crowd out competitors.

The wide use of several global social media and communication platforms in the Pacific should be taken into account in the formulation and enforcement of competition policies within regional or global frameworks. How authorities deal with global platforms in other parts of the world will also affect how they operate in the Pacific. International collaboration in this space is also necessary because Pacific SIDS generally lack the legal and economic power to address the behaviour of global digital companies.

d. Taxation

Although there is emerging consensus that the existing international corporate tax system is not keeping pace with developments in the digital economy, there is less consensus on what to do to address this gap. Even the concept of value creation for taxation purposes in the digital economy is neither clearly defined nor broadly understood. A related challenge is determining how the profits of digital platforms should be allocated between different countries in which the platform's activities take place. Although these issues are being discussed in several international forums, Pacific SIDS are often not involved in the discussion. Wider and more inclusive participation of Pacific SIDS in these processes would help the region prepare for the complex taxation of the digital economy that is likely to emerge in the future, including the potential entry of global e-commerce platforms.

e. Labour markets

The impact of digitalization on economies has been broadly disruptive. Developed economies have seen a number of impacts on the labour market, ranging from job losses in some industries or sectors to job creation and the emergence of entirely new industries. For example, while online shopping may reduce the number of customer service staff needed in retail outlets, more workers may be needed for sorting, packaging and shipping. In addition, more jobs are being created in relation to the operation of digital platforms, such as search engine optimization and software development.

When considering the business models of existing e-commerce platforms in the Pacific, the impact on the labour market in the near term will likely be positive. Although user numbers on the platforms remain relatively low, the platforms provide an avenue for MSMEs to sell their goods and services. For exports in particular, e-commerce may offer the only avenue for MSMEs to reach new markets.

As the pace of digital transformation increases in the Pacific, policymakers will need to react quickly to changes in labour markets. The skills requirements for the population are likely to evolve and, as with any large-scale economic transformation, there will be disruptions. This will have implications not only for social protection policies but also skills development. Individuals will need to learn new skills over the course of their working lives and governments will need to establish appropriate learning programmes that meet the needs of the labour market.

f. Trade agreements

E-commerce provides an important avenue for Pacific businesses to participate in regional and international trade. A common challenge facing Pacific SIDS, however, is the absence of e-commerce references in the legal text of their free trade agreements. Regional free trade agreements tend to be very broad and have a low degree of clarity around implementation and enforceability mechanisms. This has limited the uptake of cooperative solutions such as having common rules on cross-border e-commerce. International developments such as the Joint Statement Initiative on E-commerce seek to find common ground and produce mutually beneficial outcomes, and will continue to be of interest to Pacific SIDS.

It is important for Pacific SIDS to carefully consider the rapidly evolving nature of digital ecosystems, business models and regulatory requirements, and the highly complex nature of international negotiations and resulting agreements. To harness the potential benefits of e-commerce for sustainable development, a number of sensitive public policy areas will need to be addressed. These include privacy, personal data protection, competition, consumer protection and cybersecurity, as well as industrialization. It will be important to strike the right balance in reconciling different regulatory practices and priorities across countries.

Digital transformation, by its very nature, is broadly disruptive, with a number of development implications. So far, most Pacific SIDS have focused on bringing basic digital connectivity and related services to their people. However, the region has reached a point where policymakers are increasingly aware of the potential development trade-offs of increased digitalization. This is therefore an opportune time to begin considering these implications and to chart a path that leads to inclusive and sustainable outcomes in the context of the digital economy.

Effective regional cooperation and international support will be key to exploring common policy solutions. Some Pacific SIDS lack the capabilities to develop, implement and enforce new policies and regulations related to e-commerce and the digital economy. Capacity-building will be key, including more support from donors to strengthen the enabling business, policy and regulatory environment for the digital economy. In some policy areas, regional leaders and policymakers could work together on approaches that align with international best practices.

Regional and international initiatives in these areas are covered in chapter IV. However, two key priority areas should be highlighted in the context of the issues that have been highlighted in this chapter. Research capacity on digital economy issues in the region urgently needs to be scaled up. Access to reliable research and statistics would support evidence-based and results-oriented policymaking, and there is a need to document the benefits and costs accruing to Pacific SIDS from digitalization. In addition, donor support for digital development in the Pacific should be prioritized, particularly given the increasing recognition that digitalization creates both opportunities and risks. Stronger alignment of donor support in this area would also improve synergies and maximize impact.



CHAPTER IV

Building an enabling environment for e-commerce and the digital economy

This chapter focuses on the cross-cutting nature of e-commerce and the digital economy, and the importance of taking action in different policy areas. Building on the *Pacific Regional E-commerce Strategy and Roadmap* (PIFS, 2021), it summarizes progress to date and discusses goals and priorities for future activities to support an inclusive digital economy in the Pacific. Section A describes the key building blocks to enable e-commerce and an inclusive digital economy, and provides a brief assessment for the Pacific. Section B provides an overview of national and regional initiatives to develop a conducive environment for e-commerce and the digital economy. Section C describes the role of regional and global initiatives and partners in establishing this enabling environment.



Creating an enabling environment for e-commerce and the digital economy in the Pacific

 **Policies and regulations** in the Pacific need to be adapted to the digital economy

Many policies have not kept pace with digitalization



Trade agreements and consumer protection laws rarely take into account the complexities of online commercial and trade activities

A holistic approach is needed, covering a range of policy areas:

-  E-commerce readiness assessments and strategy formulation
-  ICT infrastructure and services
-  Digital payment solutions
-  Trade logistics and trade facilitation
-  Legal and regulatory frameworks
-  E-commerce skills development
-  Access to financing for e-commerce

There is a **strong momentum in the region** to address these policy concerns

E-commerce diagnostic studies started

-  Regional e-commerce strategy and roadmap
-  National diagnostics and strategies

Regional cooperation and international support remain important

-  Technical support
-  Industry expertise
-  Financial support

Private sector investments are also crucial for advancing the digital transformation of Pacific SIDS

A. BUILDING AN INCLUSIVE DIGITAL ECONOMY

1. Building blocks for an inclusive digital economy

Although the nature and scope of the digital economy will continue to evolve, several frameworks have been developed to understand how key components can be strengthened. These frameworks, while differing in general approach and specific priority areas, all emphasize the cross-sectoral nature of the digital economy. The digital economy is becoming increasingly inseparable from the functioning of the overall economy, with diverse sectors and industries all digitalizing at different speeds. Existing frameworks acknowledge that strengthening the enabling environment for the digital economy is a complex endeavour and requires attention across a range of areas. This has several important implications for policymakers. These include identifying the starting point and priorities for reform with limited government resources; understanding core challenges and opportunities at the interplay of various ecosystem components; and articulating visions and actions that can lead to an inclusive and dynamic digital economy.

In addition, an enabling environment for the creation and capturing of value in the digital economy necessitates the skills and capabilities to effectively collect, use and analyse large amounts of digital data. The ever-changing digital landscape has set in motion the development and widespread use of digital platforms, which provide the mechanisms to bring a set of parties together to interact online. For digital economies to be truly inclusive, it is essential to create an empowering environment that responds to the needs of women and other groups at risk of being left behind. Ensuring that the concerns of at-risk and marginalized groups are being addressed in the design and implementation of policy interventions and decisions is central to building inclusive digital economies. All this must be done in a context that is fast evolving – and likely more rapidly than previous large-scale economic transformations (UNCTAD, 2019b).

Global frameworks that support building inclusive digital economies include the eTrade for all initiative and the Inclusive Digital Economy Scorecard (IDES). These frameworks enable governments to better understand the challenges and opportunities for engaging in the digital economy.

The policy areas under eTrade for all (see figure IV.1) are aimed at building competitiveness in e-commerce – an important component of the digital economy that is closely tied to SMEs and export competitiveness. These policy areas are considered critical for strengthening the overall business,

regulatory and policy environment for accelerated uptake of e-commerce and development of the broader digital economy. They form the basis of the eTrade Readiness Assessment methodology (UNCTAD), which, in turn, forms the basis of the Pacific E-commerce Initiative and national and regional assessments and strategies developed by initiative partners (see section IV.B.2).¹⁷

The IDES framework developed by UNCDF is designed to help governments set priorities for digital transformation in each respective country. Inclusiveness is factored in as a critical cross-cutting element. The framework relies on four foundational components – policy and regulation, infrastructure, innovation and skills – to identify constraints hindering the development of an inclusive digital economy. Multiple constituent indicators are used to assess the status of a country's overall digital economy and the level of inclusion for key segments of the population such as women, youth, refugees, migrants, MSMEs and people living in rural areas. Since

Figure IV.1. The eTrade for all policy areas



Source: UNCTAD.

2021, IDES has been implemented in 25 countries in Africa, Asia and the Pacific, and will be expanded to additional countries in the near future.¹¹⁸

Both frameworks outline important goals for Pacific SIDS and can be useful for policymakers who wish to strengthen their enabling environments for the digital economy. Although the frameworks may differ in areas of emphasis and methodological approach, they collectively provide the following:

- Solid frameworks for diagnostics and strategy formulation: The complex nature of the digital economy requires a detailed review of each relevant dimension, as well as an understanding of the interdependencies involved. Beyond serving as a key diagnostics tool and needs assessment, they also support project, programme and strategy formulation. For example, an eTrade Readiness Assessment can help prioritize policy interventions that would be included in a national strategy. IDES can feed into the design of targeted and relevant interventions in combination with strategic measures laid out in the implementation and monitoring and evaluation plans. Taken together, the frameworks also make it easier to understand the potential impact of actions in one area on other ecosystem components.
- Resources to help reinforce a virtuous cycle between e-commerce and the digital economy: In the early stages of maturity, e-commerce depends on several broad enabling factors within the digital economy such as digital literacy, smartphone penetration and digital entrepreneurship. As consumer and enterprise uptake of digital tools accelerates in the medium to long term, e-commerce drives growth in these same enabling areas, reinforcing its own growth but also that of the digital economy as a whole. For example, basic digital literacy is required for e-commerce transactions. At the same time, e-commerce helps build more advanced digital literacy that can support growth in the broader digital economy.
- A basis for supporting interoperability and harmonization within the Pacific: harmonization and interoperability are critical to promote access to regional markets. This is especially important for cyberlaws, business regulations, technical systems for payments and other infrastructure areas. A focus on harmonization and interoperability stresses adherence to common principles but does not require each country to adopt the same tenets. This leaves space for countries to be flexible in their own approach.¹¹⁹

2. E-commerce readiness in the Pacific region

Strengthening the enabling policy environment is important in the Pacific where the transition to a digital economy and local e-commerce platforms is just beginning to take hold. The few local e-commerce platforms that have emerged continue to experiment and have not achieved long-term sustainability (see chapter III). Policies that enhance the overall business, policy and regulatory environment would increase the likelihood of their success and growth, and make it easier for other businesses to enter the market. This section provides a summary of relevant policy areas and related policy recommendations. More detailed analysis can be found in national and regional e-commerce assessments and strategies.¹²⁰

a. Policy framework and institutional coordination

E-commerce is a cross-cutting policy issue that has implications in many sectors, including banking and financial services, telecommunications, ICT infrastructure, education, trade and transportation. Identifying key policy actions in this context is a challenge and involves regulators, line ministries, technical agencies, the private sector and civil society actors. Developing a whole-of-society understanding of these issues and ensuring coherence of policy actions is therefore crucial. Although national e-commerce assessments have been carried out for most Pacific SIDS, contributing to whole-of-society understanding, national strategy formulation and implementation related to e-commerce or the digital economy is still at an early stage (see box IV.1 and section IV.B.1).

Limited interministerial coordination on related issues remains a challenge. As in most parts of the world, ministries tend to operate in silos and national sectoral development strategies often do not adequately take into account the potentially transformative role of the enhanced digitalization of economies. This may, for example, reduce the ability to harness the potential of e-commerce to allow entrepreneurs

Box IV.1. Case study: Improvements in the Solomon Islands digital ecosystem since the 2018 eTrade Readiness Assessment

Solomon Islands is an archipelago State with 900 islands (300+ of which are populated) spread across a chain of islands measuring some 1,500 km in total length. These geographic characteristics mean that the country is faced with formidable natural barriers that have constrained development in a number of areas: domestic markets development and integration; SME-led productive sector growth; government-to-business and government-to-consumer services; and general development in rural areas, where 76 per cent of the population resides. E-commerce has been identified as a nascent lever of growth for lowering these barriers in the medium to long term, and in this context, UNCTAD conducted an eTrade Readiness Assessment for the country in 2018. The assessment became a key tool for policymakers to understand the challenges the country faced as it moved towards a digital economy and provided concrete recommendations for overcoming these challenges. By 2021, an estimated 38 per cent of recommendations from the assessment had been implemented by the Solomon Islands Government and partners (UNCTAD, 2022e).

Several improvements have been made within the national e-commerce ecosystem. The arrival of the Coral Sea Cable System and subsequent connectivity with four provinces via the Solomon Islands Domestic Network system has ushered in a new era of connectivity for the country. E-commerce has also seen improved stewardship and the gradual emergence of a strategic vision. Public sector coordination has been boosted by the National E-commerce Strategy project steering committee and technical working task force, who also oversee strategy implementation. The national financial inclusion agenda has continued developing at a brisk pace, as evidenced by the launch of the Third National Financial Inclusion Strategy and a regulatory sandbox, and the upcoming introduction of a new mobile money solution beyond existing solutions such as EziPei and iumiCash. New fintech models have been tested – in particular the YouSave voluntary saving scheme app designed especially for the self-employed.

The significant progress achieved since 2018 motivated the Solomon Islands Government to develop its first national e-commerce strategy, aimed at strengthening the business, regulatory and policy environment for e-commerce and the broader digital economy. Through a forward-looking and practical approach, the Solomon Islands National E-commerce Strategy 2022–2027 provides a framework to leverage resources and forge partnerships to accelerate e-commerce development. The National E-commerce Strategy aims to support the country's burgeoning digital economy and national transformation journey, but also focuses on broader economic growth pillars. The strategy contributes to the National Development Strategy (2016–2035) overall vision of improving the social and economic livelihoods of all Solomon Islanders by 2035 (Solomon Islands Ministry of Environment, Climate Change, Disaster Management and Meteorology, 2021).

Source: UNCTAD.

and businesses to access new markets, reduce transaction costs or develop new business models. More consideration could also be given to the integration of digital trade considerations in national export strategies. Such strategies encourage greater participation and value addition by Pacific SIDS in global trade and are an important tool to boost participation in future free trade agreements that include an e-commerce chapter, such as at the World Trade Organization (PIFS, 2021).

One avenue for enhancing policy coordination and coherence is the establishment of national e-commerce steering committees, as well as the development and implementation of national e-commerce strategies. Where e-commerce or digital economy policies and strategies have been developed, such steering committees can play a key role in guiding implementation and monitoring progress. Overall, political leadership and commitment remain vital to ensure ministries and agencies facilitate and contribute towards e-commerce and an inclusive digital economy.

b. ICT infrastructure and services

Equitable access to affordable, reliable, high-speed and high-capacity broadband Internet is key for e-commerce and the digital economy. Resolving ICT connectivity issues and closing the digital divide related to Internet access has been at the centre of policy developments over the last two



decades. However, many Pacific SIDS are still grappling with how to leverage private sector resources and expertise to support investment in the smaller, less profitable markets. Liberalization of telecommunication services has produced clear benefits in terms of improved connectivity. However, Pacific SIDS still face challenges in the core areas of affordability, reliability and speed – all of which create obstacles to e-commerce uptake, especially in rural areas (see chapter II).

An enabling regulatory environment is instrumental to incentivize further private sector investment and ensure that the impact of such investment is maximized. Appropriate policy actions will vary by country but general principles include adequate digital infrastructure to support universal access; competitive telecom markets that bring down prices and introduce new consumer services; and a focus on the unique access challenges of rural populations. Measures to encourage coverage expansion – such as sharing of ICT and fixed infrastructure between different MNOs – could be one way to increase coverage and decrease costs.

c. Trade logistics and trade facilitation

An effective and competitive national and international trade environment is vital for domestic and cross-border e-commerce. However, transportation of goods within Pacific SIDS and across the region is time-consuming, labour-intensive and costly. Last-mile delivery is not feasible in many parts of the region due to constraints with transportation infrastructure, limited use of physical addresses and lack of widespread transportation services. Policy solutions that ease these constraints would enhance the business case for e-commerce and build consumer trust. More local courier services, for example, would reduce e-commerce delivery times, increase predictability and create a source of local jobs.

The regulatory environment around trade facilitation is inconsistent across Pacific SIDS (PIFS, 2021). Implementation of solutions in the Pacific region is being designed, where relevant, to align with the World Trade Organization Trade Facilitation Agreement and support regional approaches consistent with the Pacific Agreement on Closer Economic Relations Plus (PACER Plus) (see section IV.C.2). Some World Trade Organization members have made noticeable progress towards implementation of the Trade Facilitation Agreement. In addition, automation of border procedures plays a key role in supporting e-commerce. In the Pacific, the Automated System for Customs Data (ASYCUDA) developed by UNCTAD has become the system of choice for Customs declaration processing and is running or being implemented in 15 Pacific SIDS (see also section IV.C.2).¹²¹ In addition, UNESCAP supports country efforts towards trade digitalization through its Readiness Assessments for Cross-Border Paperless Trade (see section IV.C.2).¹²²

d. Legal and regulatory frameworks

As in many other regions, the legal and regulatory frameworks for e-commerce and the digital economy have not kept pace with the growing use of digital technologies by consumers, governments and businesses in the Pacific. Across the region, there is a diverse legislative and regulatory environment for e-commerce (see table IV.1). Only four Pacific SIDS having comprehensive legislation on e-transactions and e-signatures, and none of these countries has comprehensive legislation concerning data protection and privacy. Three of these economies have comprehensive legislation for cybercrime, with the remaining countries having partially developed legislation or no existing legislation. Comprehensive consumer protection legislation has not yet been developed in any of the Pacific SIDS.

The establishment of predictable and transparent legal frameworks is critical to enabling and facilitating e-commerce transactions. Regulatory gaps should be addressed as a matter of priority, especially in the context of current e-commerce companies that would need to comply with laws in multiple countries if they expanded to multiple countries in the near future. Updated regulations and the accompanying regulatory certainty will contribute to increased confidence for both businesses and consumers. In addition, the enactment or modification of certain laws should be enforced consistently to avoid uncertainty and delays in the implementation of strategy and policy. Such legal reforms will improve government capacity to regulate the digital economy efficiently and to reach administrative decisions on the basis of a set of up-to-date and relevant laws.

Maintaining adequate standards of protection and reducing discrepancies in the different applicable rules are vital to supporting a vibrant digital economy in the region. International standards and regional harmonization of regulations can be helpful in this context, especially in relation to the promotion



Table IV.1. Status of legislation in key areas related to the digital economy, Pacific SIDS, 2022

Jurisdiction	E-transactions / e-signatures	Consumer protection ^a	Data protection and privacy	Cybercrime and security	Intellectual property and copyright	Online content regulation ^b	Domain names ^c	Online dispute resolution	Digital ID	E-payment	Taxation
Cook Islands	None	Partial	None	None	Partial	None	Comprehensive	None	None	None	None
Federated States of Micronesia	None	Partial	None	None	Partial	None	None	None	None	None	None
Fiji	Comprehensive	None	None	Comprehensive	Partial	Comprehensive	None	None	None	None	None
French Polynesia	None	None	None	None	Unknown	None	None	None	None	None	None
Kiribati	None	Partial	None	None	Partial	None	None	None	None	None	None
Marshall Islands	None	Partial	None	None	Partial	Partial	None	None	None	Partial	None
Nauru	None	None	None	Comprehensive	Partial	Partial	None	None	None	None	None
New Caledonia	Unknown	Unknown	None	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Niue	None	None	None	None	Partial	None	Partial	None	None	None	None
Palau	None	Partial	None	Partial	Partial	None	None	None	None	Partial	None
Papua New Guinea	Comprehensive	None	None	Comprehensive	Comprehensive	Partial	None	None	None	Partial	None
Samoa	Comprehensive	Partial	None	Partial	Partial	Partial	None	None	None	None	None
Solomon Islands	None	None	None	Partial	Partial	None	None	None	None	None	None
Tonga	None	Partial	None	Partial	Partial	Comprehensive	Comprehensive	None	None	None	None
Tuvalu	None	None	None	Partial	Partial	Partial	Comprehensive	None	None	None	None
Vanuatu	Comprehensive	None	None	Partial	Partial	Partial	None	None	None	None	None

Source: UNCTAD (forthcoming).

Notes: Highlighted areas are those covered by the UNCTAD Cyber Law Tracker. For the classification outlined in Table IV.1, the status in each jurisdiction is classed as 'comprehensive', 'partial', or 'none'. To be classed as comprehensive, the legislation must (a) specifically address the online environment, and (b) address most of the known issues within the subject area. Legislation being classed as comprehensive does not, however, preclude that further reform is needed. Where the regulatory environment in a jurisdiction is classed as 'partial', some examples of relevant legislation have been found, but there is no systematic approach to addressing the known issues within the subject area in question. The classification 'none' does not necessarily mean that no law in the relevant jurisdiction applies to the subject area being discussed.

a. In the context of consumer protection, countries with sector-specific consumer protection laws (e.g. in the telecommunications sector), and those relying on general protections afforded to all buyers (such as Sale of Goods Acts) have their system classed as 'none'.

b. In the context of online content regulation, legislation has been classed as 'partial' where examples are found of specific regulations applying online.

c. In the context of domain names, the classification 'comprehensive' means that the legislation specifically addresses the domain name system. The classification 'none' indicates that the legislation does not specifically regulate domain name issues (although the registry will of course have rules regarding registration and disputes).

of financial messaging and payments, cybersecurity, privacy and emerging technologies across the region. However, the uniformity and applicability of international standards in the Pacific remains relatively low, which has implications for the quality of goods and services for domestic populations. Only three Pacific SIDS (Fiji, Papua New Guinea and Vanuatu) have internationally recognized standards bodies, whereas other economies have only ad hoc standard practices and procedures.

e. Digital payment solutions

Reliable, affordable and secure payment options are critical for businesses and consumers to engage in e-commerce. Digital payments not only underpin e-commerce transactions but also provide one of the best ways to increase digital literacy and consumer familiarity with the digital economy. For many people, digital payments may be the primary way they engage with digital technologies (for domestic remittances, for example). However, low banking penetration in the region affects the availability and affordability of bank-based digital payment solutions. As a result, economies are mostly cash-based, with very low credit or debit card use. In addition, the absence of local payment gateways results in high costs to set up merchant accounts.

Digital financial services infrastructure in the region is underdeveloped and policymakers have a key role in strengthening these systems. This includes the establishment of local payment gateways and incentives to boost the fintech space. To overcome obstacles that limit e-commerce payment aggregation in the region, focus should be placed on addressing challenges in the areas of payments infrastructure (such as lack of network infrastructure, lack of payment network interoperability and absence of local payments processors); regulations (such as rigid know-your-customer requirements and lack of uniform licensing); digital payment economics (such as those related to fees); and financial literacy and technical skill sets (UNCDF, 2021c).

The World Bank and the International Finance Corporation are supporting central banks in the region to implement a set of critical reforms of national payment systems, including the legal and regulatory framework, implementation of digital clearing and settlement systems and the creation of oversight skills in the sector (PIFS, 2021).¹²³ At the same time, non-bank payment service providers are emerging, such as M-PAiSA (Vodafone) and MyCash (Digicel) mobile wallets, and are progressively increasing their role in the financial market (UNCDF, 2021c). The monetary authorities of the Pacific Islands Regional Initiative have already made headway through establishing the *Pacific Regional Regulatory Sandbox Guidelines*. Regulatory sandboxes to facilitate fintech solutions have been approved in Fiji and Papua New Guinea based on these guidelines.

f. E-commerce skills development

Changing demand for skills in digital economies is expected to lead to new types of jobs and employment. Fundamental changes will need to be made to the nature and conditions of work, and to skills training, to respond to the rapid pace of technological and structural change brought about by digitalization (UNCTAD, 2017a). In this context, digital skills development should respond to the needs of business owners and MSMEs so they can tap into the potential offered by digital technologies.

However, e-commerce and digital entrepreneurship skills in the region remain relatively low – although some momentum is emerging, particularly in online commerce through social media platforms (see chapter III). The software and web development base in the region remains small, which hinders the development of local digital content. A lack of ICT mainstreaming in school and university curricula – as well as in technical and vocational education and training – remains an obstacle for the development of ICT capabilities.

Policy action needed in several areas includes upgrading the curriculum at primary and secondary school levels; introducing digital entrepreneurship and supply chain courses at university level; and providing broad community-based training workshops. However, government officials and policymakers responsible for drafting and enforcing the policies in this area often do not possess the necessary knowledge to drive the e-commerce agenda.

Women in the Pacific are disproportionately affected by a lack of access to e-commerce skills development. Identifying relevant focused interventions should therefore be a priority. Some interventions targeting increased women's participation in e-commerce have started to appear in the



region, supported by the UNCDF Pacific Financial Inclusion Programme and ADB. In the absence of gender-disaggregated data, the *Pacific Regional E-commerce Strategy and Roadmap* could serve as a useful source for further exploring the barriers that women face in e-commerce.

g. Access to finance for e-commerce

Access to financing, especially for innovation and entrepreneurship across the e-commerce value chain, facilitates the growth of the digital economy. E-commerce firms and digital entrepreneurs in the Pacific have very few options to raise the financing needed to establish or grow their digital businesses – which are often considered high-risk by financial institutions. Challenges include weak financing instruments specific to MSMEs, high interest rates and overall weak enterprise capacities to demonstrate and maintain strong credit. Stringent know-your-customer requirements in banking for MSMEs and other private businesses force dependence on informal and community lending solutions. In addition, small producers are negatively affected by the working capital financing required to produce and export goods.

Incentives to promote dedicated loan schemes for digital businesses, enhance access to venture capital and develop alternative credit scoring schemes could help increase access to finance for e-commerce firms. Given the generally small market for innovators in Pacific SIDS, providing access to finance mechanisms at the regional level could further promote efficiencies and sustainability (PIFS, 2021). These could include crowdfunding initiatives, regional venture capital pitching events and support or e-commerce innovation challenges.

B. THE PACIFIC E-COMMERCE INITIATIVE

The Pacific E-commerce Initiative is a multi-stakeholder partnership that supports Pacific Island Forum countries to engage in e-commerce, with the objective of promoting sustainable growth and poverty eradication in the region. The initiative was developed as a result of an e-commerce workshop organized by PIFS, UNCTAD and the World Trade Organization in 2017, during which participants acknowledged the need to develop solid analytical and policy foundations as a precondition to undertaking truly transformative actions.¹²⁴ E-commerce is one of the priority areas identified in the *Pacific Aid for Trade Strategy 2020–2025* (PAfTS) (see box IV.2) and focus is placed on the regional dimension of e-commerce, complementing the work being undertaken at the country level. By considering the regional dimensions of e-commerce, the initiative seeks to: (a) achieve selected priorities through more cost-effective approaches; and (b) achieve priorities which are outside the reach of single companies or Members.

The initiative is coordinated by PIFS and has been the driving force behind the development of harmonized national and regional e-commerce assessments – which have, in turn, informed the development of the *Pacific Regional E-commerce Strategy and Roadmap*. The latter was endorsed by Pacific Trade Ministers in August 2021. In 2022, the focus shifted to implementation of the measures recommended in the Regional Strategy. This includes, but is not limited to, the development of national e-commerce strategies aligned with the strategy.



Box IV.2. The Pacific Aid for Trade Strategy

The region's trade priorities are enshrined in the PAfTS developed by PIFS and endorsed by Forum Trade Ministers in 2020. It provides strategic direction and sets regional aid-for-trade priorities grounded in Pacific regionalism and development agendas as determined by Forum Member States. Its implementation is guided by four guiding principles: strategic regional impact; prioritization; leveraging existing mechanisms; and ownership.

E-commerce has been identified as one of the four thematic priority areas in the strategy. Given its potential for structural transformation and economic diversification, e-commerce is a critical enabler of the digital economy and presents substantial opportunities for businesses and regional integration. Advancing the digital economy through inclusive and secure e-commerce is reflected in PAfTS, with the strategy highlighting opportunities to empower businesses, benefit consumers and utilize growing levels of Internet penetration and mobile use across the region.

The remaining three thematic priority areas – the services sector, comprehensive connectivity and deepening forum markets – are closely related to the broader digital ecosystem.

- Services sectors such as tourism, ICT, telecommunications and financial services cope with infrastructure barriers relatively better than manufacturing sectors and offer stronger economic diversification potential. These sectors either drive digital transformation (e.g. ICT and fintech) or serve as natural anchors for digital transformation (e.g. tourism and e-commerce).
- Under the theme of comprehensive connectivity, the strategy considers issues such as labour mobility and physical connectivity. These are critical for supporting a robust digital economy, for instance through market matchmaking and improvements in the general business environment.
- Trade facilitation reforms and quality infrastructure across the Pacific will enable SMEs to penetrate or expand their presence in international markets. This will also benefit cross-border e-commerce in the region.

Source: UNCTAD, based on Pacific Islands Forum, 2020.

1. National e-commerce readiness assessments and strategy development

National e-commerce assessments are essential to identify strengths and weaknesses in the e-commerce readiness of countries. They can serve as a basis for formulating relevant policies to harness the potential of digital technologies for economic growth and social development. In the Pacific, national assessments have often been the first opportunity for Pacific SIDS governments to take stock of digital transformation within their respective country comprehensively and inclusively. Assessments cover the seven policy areas included in the eTrade Readiness Assessment methodology (see section IV.A.2).

A total of 11 comprehensive assessments have been undertaken in the Pacific region to date (see table IV.2). The assessments have enhanced general knowledge on digital economic development, strengthened stakeholders' overall perception of e-commerce, fostered public-private dialogue among e-commerce participants, and helped to identify priority actions to inform regional and national e-commerce strategies.

Because most Pacific SIDS are comparable in both economic size and structure, the national assessments have allowed for comparison of the status of e-commerce development across the region and helped identify priority actions to pursue at the regional or subregional level (see section IV.B.2). The national assessments have also served as an important diagnostic assessment and prioritization tool for the development of national e-commerce strategies in some of these economies. As of October 2022, three Pacific SIDS have fully developed and endorsed national e-commerce strategies: Tonga (2021), Vanuatu (2021) and Samoa (2022). Development of the national e-commerce strategy was still in progress for Solomon Islands (with support from UNCTAD), Tuvalu (with support from PIFS) and

Table IV.2. Year of the most recent e-commerce assessments and strategies in Pacific SIDS

	Assessment	Strategy
Samoa	2017	2022
Solomon Islands	2018	2022*
Vanuatu	2018	2021
Kiribati	2019	2022**
Tonga	2019	2021
Tuvalu	2019	2023*
Federated States of Micronesia	2020	
Fiji	2020	
Niue	2020	
Papua New Guinea	2020	2023*
Cook Islands		2021**
Nauru	2021	
Regional	2020	2021

Source: UNCTAD. See also Pacific Islands Forum (2022) and Pacific E-Commerce Initiative (2022).

* Ongoing.

** E-commerce acceleration plan, ongoing.

Kiribati (with support from the Enhanced Integrated Framework). These national strategies are based on national priorities and provide a vision and road map for the development of e-commerce and the broader digital economy. They are also aligned in their methodological approach with the *Pacific Regional E-commerce Strategy and Roadmap*. Several other Pacific SIDS have reached out to PIFS to secure funding to develop their own national e-commerce strategies.

2. Regional baseline assessment and strategy

In 2020, the E-Commerce Assessment: Pacific Region (PIFS, 2020) consolidated the findings from the national assessments conducted by PIFS and UNCTAD. The assessment concluded that, overall, e-commerce in the Pacific was at a nascent stage (see section IV.2). While some sectors and countries had observed growth in e-commerce activities, for e-commerce to flourish, some crucial constraints would still need to be addressed through a comprehensive regional initiative (see sections III.D.3 and IV.A.2). The assessment provided a springboard for the development of the *Pacific Regional E-commerce Strategy and Roadmap* (PIFS, 2021) endorsed by Forum Trade Ministers in August 2021. The principles of the *Pacific Regional E-commerce Strategy and Roadmap* are based on the *Framework for Pacific Regionalism*. Strategy measures are also aligned with the framework criteria for the regionalism test to assess regional initiatives (see box IV.3).

The *Pacific Regional E-commerce Strategy and Roadmap* outlines the Pacific consensus on regional priorities to increase digital trade readiness and proposes a vision of a transformative Pacific economy where all businesses and consumers actively engage in domestic and cross-border e-commerce. Its mission is to transform Pacific livelihoods through accelerated economic growth that is inclusive and equitable.

The regional strategy targets three overarching outcomes: (1) more online consumers; (2) more online businesses; who are (3) connected through a faster and more inclusive network. Seven intermediate or thematic outcomes are linked to the three overarching outcomes, one for each of the eTrade Readiness policy areas. Direct impacts are captured through 18 strategic outputs, which are delivered through 54 measures (see table IV.3)

Box IV.3. Framework for Pacific Regionalism

The *Framework for Pacific Regionalism* was the highest-level policy document at the time of drafting the *Pacific Regional E-commerce Strategy and Roadmap*. The Framework is based on: (1) regionalism; (2) putting the private sector at the core; (3) sovereignty; and (4) partnership. It is also closely aligned with PAFTS, and mainstreams gender equality.

The regional strategy is premised on the principles of the Framework. Under the Framework, the following criteria are set out for regional implementation of the Regionalism Test: establish a shared norm or standard; establish a common position on an issue; deliver a public or quasi-public good which is regional or subregional in its scope; realize economies of scale; overcome national capacity constraints; complement national governments; or facilitate economic or political integration. Given its comprehensive approach to digital trade, many of the regional strategy's measures will require interaction with and leadership by ministries and agencies with mandates beyond trade related matters.

In July 2022, a new top-level regional development strategy was approved – the *2050 Strategy for the Blue Pacific Continent* – in which Pacific leaders commit to invest in and strengthen partnerships and regional regulatory arrangements to ensure a well-connected region.

Source: UNCTAD, based on PIFS (2014 and 2022).

The strategy, in addition to providing a regional road map for e-commerce development, will also encourage harmonization of approaches and facilitate learning between countries. A harmonized regulatory approach on taxation of digital firms, for example, could be beneficial as cross-border e-commerce and digital trade expand. Learnings from countries with more developed digital ecosystems could also be shared with less digitally advanced countries in the region through the regional strategy's governance and implementation mechanism.

The ambitious development goals proposed by the *Pacific Regional E-commerce Strategy and Roadmap* will require a sound governance mechanism. At the core of the strategy's governance mechanism lies the Pacific E-commerce Committee, which has been established under the auspices of PIFS (see figure IV.2). Members of the Committee comprise national e-commerce focal points from Pacific Islands Forum countries. Representatives of agencies implementing measures envisaged under the strategy and funding partners of those measures will be able to attend as observers. The Committee reports to Forum Trade Ministers through the Steering Committee of the PAFTS Working Group. The *Pacific Regional E-commerce Strategy and Roadmap* recommends that subcommittees for the private sector and development partners are also established.¹²⁵ PIFS provides Secretariat support to the Committee with support from the PDEP.

Figure IV.2. The Pacific Regional E-commerce Strategy and Roadmap governance framework



Source: PIFS (2021).

Table IV.3. Pacific Regional E-commerce Strategy and Roadmap: priority areas and strategic outputs

VISION: A transformative Blue Pacific economy where all businesses and consumers actively engage in domestic and cross-border electronic commerce.

IMPACT: Transforming Pacific livelihoods, through accelerated economic growth that is inclusive and equitable.

Overarching outcomes	Policy area	Thematic outcomes	Strategic outputs
More online consumers More online businesses	PA 1: E-commerce Readiness and Strategy Formulation	E-commerce is mainstreamed in national and regional level policies	1.1 National E-commerce strategies are developed and implemented in Forum island countries, which are built on domestic consensus and inspired by the Regional E-commerce Strategy and Roadmap 1.2 Statistics on e-commerce are available to inform national and regional policymaking and the formulation of donor-funded programmes 1.3 E-commerce potential and opportunities in the Pacific are visible and recognized internationally
Connected through a faster and more inclusive network	PA 2: ICT Infrastructure and Services	Fast, reliable, affordable and inclusive internet connectivity is achieved	2.1 International connectivity is expanded and strengthened across the Pacific 2.2 Supply of general and last-mile domestic connectivity is expanded across the Pacific 2.3 Demand for better connectivity is stimulated across the Pacific
More online businesses	PA 3: Trade Logistics and Trade Facilitation	Fast, reliable, affordable and inclusive delivery of online purchases is achieved within and across borders	3.1 Trade procedures relevant to cross-border e-commerce are digitalized and harmonized across Forum island countries 3.2 Logistics systems relevant to e-commerce are strengthened and their costs to business reduced 3.3 Postal readiness for e-commerce has increased 3.4 Accessibility of e-commerce platforms has increased
More online consumers More online businesses	PA 4: Legal and Regulatory Framework	Predictable laws and regulations have encouraged businesses and consumers to trust marketplaces and engage in e-commerce	4.1 E-commerce-related laws are made or amended based on United Nations Commission on International Trade Law model laws as the best international standard, plus other best international practices 4.2 International agreements on e-commerce benefiting Forum island countries are negotiated and concluded
More online consumers More online businesses	PA 5: Electronic Payment Solutions	Digital financial services, including payment solutions for e-commerce, are widely adopted by businesses and consumers	5.1 Non-bank digital payment solutions for e-commerce are deployed across the Pacific 5.2 Business-friendly digital payment solutions spearheaded by commercial banks and MNOs are integrated in e-commerce ecosystem
More online consumers More online businesses	PA 6: E-commerce Skill Development	Better informed and prepared, and more confident populations have mastered digital innovation	6.1 The regional innovation/start-up ecosystem for e-commerce business ventures is strengthened 6.2 Digital skills are enhanced for all
More online businesses	PA 7: Access to Finance for E-commerce	Funding options for businesses seeking to start or accelerate their digital journey have been expanded and diversified	7.1 Availability of risk-sharing facilities and blended finance solutions has increased for e-commerce players (marketplace, vendors, merchants) 7.2 Alternative sources of finance for e-commerce ventures have been mainstreamed in access to finance solutions and are promoted regionally

Source: PIFS (2021).

C. THE ROLE OF REGIONAL AND GLOBAL INITIATIVES AND PARTNERS

1. Lessons from other regional groupings

The Pacific E-commerce Initiative has not only taken inspiration from global initiatives, such as eTrade for all, but has also benefited from the experiences of and tools developed by other regional groupings in the field of e-commerce. Specific examples were drawn from the work of both the Association of Southeast Asian Nations (ASEAN) and the Caribbean Community (CARICOM).

ASEAN developed the Work Programme on Electronic Commerce¹²⁶ and the ASEAN Agreement on Electronic Commerce, which was ratified in 2019.¹²⁷ E-commerce developments in the 10 Member States are coordinated through the ASEAN Coordinating Committee on Electronic Commerce.¹²⁸

The *Vision and Roadmap for a CARICOM Single ICT Space* (Caribbean Telecommunications Union Secretariat, 2017) is supported by an *Integrated Work Plan for the CARICOM Single ICT Space* (CARICOM Secretariat, 2017). A CARICOM Digital Agenda 2025 has also been developed.¹²⁹ The CARICOM Secretariat works with Member States in the design and implementation of policies, programmes and projects to accelerate development of the sector.

The regional initiatives in ASEAN and CARICOM provide valuable insights into how the Pacific E-commerce Initiative and Pacific SIDS can develop digital ecosystems with harmonized ICT policies, legislation, regulations, technical standards, best practices, networks and services. Digital agendas and agreements across both regions are underscored by functional cooperation that also reflects and fulfils the social, cultural and economic priorities of Member States. Drawing on the lessons learned and best practices from other regional groupings provides a foundation for the Pacific E-commerce Initiative and Pacific SIDS to conceptualize a regional digital ecosystem that promotes even greater cohesion and collaboration so countries can be in a better position to leverage the opportunities arising from digitalization.

2. E-commerce support programmes

Pacific SIDS require a significant injection of technical support, industry expertise and financial support to accelerate growth in e-commerce and the digital economy. No single development partner will suffice to meet the wide array of support needs. The past decade has seen a range of collaborative, multi-themed approaches from international partners – both development and private sector partners – adapted to the Pacific context. These partners have brought best practices and technologies from around the world to the region.

The eTrade for all initiative comprises 35 partner organizations, including technical agencies and non-governmental organizations active in the digital economy space. The initiative is a trusted information hub on development solutions and provides multiple resources related to the digital economy.¹³⁰ For Pacific SIDS, it offers tangible benefits in terms of access to reliable information on development solutions offered by eTrade for all partners. The coordinated approach facilitates access to technical support for projects and pilot initiatives, and effectively connects the dots between countries, partners and donors. One example is the eTrade Readiness Assessments and national e-commerce strategies where partners often support design and implementation phases. The initiative also allows Pacific SIDS to engage in the global dialogue on digitalization and is a useful channel for keeping abreast of global developments for those in more geographically isolated locations. PIFS joined eTrade for all in November 2022, becoming the thirty-fifth partner.

The Alliance for eTrade Development (eTrade Alliance)¹³¹ is a global development alliance between USAID and 12 private sector partners¹³² that supports cross-border e-commerce development for MSMEs. Membership of the alliance is mostly made up of industry leaders. This provides a competitive advantage because many are actively seeking new product testing and investment grounds. Pacific SIDS governments have placed a priority on building the digital economy and seeking investment links with larger firms. In this context, the eTrade Alliance can offer support for the introduction and scaling up of new technologies. The Alliance has five workstreams: policy and enabling environment for e-commerce; MSME skills development for e-commerce; e-commerce logistics and trade facilitation;



access to finance; and inclusive trade. In March 2022, the Alliance co-hosted a digital trade dialogue (along with PIFS and Pacific Trade Invest) to present proofs of concepts for promoting e-commerce for Pacific MSMEs.

Several donor-supported programmes are driving growth within the region's digital economy. These programmes operate at different levels and involve a range of technical areas and stakeholders. Institutions must coordinate well with each other to address the developmental needs that have been identified and avoid overlap.

UNCDF is a well-established actor in the region responsible for piloting, scaling and anchoring numerous solutions across the digital economy spectrum in Pacific SIDS. The agency is engaged in digital payments, financial inclusion, and digital entrepreneurship and literacy initiatives. It is also leading the PDEP, which leverages the comparative advantage of each partner in their contributions to poverty reduction, livelihood improvement and economic growth through e-commerce and the digital economy. The programme brings together synergies in e-commerce (UNCTAD), last-mile finance and digital inclusion (UNCDF) and programme management (UNDP).

PACER Plus is a regional trade and investment agreement intended to stimulate economic development across the Pacific. It also provides a broad framework for regional integration between Pacific SIDS plus the economies of New Zealand and Australia. Under this agreement, key outcomes of the PACER Plus Implementation Unit Strategic Plan 2025 offer an opportunity to enhance online market access and stimulate the growth of e-commerce.¹³³ In addition, implementation of the Arrangement on Labour Mobility (alongside PACER Plus) can reduce gender gaps in the labour market through more flexible working arrangements and generating new opportunities in e-commerce and online forms of work. The Agreement is implemented by the PACER Plus Implementation Unit¹³⁴ and hosted by the Government of Samoa.

UNCTAD has extensive experience in Customs automation and modernization, and has provided tailored approaches for the deployment of ASYCUDAWorld in smaller Customs administrations. The system is being rolled out in nine Pacific SIDS in addition to the five current ASYCUDA users. The ASYCUDA Support Mechanism for the Pacific includes comprehensive capacity-building to promote long-term sustainability and ensure that policymakers benefit from the latest innovations in information technology. It has enabled these countries to speed up Customs clearance and increase Customs revenue. It also promotes e-commerce and digital government transactions and has provided national economies with reliable data to inform policymaking and promote cross-border trade.¹³⁵

The Framework Agreement on Facilitation of Cross-border Paperless Trade in Asia and the Pacific aims to accelerate the implementation of digital trade facilitation measures for trade and development. Legal and technical readiness checklists were developed by the Legal and Technical Working Group of the UNESCAP Interim Intergovernmental Steering Group on Cross-border Paperless Trade Facilitation.¹³⁶ The checklists provide support for implementation of the substantive provisions within the framework. In the Pacific, UNESCAP has completed readiness assessments for cross-border paperless trade for Timor-Leste and Tonga, and another is under way for Tuvalu.¹³⁷ The readiness assessments provide countries with recommendations and action plans towards trade digitalization.

3. Regional coordination

Regionalism plays a particularly important role in the Pacific. Sharing and combining resources helps leverage the Pacific voice, influence and competitiveness; and overcome geographical and demographic disadvantages. Pacific Islands Forum Trade Ministers have identified a small number of high-priority issues related to trade that can be addressed by forms of regionalism under the coordination of PIFS. These priority issues include the services sector, e-commerce, connectivity and deepening markets.

The *Pacific Regional E-commerce Strategy and Roadmap* addresses the focus areas for e-commerce and identifies measures that can be implemented through collective action, as identified in *The Framework for Pacific Regionalism* (PIFS, 2014) (see section IV.B.2). The strategy seeks to address collective challenges and harmonize activities. As such, the work on e-commerce at the regional level is intended to complement and not substitute existing or planned national processes.



To maintain coherence of collective actions and for all Pacific SIDS to benefit from the assistance provided at the regional level, the regional strategy promotes similar strategy and implementation tools across the region. This approach may also help generate support from development partners who find supporting individual economies too resource-intensive but appreciate collective actions that could help generate a broader regional impact. The institutional set-up to implement the regional strategy has allowed for progress to be made in pursuing this support (see section IV.B.2).

4. Continued donor support

Increased support for regional and national initiatives around e-commerce and the digital economy is encouraging. Since the inception of the Pacific E-commerce Initiative in 2017, the involvement of development partners and implementing agencies has been instrumental in shaping the strategy and road map. Traditional donors supporting economic and trade development in the region – including the Australian Government Department of Foreign Affairs and Trade, the New Zealand Ministry of Foreign Affairs and Trade, the European Union, USAID, the World Bank and ADB – all have ongoing multi-year, regional, subregional and national projects.

Over the last two decades, most support provided by development partners in the digital field has targeted ICT infrastructure, onshore broadband connectivity, fibre-optic and offshore submarine cables and, in some instances, satellite connectivity. However, preliminary results from a recent stocktaking exercise by PIFS suggest that more development assistance is now going to soft infrastructure. This may range from laws and regulations for e-commerce to supporting entrepreneurs to move online through incubation programmes, training, toolkits and support for cross-border e-commerce market access.¹³⁸ Out of the 48 interventions reported on by partners, 19 focused on trade logistics and trade facilitation (including cross-border), seven on skills development and seven on legal and regulatory frameworks. Nine of the reported interventions covered more than two policy areas.

This shows that donors acknowledge the importance of strong e-commerce and digital economy ecosystems for the region to take advantage of enhanced connectivity. While donor focus has been expanding to include creating local capacity for both businesses and citizens to take advantage of the power of the Internet, the COVID-19 pandemic has accelerated the need for digital readiness for businesses, consumers, citizens and governments. However, Pacific SIDS markets are currently not well served by regional or global marketplaces.¹³⁹ E-commerce activities still focus predominantly on the domestic market – with the exception of diaspora-driven e-commerce. Very few Pacific merchants are listed on regional and global marketplaces. In addition, fulfilment centres in Australia and the United States contain a limited number of Pacific-made goods. More support directed at Pacific exporters with the potential to sell in these marketplaces may therefore be needed.

While support for developing e-commerce ecosystems is important, more attention could be given to ensuring that consumers and traders have better options and the confidence to buy and sell online. In this context, UNCDF has launched several initiatives providing grants to existing marketplaces and vendors to expand their businesses beyond their markets and borders (see box IV.4).¹⁴⁰ In addition, initiatives such as those promoted by Pacific Trade Invest in export markets and the eTrade Alliance at the regional level can be reinforced and replicated.

Establishment of the proposed Pacific E-commerce Private Sector Subcommittee would assist PIFS in defining and updating resource needs. It would also assist in more focused targeting of development partners and agencies, and in formulating new technical assistance programmes for the region. In addition, the Pacific E-commerce Portal provides visibility of the different initiatives that are being undertaken in the region and allows for better coordination between development partners and donors.

Box IV.4. The Pacific Digital Economy Programme

The PDEP is a UNCDF, UNDP and UNCTAD joint programme implemented in close collaboration with key stakeholders from the public and private sectors. The programme is financially supported by the Australian Department of Foreign Affairs and Trade.

The programme has the objective of leaving no one behind in the digital era and supports the development of inclusive digital economies in the Pacific, more specifically in Fiji, Tonga, Samoa, Vanuatu, and Solomon Islands. The programme seeks to create inclusive economies by addressing specific market constraints, narrowing the digital divide, and having a positive impact on the lives of Pacific islanders. The PDEP has four workstreams: 1) enabling policy and regulatory environment; 2) open digital payments ecosystem; 3) inclusive innovation; and 4) empowered customers.

Positive results have been achieved since the inception of the PDEP in 2021. The programme has promoted cross-cutting improvements in the enabling environment by supporting the development of national and regional e-commerce strategies, and strengthened policy and legal frameworks for the digital economy. Technical assistance facilitated by UNCTAD, UNCDF and UNDP has also enabled institutional, policy and regulatory best practices to be implemented by relevant agencies. The programme also supports implementing agencies by investing in policies to respond to regional integration goals and promote equity and inclusion.

The PDEP has accelerated the environment for the start-up of digital businesses, competencies to build a digital ecosystem and financing to kick-start a digital economy. The PDEP approach to private and public sector collaboration has transformative potential to increase people's meaningful participation in the digital economy. PDEP programming in Solomon Islands spurred the development of a robust foundation for digital financial services, which is essential for financial inclusion. Similarly, a FinTech Innovation Challenge took place in Singapore to address development challenges related to digital payments.

Complementing national solutions has bolstered the sustainability of programme activities with partner countries and showcases the great potential for dynamic digital transformation. The PDEP will continue to support the improvement of the digital environment, reflecting international good practice and thus advancing the interoperability of systems and simplification of services.

Source: UNCTAD, based on UNCDF, UNDP and UNCTAD (2022a and 2022b).

5. The role of the private sector

Private sector investment is crucial in advancing the digital transformation of economies and societies. For Pacific SIDS, the numerous, multidimensional investment needs include:

- Financial infrastructure, electricity, transportation logistics (including reverse logistics)
- ICT-enabling infrastructure, including telecommunications and data centres
- Multinational enterprises seeking to invest in productive sectors where digitalization is occurring
- Multinational enterprises with a smaller footprint seeking to penetrate virgin markets, such as fintech firms
- Companies and organizations offering skills development solutions.

Investment needs, prioritization, promotion and aftercare need to be carefully identified and expanded on within national investment policy and promotion frameworks (UNCTAD, 2015b). UNCTAD notes that less than 25 per cent of digital development strategies contain relevant details on investment requirements for infrastructure, and less than 5 per cent on investment needs beyond infrastructure, including for the development of digital industries (UNCTAD, 2017b). Priority should be given to joint ventures and investments that promote links with local suppliers, create knowledge and foster technical expertise spillover.

Pacific SIDS can also consider establishing special economic zones where investors can have access to good supporting infrastructure and several shared services. Investors in these zones are afforded



protection from some of the challenging infrastructural issues that national SMEs face. This can be justified if investors forge meaningful links that benefit national suppliers.

Opportunities that provide entry points for investors to access the entire region easily improve their business scope. A good example is the regional sandbox (and accompanying guidelines) developed by the Pacific Islands Regional Initiative and adopted by eight Pacific SIDS (Alliance for Financial Inclusion and Pacific Islands Regional Initiative, 2020). The sandbox provides a unified and coordinated multi-country regulatory environment that effectively creates a single market that fintech firms, including investors, can access.

Strengthening the enabling environment for e-commerce and the digital economy is a complex endeavour because the building blocks of the digital economy are diverse and cross-cutting in nature. Although there are opportunities to build on frameworks, strategies and solutions that are locally driven, several constraints hamper the design and implementation of effective approaches. Understanding the enablers and constraints to building inclusive digital economies in the region provides a starting point to develop relevant approaches.

Throughout the Pacific, countries are in the process of developing their own digital visions and starting to build enabling environments for e-commerce and the digital economy. This requires a broad road map that pursues a coordinated and harmonized approach with various stakeholders, both at the national and regional level. Although significant progress has been made, there is still considerable scope in the Pacific to expand regional initiatives, improve connectivity and broaden e-commerce opportunities. Developing synergies between initiatives at the regional and national levels and strengthening public–private collaboration can help develop common approaches and strengthen the business and policy environment.

In the transition to a digital economy, Pacific SIDS will encounter both development opportunities and challenges. It is critical to take a holistic and balanced approach that ensures that all Pacific islanders benefit from the digitalization of economies. Chapter V provides perspectives and recommendations on some key considerations.



CHAPTER V

The way forward

The Pacific region is still in the early stages of its digital transformation. For the region to fully realize the benefits of the digital economy, it will be important for countries to enhance their capacities in a number of areas and to consider policies that would facilitate the capture of the value that emerges from this broad economic transformation. Overarching digital governance and regulatory frameworks will also be important to ensure that digitalization leads to inclusive and sustainable outcomes. This is an immense challenge given that the digital economy has implications across many policy areas and is increasingly inseparable from the functioning of the economy as a whole.

As highlighted in the *Digital Economy Report 2021* (UNCTAD, 2021b), policymakers and stakeholders are often poorly prepared to tackle the emerging policy challenges related to the digital economy. This chapter provides recommendations and pathways to support Pacific policymakers as they seek a way forward that maximizes the benefits and minimizes the risks of the digital era.

Towards an inclusive digital economy in the Pacific



A. CAPACITY-BUILDING FOR DIGITALIZATION

Countries in the Pacific find themselves at different levels of readiness to engage in and benefit from e-commerce and the digital economy. Some countries have e-commerce platforms and moderate levels of digitalization of business processes, while other countries are still focused on closing the digital divides related to Internet access and affordability. Building capacity for digitalization, particularly for LDCs in the region, will help address this regional divide and position countries to benefit from the digital economy.

1. Digital infrastructure

While significant progress has been made in upgrading the digital infrastructure in the region – notably the expansion of the submarine fibre-optic cable network and mobile network infrastructure – more investment is needed to ensure this infrastructure is strengthened and reaches rural areas and remote islands. This is particularly important because digital infrastructure lies at the core of the digital economy. Without access to affordable, reliable, high-capacity broadband access for all people and businesses in the region, development of the digital economy will remain constrained (see table V.1).

Appropriate investments in digital infrastructure will be tailored to country contexts but will require a mix of public and private investment as well as support from multilateral development banks and other development partners. Leveraging the Pacific Region Infrastructure Facility could be one avenue for generating this support, in addition to the potential establishment of new regional funds focused on digital infrastructure. Support from bilateral partners and multilateral development banks will likely be necessary to expand the submarine cable network in the region. Investments should be prioritized for those Pacific SIDS that are not connected to an international submarine cable (Nauru, Timor-Leste and Tuvalu).¹⁴¹

To bring connectivity to less profitable markets, including remote rural areas with small populations, direct government support will likely be needed to complement private sector investment. For countries already benefiting from access to submarine cables, this could include expanding connectivity to more areas through domestic backbone networks (submarine cables to outlying islands and terrestrial cables and telecom towers on land). Setting up supply-side and demand-side incentives would be needed (PIFS, 2021) to expand the 4G network and Wi-Fi connectivity in the region. Sharing of infrastructure between MNOs and maintaining existing satellite connectivity could also be explored, where appropriate, to reduce the financial risk of providing services in rural areas.

The growing importance of 5G technology in other parts of the world indicates that the Pacific region would benefit from laying the groundwork to understand how this technology could be deployed in the region. The *Pacific Regional E-commerce Strategy and Roadmap* recommends conducting a regional study to understand the requirements and implications for deploying 5G in the region, including a comparative assessment vis-à-vis ongoing efforts to scale up 4G connectivity. This study could be carried out by international organizations such as ITU, UNCTAD and UNCDF in partnership with regional organizations and MNOs.

The cost of Internet services for both consumers and businesses continues to be a barrier to digital development. As noted in chapter II, most countries still experience broadband costs above the target set by the Broadband Commission for Sustainable Development. Identifying the appropriate mix of investments in digital infrastructure to lower these costs will require further research. Although solutions will be context-specific, approaches that involve sharing network infrastructure, demand aggregation, enhanced competition and strengthening of universal access programmes could be considered (PIFS, 2021).

Investments in digital infrastructure should be complemented by policies promoting access to and the use of ICT, including policies aimed at improving the affordability of devices such as smartphones and laptops. Targeted subsidies or tax incentives could be considered to increase the affordability of devices and Internet packages. For example, governments could step in with incentives such as grants, monthly instalment payment options or non-collection of value added tax and related taxes (e.g. import duties) on entry-level smartphones.



Table V.1. Overview of selected indicators on digital infrastructure and ICT access and use, by selected country grouping and Pacific SIDS, 2017–2020

	Infrastructure of the digital economy							ICT access and use				
	Number of submarine cables	Access to electricity (% of population)	Population covered by 3G mobile network (%)	Population covered by 4G mobile network (%)	International bandwidth per Internet user (kbit/s)	Internet users (% of population)	Mobile broadband subscriptions (per 100 people)	Price data only mobile broadband 2GB (% of GNI per capita)	Smartphone adoption (% of all connections)	Price of the cheapest smartphone (% GNI per capita)		
World	..	89.7	91.3	80.9	121.5	51.9	71.1	1.3	60.0	23.4		
Pacific SIDS	1.5	68.1	72.9	49.8	29.9	21.2	29.6	4.9	30.0	17.3		
Fiji	4.0	98.8	95.2	77.0	34.0	67.3	85.3	2.6	43.0	13.3		
French Polynesia	3.0	100.0	87.6	80.9	47.6	72.7	64.4	..	49.0	..		
Guam	11.0	100.0	92.7	82.8	..	80.5	..	..	..	..
Kiribati	0.0	89.1	69.0	52.6	5.9	31.9	25.0	5.5	..	..
Marshall Islands	1.0	96.7	..	..	43.3	38.7	0.0	..	..	..
Micronesia (Fed. States of)	3.0	80.5	15.0	0.0	22.1	35.3	0.0	10.2	..	..
Nauru	0.0	99.9	98.0	30.0	..	62.4	33.2	2.3	..	..
New Caledonia	2.0	100.0	97.4	79.5	..	82.0	..	..	30.0	..
Papua New Guinea	4.0	57.5	64.4	50.0	38.9	11.2	10.7	10.5	22.0	13.4		
Samoa	3.0	99.0	91.0	49.0	10.0	33.6	18.1	4.4	..	..
Solomon Islands	1.0	68.1	40.0	22.3	11.7	11.9	18.2	15.1	31.0	21.3		
Timor-Leste	0.0	88.0	96.5	37.5	3.7	27.5	32.2	5.4	..	65.3		
Tonga	2.0	99.0	97.3	85.7	35.0	41.2	60.7	2.2	..	..
Tuvalu	0.0	99.3	48.0	0.0	10.1	35.2	0.0	..	..	..
Vanuatu	1.0	64.1	69.7	46.5	11.7	25.7	171.4	4.1	26.0	..		

Source: UNCTAD calculations, based on data used for figures and tables of this report, except World Bank, World Development Indicators, available at <https://datatopics.worldbank.org/world-development-indicators/> (for access to electricity, accessed 30 September 2022).

Notes: These are 2017–2020 averages, except for internet use and international bandwidth for Pacific SIDS as a group (2017) because of a lack of data after 2017. The numbers of submarine cables concern the situation up to 2020 and the price of the cheapest smartphone is based on 2020 data. While considering that internet use coverage in the Pacific has changed since 2017, this analysis was carried with the most recent available data at the time of writing of this report.

Country is below the Pacific SIDS average

Country is above the Pacific SIDS average

Country is above the global average

Legend: As there is no global average for submarine cables, colour coding only applies based on Pacific SIDS average.

2. Digital skills and entrepreneurship ecosystem

Enhancing digital literacy across populations – including for women, people living in rural areas and marginalized communities – will be key to building inclusive digital economies in the Pacific. This requires investment at all levels of the education system as well as initiatives aimed at businesses and consumers. As highlighted in UNCTAD (2021b), education policies should enhance data literacy, digital skills and data talent. Much of the digital knowledge in the region is currently acquired through peers and informal networks (UNCDF, 2021a). This knowledge is likely to be concentrated in urban areas among those who already have relatively high levels of education. It is thus important to roll out digital literacy initiatives to women, youth, people living in rural areas and MSMEs. The digital and financial literacy survey carried out by the PDEP in 2022 highlights that courses to enhance digital literacy could be developed by regional and international bodies such as the University of the South Pacific, the Pacific Community, the United Nations Children’s Fund, the International Labour Organization, Australia Pacific Training Coalition, UNCDF, and national technical and vocational education and training bodies (PIFS, 2021).

Strengthening the overall entrepreneurship ecosystem – which remains generally underdeveloped in the Pacific – will also be important to build digital economies. There are limited business support services for aspiring entrepreneurs and where services do exist they tend to be in urban areas (UNCDF, 2021a). Those living in rural areas are typically excluded. UNCDF recommends boosting support services for entrepreneurs by increasing the available co-working, incubation and business accelerator programmes in the region. Doing so will require support from governments, the private sector and regional and international donors. The Market Development Facility was instrumental in supporting the establishment of Greenhouse Coworking in Fiji, for example, and UNDP supported the establishment of the lumiWaka co-working space in Solomon Islands.

However, the *Digital Economy Report 2019* (UNCTAD, 2019b) reported that investments in these programmes can be a waste of resources if they remain unused due to bottlenecks such as limited market access or weak entrepreneurial advisory capacity. It will be crucial for governments and development partners to tailor actions and measures to the dynamics of the local market. For example, advice that may be useful for a market vendor wishing to advertise to a broader audience through social media would be of limited value to a mature digital business that is seeking legal advice or international investors. Given these challenges, the PDEP will continue to play a role in building the innovation ecosystem in the Pacific by providing support to local organizations and initiatives.

Building a vibrant entrepreneurship ecosystem from its current low base will require strong public–private collaboration. It is notable, for example, that entrepreneurship in the Pacific is generally associated with those who leave school early or who cannot secure jobs (UNCDF, 2021a). Changing mindsets and the negative stigma surrounding entrepreneurship will take time. Governments can invest at all levels of education and support entrepreneurship initiatives rolled out by the private sector. Starting points could be mentorship programmes and internships established by existing digital enterprises and entrepreneurs, including from outside the region. The UNCTAD eTrade for Women initiative could be rolled out in the Pacific region to support this aim.

The *Pacific Regional E-commerce Strategy and Roadmap* also recommends developing a regional distance learning programme for businesses interested in engaging in e-commerce, and a regional training and acceleration programme for Pacific companies in the digital economy sphere. This could be developed by a group of regional universities, development organizations and leading tech multinationals. Courses specifically designed to enhance the knowledge and awareness of policymakers on digital issues could be developed by UNCTAD, the International Trade Centre, ITU, PIFS, Pacific Community and regional universities (PIFS, 2021).

3. Digital economy statistics

Chapters II and III revealed significant data gaps for a number of indicators that are typically available for other regions. These data relate to ICT availability, access and use; levels of e-commerce engagement; and broad trends related to the digital economy. Information on e-commerce volumes, values, operators and regulations across the Pacific, as well as on available supporting programmes,



is not readily available. These challenges were also noted in the *Pacific Regional E-commerce Strategy and Roadmap*.

To assess progress and develop evidence-based policies, the regular collection and updating of statistics on Internet use, e-commerce and digital economy activities should be made a priority for policymakers. Robust data would support the planning, monitoring and evaluation of various ICT and e-commerce initiatives. Although some of this data collection could be carried out by national statistics offices, additional support from international development partners is likely to be needed to address capacity constraints in these institutions. UNCTAD is providing training courses on producing statistics on the digital economy. The training aims to provide policymakers with the knowledge and tools to measure e-commerce, ICT use by enterprises and international trade in digitally-delivered services. A course on this topic was delivered to policymakers in 14 Pacific SIDS in July 2022.¹⁴² The PDEP expects to provide follow-up support to strengthen the capacity of national statistics offices to collect statistics related to e-commerce and the digital economy. In addition, it could be worthwhile conducting a feasibility study on combining big data analytics with traditional statistical techniques for measuring and fostering the digital economy in the Pacific.¹⁴³

One example of effective regional cooperation in this area is the roll-out of the Pacific E-commerce Portal that was developed as one of the priority measures of the regional e-commerce strategy. The Pacific E-commerce Portal is intended to become a one-stop shop for information on e-commerce in the Pacific. Resources include information on e-commerce and ICT statistics; a repository of national and regional e-commerce assessments and strategies; toolkits for businesses in the Pacific that wish to sell products and services online; information on development programmes and projects related to the digital economy; and general news on e-commerce development in the Pacific.¹⁴⁴ The statistics section of the Pacific E-commerce Portal represents the first-ever regional database on the e-commerce enabling environment and was developed as a joint effort by PIFS, Pacific Community and UNCTAD. The Pacific E-commerce Portal is also modelled on and links to the global eTrade for all platform,¹⁴⁵ showing how synergies between global and regional portals can be leveraged.

4. Research on the digital economy

Limited institutional research capacity on digital economy issues in the Pacific became apparent while preparing this report. As noted in chapter III, the digital economy has implications for areas as diverse as competition, consumer protection, employment, social affairs, public governance and trade. In the context of the evolving digital economy, research in these areas is extremely limited or non-existent in the region, highlighting the need for more capacity-building with universities and research institutions. Governments and development partners could support researchers and professors in the region to seek fellowships in universities outside the region with a strong focus on digital development. Likewise, universities in the region could invite visiting professors with expertise in these areas. In the medium term, courses at regional and national universities could be developed on relevant topics such as digital financial services, the digital economy and digital transformation in developing countries.

More in-depth research on data and digital platforms, and their potential impact on value creation and capture in the region, is needed to inform policymaking, development programming and regional cooperation initiatives. Research capacity on digital economy issues could also help document the benefits and costs accruing to Pacific SIDS from digitalization. One approach could be to establish an 'Institute for Pacific Digital Economies' in one of the leading research institutions in the region. This institute could work with development partners, researchers and non-governmental organizations to carry out research, organize capacity-building workshops and publish research findings on issues relevant to the digital economy in the Pacific. Academic institutions with a strong regional presence – such as the University of the South Pacific with campuses in 12 Pacific SIDS – would be well placed to carry out this type of research. The PDEP could play a role in establishing such a research body and could provide initial support to the host organization. One important area that could benefit from additional research by such an institute is the potential development implications of the digital economy for marginalized groups, including women and people living in rural areas, in the context of achieving sustainable and inclusive outcomes.



Other potential areas of further research include the impact of the absence of global B2C e-commerce platforms in the Pacific. It is possible that the absence of these global platforms is providing the space for local platforms to emerge with solutions tailored to the Pacific context. At the same time, the absence of these global platforms may be limiting opportunities for some MSMEs to access new markets. More in-depth research is needed to better understand these issues and inform policymakers, and this is expected to be a future area of focus for the PDEP.

The Pacific region's heavy reliance on social media platforms would also benefit from further study, particularly the implications of the vast amounts of data that consumers and businesses provide to global companies with seemingly little compensation. More research is also needed to understand the implications of the digitalization of economies in the Pacific for vulnerable groups, including women, marginalized communities and people living in rural areas.

5. National policymaking

As highlighted in the national e-commerce assessments carried out in the region, governments have limited capacity – in terms of both human resources and institutional processes – to establish policies that would strengthen the enabling environment for the digital economy. There may be a need to increase representation of technical and analytical communities in legislative and regulatory development processes and to enable more knowledge transfer between public and private sector stakeholders (UNCTAD, 2021b).

In addition to general capacity-building on digital economy issues, governments should put in place interministerial committees or bodies to increase awareness of the issues across different parts of government. Some countries including Kiribati, Papua New Guinea, Solomon Islands, Tuvalu and Vanuatu, are achieving this through the establishment of national e-commerce committees to support the development and implementation of national e-commerce strategies. These committees help achieve whole-of-government responses to opportunities and challenges related to e-commerce and the digital economy.

Policy coherence at the national government level could be enhanced by public–private dialogue and training for policymakers. Public–private dialogue could be formalized through the establishment of private sector working groups that feed into national policymaking in areas such as financial inclusion, digital literacy and education. These efforts could be supplemented at the regional level by the Pacific E-commerce Private Sector Sub-Committee that has been endorsed for establishment in 2023 as part of the Pacific E-commerce Initiative. Training for Pacific trade negotiators was organized and delivered by PIFS in April 2022 under the Pacific E-commerce Initiative. The aim of the training was to strengthen the capacity of Pacific governments to negotiate and implement future digital trade agreements and e-commerce provisions in free trade agreements.

ODA should be increased to help countries harness the benefits of digital transformation and should be tailored to specific country needs. UNCTAD (2021c and 2022f) noted that only a small share of ODA addresses the development implications of digital transformation. Data from OECD suggest that the share of aid for ICT in total aid for trade stood at 2.7 per cent in 2019 and 2020. Increased ODA would allow for more support to Pacific governments in relevant areas. As digital development in the region increases, such assistance may also be needed to develop national strategies for dealing with data flows. As highlighted in UNCTAD (2021b), countries will need to be able to participate effectively in processes and meetings related to the digital economy, including at the regional and international levels. This is particularly important for the Pacific region, which is underrepresented at regional and global dialogues on important digital development issues. The PDEP could potentially provide support in this area as part of its broader efforts to increase the capacities of government officials.



B. DIGITAL GOVERNANCE

Although digital technologies are reshaping how people live, work and trade, the impacts of these changes and their development implications are not well understood. An optimistic view is that digital transformation will lead to new jobs, higher productivity and more efficient regional and international trade. In this scenario, the benefits are equally shared between developed and developing countries. A more cautious take is that the benefits of widespread digitalization may be captured by a minority of highly skilled workers and large corporations, leading to more inequality and further entrenching digital divides. Without global consensus on how to navigate the implications of the digital economy, developing countries face the risk of bearing the burdens of digitalization but not reaping the full benefits.

In the Pacific, digital development should not be viewed within a narrow development lens where progress is measured solely in terms of more people and businesses using the Internet or participating in e-commerce. Digital development aims to stimulate economic growth, create jobs, boost innovation and increase regional and international trade. At the same time, digital development should be pursued in the context of the broader realization of economic, social and cultural rights, and all other human rights for the transformative changes envisioned in the 2030 Agenda for Sustainable Development. These rights include the right to education, the right to food, the right to health, the right to an adequate standard of living and the right to work.

In this context, common principles and approaches can help guide policymakers and other stakeholders. Inclusion should be central to approaches by policymakers aimed at strengthening the enabling framework for digital economies. All people and sectors should benefit from e-commerce and the digital economy, including rural populations, women, youth, persons with disabilities and indigenous communities. Digitalization of economies should reduce, not widen, existing income and wealth disparities. In the process of building enabling frameworks and implementing related policies, specific measures should be identified to promote the empowerment of women and people living in rural areas. Smartphone affordability, for example, can expand access to education and learning opportunities as well as to health services, information and employment for all. Inclusive digital economies carry profound implications for State obligations under international human rights law, including for the realization of women's human rights.

Issues related to digital governance are complex and discussions on how to achieve it will continue at the domestic, regional and international levels. This report highlights two elements of digital governance in the Pacific: value creation and capture, and the gender digital divide.

1. Value creation and capture

As described in chapter III, digitalization makes entirely new methods of value creation possible. With the digital economy in the early stages in the Pacific, there is limited evidence of its effects on value creation and distribution. As countries in the region pursue digital development, assessing and shaping how value is created and captured should be prioritized. Policymakers should have the understanding that digital development could have different possible outcomes. For example, it could lead to more inclusive and sustainable development or it could result in greater inequality. Policies that focus on capturing the value that emerges from the digital economy would improve the chances of an inclusive and sustainable outcome.

Although recommendations to create and capture value in the digital economy were covered in chapter III, the importance of building domestic productive capacity should also be highlighted. The adoption of digital technologies and related business models may become more of a requirement than a distinguishing factor in the Pacific. As highlighted in the *Digital Economy Report 2019* (UNCTAD, 2019b), this increases the importance of second-order benefits stemming from the development, management and distribution of digital technologies and services. Significant value in this context is likely to emerge from the monetization of large-scale digital data. This implies that the digitalization of firms, digital entrepreneurship, development of local digital content and the capacity to turn data into digital intelligence will increase in importance in the Pacific region.



Many countries are confronted with difficulties in striking the right balance between the digitalization process and ensuring a more equitable distribution of the value created by the digital economy. This is something policymakers, digital platform owners and users in the Pacific will have to grapple with in the near future, and an area where development partners can provide support. The PDEP will continue to support policymakers with technical assistance and capacity-building related to strengthening the enabling environment for the digital economy. The programme will also provide grants and loans to private sector partners with business models that demonstrate the potential to create and capture value from digitalization occurring in the region.

2. Gender divide

It is imperative that discussions on digital governance frameworks include the goal of closing the digital gender divide. Addressing this issue not only provides more opportunities for women and girls, but also contributes to broad socioeconomic progress. Digital technologies can reduce gender gaps in labour force participation by making work arrangements more flexible, connecting women to work, and generating new opportunities in online work, e-commerce and the sharing economy (World Bank, 2017).

As noted in chapter II, many women in the Pacific remain excluded from the digital sphere and are confronted with multiple barriers to mobile phone ownership and access to and use of the Internet. They also face unique barriers to digital entrepreneurship. These barriers are complex and diverse and include inequality in incomes, discriminatory gender norms, the education gap and digital skills gap. A significant proportion of MSMEs are led by women, who are often household heads. The economic benefits arising from e-commerce and the digital economy will therefore have a positive impact on the household, including through improved health and education outcomes for children, among other socioeconomic benefits. Greater economic participation of women in general, and women-led MSMEs in particular, further contributes to inclusive economic growth.

Closing the digital gender divide is therefore critical to ensuring that women-led MSMEs in particular can harness the benefits of digitalization and have increased opportunities for social and economic inclusion. The PDEP will continue to prioritize the inclusion of women-owned and women-led MSMEs within its work on building inclusive digital economies in the region. In all cases, actions taken in response to bridging the digital gender divide should be guided by international human rights norms and principles including equality, non-discrimination, inclusion, participation and the provision of effective remedies.

Reducing the digital gender divide should be a priority for public authorities. More resources should be allocated for research on structural barriers and drivers to inform policy responses that are needed to close the divide. The PDEP will continue to explore these issues within its broader research on policies and regulations related to the digital economy.

C. REGIONAL COOPERATION AND INTERNATIONAL SUPPORT

The Pacific region is well placed to begin putting in place policy frameworks that would maximize the benefits of digitalization and minimize the risks. The far-reaching impacts and complexity of policy solutions call for regional cooperation and more international support. Effective solutions in the digital era will require collaboration across governments, the private sector, academia, non-government organizations, community groups, research institutions, multilateral development banks and development partners. For many policy areas, there will be no simple or obvious solutions. The complexity of the challenges will require partnership, collaboration and innovative thinking. There is no one-size-fits-all approach in the Pacific region.

Fortunately, there is strong momentum in the region to address these concerns, at both the national and regional level. Many Pacific SIDS have completed e-commerce diagnostic studies and started formulating national e-commerce strategies. The diagnostic studies also provide a broad understanding of the digital development issues and stress the importance of interoperability and harmonization



within the Pacific on important issues such as the development of regional markets and trade relations. As noted in chapter IV, a total of 11 countries have benefited from diagnostic studies and five have developed national e-commerce strategies that provide road maps for strengthening their respective business, policy and regulatory environments.

In addition to national initiatives, the Pacific E-commerce Initiative and regional baseline assessment and strategy further demonstrate the momentum. The main challenge will be to set up effective governance structures to coordinate the implementation of national and regional strategies with different government agencies and other stakeholders. It will also be essential to monitor progress and coordinate financial and technical support from donors and development agencies. The Pacific E-commerce Committee will help address these issues.

The PDEP will also continue to support countries through its four workstreams. By working with public and private sector stakeholders, the programme has improved the capacity of policymakers to develop policies related to the digital economy, and has also supported digital finance providers, MNOs and MSMEs. Looking ahead, the PDEP will seek to expand its country coverage in the region and continue to focus on an integrated approach that includes capacity-building, technical assistance, research, partnership engagement and financial instruments (loans, guarantees, grants and blended finance).

The Pacific region can benefit from lessons learned from other regions or global initiatives. The region already benefits from the support of a wide range of development partners – including the Governments of Australia, China, Japan, New Zealand and the United States, as well as the European Union – that provide technical expertise and funding to national and regional initiatives. Long-term planning and continuity will benefit from both visibility and predictability of donor support. In addition, involving and seeking solutions from the private sector will be key to advancing the digital transformation of economies and societies in the Pacific.

While regional cooperation and allocation of domestic resources will be critical to addressing the emerging policy challenges of the digital economy, more financial and technical resources will also be needed. In some policy areas, regional leaders and development partners could work together on approaches that align with international best practices. International development partners will need to support the development and delivery of solutions tailored to the Pacific region. Any initiative should directly help reduce persistent digital divides, strengthen the enabling environment for value creation and build capacities in the public and private sectors.

Some policy challenges related to the digital economy may be more effectively addressed at the international level (UNCTAD, 2019b). Finding adequate solutions to cross-border data flows, taxation of global digital platforms and international trade, for example, will require international collaboration and policy dialogue. The full involvement of Pacific SIDS in these discussions will be critical and any global consensus will need to incorporate the unique circumstances of SIDS.

The characteristics of the Pacific region have led to the emergence of distinct trends, opportunities and challenges. The possibilities for building an inclusive digital economy in the region are great – yet not without difficulties. Significant gaps remain in terms of access to affordable, reliable, high-capacity and high-speed broadband connectivity. Other important factors affecting the region's prospects of harnessing digitalization for development include political realities, economic conditions, and social and cultural priorities.

This creates somewhat of a Pacific paradox. The unique barriers to digital development in the region also highlight the vast potential of e-commerce and the digital economy. For example, the huge distances between intraregional markets make delivery logistics inherently challenging. At the same time, e-commerce may be the only avenue for many MSMEs to access new markets. Geographically dispersed populations make last-mile delivery at the very least costly and time-consuming, if not completely infeasible. In this context, e-commerce offers perhaps the most efficient way to integrate rural and urban markets in the Pacific. For fragmented markets in the region, digital platforms may present an avenue for facilitating buyer–seller discovery and trade that is taken for granted in the large urban centres in other parts of the world.



The unique challenges of the Pacific paradox will require new ways of thinking and innovative solutions. Global models or experiences from other regions may not always fit in the Pacific context. Policy approaches and solutions in the region will need to be adapted to the unique cultural, economic, social and political characteristics of individual countries and the region as a whole. This underscores the importance of thoughtful national debate, regional cooperation and development support so that the digital economy works for all Pacific islanders.



Annex tables

Table 1. Selected geographical and demographic characteristics of Pacific SIDS, latest available year

	Land area (km ²) 2019	Number of islands and islets	Number of inhabited islands	Distance from capital to nearest neighbouring capital (km)	Population 2022	Rural population (% of total population) 2022	Living languages (indigenous and immigrant) 2009	Linguistic Diversity Index 2009
American Samoa	200	7	6	..	55 032	12.8	..	..
Cook Islands	240	15	13	..	17 564	24.1	6	0.379
Fiji	18 270	322	110	806	909 457	41.8	20	0.607
French Polynesia	3 471	118	76	..	284 160	37.8	..	..
Guam	540	1	1	..	171 528	4.9	..	..
Kiribati	810	33	21	677	123 416	42.9	3	0.033
Marshall Islands	180	1 200	24	677	60 051	21.5	2	0.027
Micronesia (Federated States of)	700	607	65	1 296	117 486	76.8	19	0.792
Nauru	20	1	1	699	10 894	0.0	9	0.596
New Caledonia	18 280	..	5	..	290 924	27.7	..	..
Niue	260	1	1	..	1 616	52.5	3	0.071
Northern Mariana Islands	460	14	3	..	58 271	8.0	..	..
Palau	460	340	8	1 631	18 227	18.0	5	0.077
Papua New Guinea	452 860	..	5	1 428	9 292 172	86.4	820	0.990
Samoa	2 830	12	4	868	202 241	82.4	2	0.002
Solomon Islands	27 990	992	347	1 252	721 164	74.4	70	0.965
Timor-Leste	14 870	3	2	1 924	1 369 431	67.9	19	0.897
Tonga	720	170	36	806	107 748	76.9	3	0.014
Tuvalu	30	9	9	1 066	12 060	34.5	2	0.139
Vanuatu	12 190	83	67	1 060	321 834	74.2	115	0.972

Source: UNCTAD, based on UNCTADstat (2022), available at <https://unctadstat.unctad.org> (for population and rural population, accessed 16 and 17 March 2022); United Nations Educational, Scientific and Cultural Organization (2009) (for living languages and Linguistic Diversity Index); Food and Agriculture Organization of the United Nations, available at <https://www.fao.org/faostat/en/#data/RL> (for land area, accessed 16 March 2022); UNCTAD (2022c) and various governmental, non-governmental and regional sources (for number of islands and islets, number of inhabited islands and distance between capitals).

Notes: Linguistic Diversity Index: the highest possible value, 1, indicates total diversity (that is, no randomly selected two people have the same mother tongue) while the lowest possible value, 0, indicates no diversity at all (that is, everyone has the same mother tongue). The computation of the diversity index is based on the population of each language as a proportion of the total population.

Table 2. Selected economic characteristics, by country grouping and Pacific SIDS, latest available year

	GDP per capita (\$ at current prices) 2021	Nominal GNI per capita (\$ at current prices) 2020	Personal remittances (% of GDP) 2020	Net ODA received (% of GNI) 2020	Share of population without postal services (%) 2016 or more recent	Adult literacy rate (15+ years, both sexes, %) 2020 or latest available year
World	12 223	10 936	0.8	0.2	..	86.7
Developed economies	43 203	39 400	..	..	..	..
Developing economies	5 860	5 029	..	..	..	..
Middle income	..	..	1.6	0.3	..	86.7
Low income	..	..	2.7	11.6	..	61.4
LDCs	1 110	1 090	4.6	4.9	..	65.4
SIDS	11 849	10 062	..	..	..	84.8
Caribbean small states	..	..	7.8	0.7	..	..
Pacific SIDS	3 966	3 798	4.5	7.5	..	..
American Samoa	..	..	0.0	..	..	..
Cook Islands	14 342	16 135	..	..	..	..
Fiji	5 434	4 590	7.8	4.5	27.0	99.1
French Polynesia	21 738	20 708	10.3	..	..	..
Guam	..	..	0.0	..	..	..
Kiribati	1 679	2 826	8.2	17.2	0.0	..
Marshall Islands	4 202	5 038	12.7	61.4	..	98.3
Micronesia (Fed. States of)	3 471	3 937	5.7	37.8	..	..
Nauru	14 241	14 711	0.0	15.9	..	..
New Caledonia	35 619	34 007	6.6	..	1.0	..
Niue	..	..	..	..	..	..
Northern Mariana Islands	..	..	0.0	..	..	..
Palau	13 694	14 868	0.8	25.2	..	96.6
Papua New Guinea	2 769	2 590	0.0	4.3	90.0	..
Samoa	3 756	3 777	25.3	21.5	0.0	99.1
Solomon Islands	2 365	2 303	1.8	13.5	..	76.6
Timor-Leste	1 500	1 807	8.2	10.5	60.0	68.1
Tonga	4 585	5 039	39.0	30.7	45.0	99.4
Tuvalu	5 309	8 204	0.0	58.2	30.0	..
Vanuatu	3 001	2 786	10.9	15.6	..	87.5

Source: UNCTAD calculations, based on UNCTADstat (2022), available at <https://unctadstat.unctad.org> (for GDP and GNI per capita, accessed 11 October 2022); World Bank, World Development Indicators, available at <https://datatopics.worldbank.org/world-development-indicators/> (for net ODA and personal remittances, accessed 30 September 2022); UNCTAD Development and Globalization: Facts and Figures 2021, SIDS profile, available at <https://dgff2021.unctad.org/social-development-issues/health-and-education/> (for adult literacy rate); and Universal Postal Union (for share of population without postal services).

Notes: Country groups are those of the source, except Pacific SIDS. The 2019 data concern Caribbean small states and LDCs for net ODA received (per cent of GNI).

Table 3. Value added by sector, tourism expenditure and trade openness, by country grouping and Pacific SIDS, selected years

	Agriculture, hunting, forestry and fishing (% of GDP) 2020	Industry (% of GDP) 2020			Services (% of GDP) 2020	Inbound tourism expenditure in the country (% of GDP)		Trade openness (% of GDP) 2021
		All industry	Manufacturing	Mining/utilities		2019	2020	
World	4.3	26.1	15.8	4.8	65.3	0.0	0.0	28.5
Developed economies	1.3	21.7	13.2	3.6	72.1	0.0	0.0	28.4
Developing economies	9.1	33.0	19.8	6.7	54.4	0.0	0.0	28.6
LDCs	20.3	28.6	13.4	7.4	47.1	0.9	0.3	26.1
SIDS	3.2	25.2	15.6	4.0	66.7	0.7	0.2	99.5
Caribbean	5.0	25.0	12.3	3.6	65.3	3.6	1.1	23.7
Pacific SIDS	12.8	26.1	4.9	14.7	54.1	6.1	1.5	29.6
Cook Islands	2.7	8.5	2.7	2.4	76.4	63.9	..	..
Fiji	14.5	17.3	11.9	2.6	50.6	24.5	5.3	35.1
French Polynesia	3.1	10.5	4.9	2.5	76.0	10.7	4.6	..
Kiribati	26.2	9.8	4.4	1.6	67.9	1.8	0.0	..
Marshall Islands	21.8	12.8	3.4	4.3	67.2	..	..	..
Micronesia (Fed. States of)	24.1	5.0	0.5	2.6	64.3	..	..	..
Nauru	2.4	35.9	19.2	13.8	60.5	1.3	..	..
New Caledonia	2.0	21.1	9.5	1.9	68.7	1.7	0.3	..
Palau	3.0	13.0	1.0	4.3	74.3	32.8	19.3	53.1
Papua New Guinea	17.4	36.4	1.8	27.9	41.8	0.0	0.0	28.3
Samoa	10.5	15.2	6.1	3.4	74.3	24.4	3.0	35.1
Solomon Islands	32.7	16.3	9.1	2.5	48.4	5.2	0.5	31.0
Timor-Leste	15.4	25.4	1.7	14.8	55.2	3.4	1.3	26.3
Tonga	17.7	14.8	5.6	2.9	51.2	11.2	9.7	35.2
Tuvalu	10.7	14.5	1.2	1.2	69.7	16.0	..	66.6
Vanuatu	21.3	10.2	2.9	1.8	60.6	31.6	6.8	24.7

Source: UNCTAD calculations, based on UNCTADstat (2022), available at <https://unctadstat.unctad.org> (accessed 13 October 2022).

Notes: Inbound tourism is the sum of exports of services; passenger transport (all modes) and travel. Trade openness is the average of total imports and exports of goods and services as a percentage of GDP. Country groups are those of the source, except Pacific SIDS.

Table 4. Submarine cables in Pacific SIDS and territories, by deployment scope, route, ownership and funding (20 September 2022)

Submarine cable name	Cable deployment scope	Route and relation with other cables	Year	Ownership	Funded by	Laid by (supplier)
Southern Cross Cable Network	Intercontinental	Australia to United States via Fiji and Hawaii Another parallel route goes from Australia to the United States via New Zealand and Hawaii.	2000	Privately owned	Private company based in Bermuda, New Zealand and Australia	Alcatel Submarine Networks and Fujitsu
A branch off the Southeast Asia–United States (SEA-US)	Intercontinental	Micronesia (Fed. States of) to Guam Branch off the continental cable SEA-US cable (United States to Hawaii, Guam, Indonesia and the Philippines)	2017	SOE (branch)	World Bank (branch funding)	Nippon Electric Company
A branch off SEA-US	Intercontinental	Palau to Guam Branch off the continental SEA-US cable (United States to Hawaii, Guam, Indonesia and the Philippines)	2017	SOE (branch)	ADB through a loan (branch funding)	Nippon Electric Company
Hawaiki	Intercontinental	Australia to New Zealand, American Samoa, Hawaii and United States	2018	Privately owned	Private company from New Zealand	SubCom
Southern Cross NEXT	Intercontinental	Australia to New Zealand, Fiji, Tokelau, Kiribati and the United States	2022	Privately owned	Private company based in Bermuda, New Zealand and Australia	Alcatel Submarine Networks
A branch off Echo	Intercontinental	Palau to Guam Branch off the continental cable Echo (United States to Guam, Indonesia and Singapore) owned by Google and Meta	Q3 2023	Not known for the branch	Australia, Japan and the United States	Nippon Electric Company
Asia Connect Cable 1	Intercontinental	Singapore, Indonesia and Australia to Timor-Leste, Guam and the United States	2024	Privately owned	Private company from Australia	Inligo Networks and Indosat Ooredoo Hutchison
Gondwana-1 Submarine Cable	Interregional	New Caledonia to Australia	2008	SOE	New Caledonia SOE	Alcatel Submarine Networks
PIPE Pacific Cable-1	Interregional	Australia to Papua New Guinea and Guam	2009	Privately owned	Private company from Australia	Tyco Electronics
Honotua	Interregional	French Polynesia to Hawaii (Four domestic branches in French Polynesia)	2010	SOE	French Polynesian SOE	Alcatel Submarine Networks
Coral Sea Cable System	Interregional	Australia to Papua New Guinea and Solomon Islands (three domestic branches in Solomon Islands)	2020	Papua New Guinea and Solomon Islands	Australia. Funding also provided for a domestic cable within Solomon Islands	Alcatel Submarine Networks
Mariana–Guam	Intraregional	Northern Mariana Islands to Guam	1997	Privately owned	..	..
Samoa–American Samoa	Intraregional	Samoa to American Samoa	2009	Privately owned	Government of American Samoa and a United States private company	..

Submarine cable name	Cable deployment scope	Route and relation with other cables	Year	Ownership	Funded by	Laid by (supplier)
HANTRU-1	Intraregional	Guam to Micronesia (Fed. States of) and Marshall Islands	2010	SOEs and privately owned	A United States private company; the Micronesia (Fed. States of) section financed by a loan from the United States	SubCom
Tonga Cable	Intraregional	Tonga to Fiji	2013	Tonga, SOE and privately owned	World Bank, ADB, a Tongan SOE and a private company from Ireland	Alcatel Submarine Networks
Interchange Cable Network 1	Intraregional	Vanuatu to Fiji	2014	Privately owned	Vanuatu-based consortium	Alcatel Submarine Networks
ATISA	Intraregional	Northern Mariana Islands to Guam	2017	Privately owned	Private company from Japan	Nippon Electric Company
Tui-Samoa Submarine Cable	Intraregional	Fiji to Samoa with a landing point in Wallis and Futuna	2018	Privately owned	Private company from Samoa, with an ADB loan and grants from World Bank and Australia	Alcatel Submarine Networks
Manatua Cable constellation	Intraregional	Samoa to Niue, Cook Islands and French Polynesia (Latter ones have two landing points each)	2020	SOEs and privately owned	Consortium: Three Pacific SOEs and a private company from Samoa, with the Cook Islands component supported by New Zealand and ADB	SubCom
Gondwana-2/ Picot-2	Intraregional	Gondwana-2 cable (New Caledonia to Fiji): after Gondwana-1, the second international cable to secure Internet bandwidth to New Caledonia. Picot-2 cable: domestic branches off the Gondwana-2 cable in New Caledonia (six landing points).	Q3, 2022	SOE	New Caledonia SOE	Alcatel Submarine Networks
Pukpuk 1	Intraregional	Indonesia to Papua New Guinea	Not finished	SOE	China, through Exim Bank concessional loan	HMN Tech (former Huawei Marine Networks)
East Micronesia	Intraregional	Micronesia (Fed. States of) to Nauru and Kiribati	Not finished	..	World Bank and ADB	..
Picot-1	Domestic	New Caledonia (three landing points). The laying of this cable was associated with the Gondwana-1 cable (New Caledonia to Australia)	2008	SOE	New Caledonia SOE	Alcatel Submarine Networks
PNG LNG	Domestic	Papua New Guinea (two landing points) Cable serves principally to connect offshore platforms (oil, gas) with onshore facilities	2014	SOE	Papua New Guinea Government and private companies (oil and gas platforms)	..
Tonga Domestic Cable Extension	Domestic	Tonga (three landing points) Domestic extension of Tonga Cable to Fiji. Damaged at the time of writing of this report	2018	SOE	Savings from initial World Bank and ADB funding of the Tonga Cable; plus funding from the Government of Tonga	Alcatel Submarine Networks

Submarine cable name	Cable deployment scope	Route and relation with other cables	Year	Ownership	Funded by	Laid by (supplier)
Natitua	Domestic	French Polynesia (11 landing points)	2018	SOE	Agence Française de Développement loan (France)	Alcatel Submarine Networks
Kumul Domestic Submarine Cable System	Domestic	Papua New Guinea (14 landing points) Indonesia (one landing point)	2019	SOE	Government of Papua New Guinea and Exim Bank loan (China)	HMN Tech
Chuuk-Pohnpei Cable	Domestic	Micronesia (Fed. States of) (two landing points)	2019	SOE	Government of Micronesia (Fed. States of) and the World Bank	Nippon Electric Company
Tokelau Domestic Cable	Domestic	Tokelau (three landing points). Cable linking two islands with international Internet connectivity from the Southern Cross NEXT cable	2022	SOE	Governments of New Zealand and Tokelau	Alcatel Submarine Networks
Natitua Sud	Domestic	French Polynesia (three landing points)	2023	SOE	Governments of France and French Polynesia, and French Polynesian SOEs	Alcatel Submarine Networks and Optic Marine Services

Source: UNCTAD compilation based on Watson (2021), TeleGeography (2022) and various governmental and non-governmental sources.



Endnotes

- 1 UNCTAD calculations based on World Bank, 2021, Global Findex Database 2021, available at <https://www.worldbank.org/en/publication/globalfindex/Data>.
- 2 Some Caribbean SIDS are also dispersed, but they tend to be located closer to markets (proximity to North and South America).
- 3 Without Papua New Guinea, the most populated country in the region, the rural population represents 56 per cent of total population in 2022 (UNCTAD calculations, based on the same source as annex table 1).
- 4 For the Pacific SIDS with available data (see annex table 2), the shares of population without postal services per country are: Papua New Guinea (90 per cent), Timor-Leste (60 per cent) and Fiji (27 per cent). However, Kiribati, New Caledonia and Samoa are universally, or almost universally, covered. Even without data for remaining Pacific SIDS, one can expect the regional weighted average to be high, biased by Papua New Guinea, the most populated country.
- 5 The Linguistic Diversity Index assesses the probability that in a given country any randomly selected two people would have different mother tongues.
- 6 The classification is based on GDP at current prices (\$). Three additional economies from the region were within the 25 smallest economies, making therefore a total of 11 Pacific SIDS (UNCTADstat, available from <https://unctadstat.unctad.org>, accessed 10 November 2022).
- 7 UNCTAD calculations, based on the same source as annex table 1 and annex table 2.
- 8 This was 35 per cent of GDP on average between 2015 and 2019.
- 9 The current version of the liner shipping connectivity index is generated from the following six components: (i) the number of scheduled ship calls per week in the country; (ii) deployed annual capacity in twenty-foot-equivalent units: total deployed capacity offered at the country; (iii) the number of regular liner shipping services from and to the country; (iv) the number of liner shipping companies that provide services from and to the country; (v) the average size in twenty-foot-equivalent units of the ships deployed by the scheduled service with the largest average vessel size; and (vi) the number of other countries that are connected to the country through direct liner shipping services.
- 10 GNI per capita takes into account ODA and is generally greater than the GDP per capita in countries that are more reliant on foreign aid.
- 11 In traditional economic development, the primary sector (agriculture, hunting, etc.) is gradually overtaken by manufacturing, which is in turn overtaken by services (retail, banking, e-commerce, etc.). The employment rates by sector should normally follow, requiring the population to learn new skills and to change sectors for better economic opportunities.
- 12 The regional averages of value added by sector in Pacific SIDS change significantly without Papua New Guinea, the largest economy, with important parts of that economy relying on the primary sector and mining. Without this country, the value added of agriculture and related activities, industry and services are respectively of 9, 17 and 65 per cent of GDP in the Pacific SIDS in 2020 (UNCTAD calculations, based on the same source as annex table 3).
- 13 The World Bank has been a crucial partner in extending the fibre-optic submarine cables in the region through the Pacific Regional Connectivity Programme. For instance, in the first phase of the programme (2011–2018), the Tonga–Fiji cable was built (PIFS, 2020).
- 14 See more at Submarine Cable Networks, 2022, Tonga cable, available at <https://www.submarinenetworks.com/en/systems/australia-usa/tonga-cable>.
- 15 Guam's case is different from other countries in the region as it acts as the interconnectivity hub for cables between Asia, Oceania and North America.
- 16 Other Pacific territories not yet connected to a submarine cable are Norfolk Islands and Pitcairn. Kiribati and Tokelau have been connected (branches) to the intercontinental Southern Cross NEXT cable, which went live on 7 July 2022.
- 17 For instance, in New Caledonia the connection of the Gondwana-2 cable with Fiji was to provide a level of redundancy to the older Gondwana-1 cable, connecting with Australia. This deployment cost was integrated into existing Internet service prices. In the future, efforts may be taken to lower the prices thanks to an IXP model, based on international data transit (Australia, New Zealand, Fiji, United States). See J-T Faatau, 26 August 2022, New Caledonia: Gondwana-2 and Picot-2 submarine cables commissioned, Outremers360°, available at <https://outremers360.com/bassin-pacifique-appli/nouvelle-caledonie-les-cables-sous-marins-gondwana-2-et-picot-2-mis-en-service>.
- 18 See UltramapGlobal, 9 March 2020, The biggest threat to subsea cables, available at <https://ultramapglobal.com/the-biggest-threat-to-subsea-cables>.
- 19 The search concerned only international submarine cables deployed in the Pacific region, based on Submarine Telecoms Forum, available at <https://subtelforum.com/> (accessed 23 August 2022).
- 20 See B Hogeveen, 16 February 2022, What the Tonga disaster tells us about the south Pacific's cyber resilience, Prevention Web, available at <https://www.preventionweb.net/news/what-tonga-disaster-tells-us-about-south-pacifics-cyber-resilience>.
- 21 See K Needham, 23 February 2022, Musk's Starlink connects remote Tonga villages still cut off after tsunami, Reuters, available at <https://www.reuters.com/world/asia-pacific/musks-starlink-connects-remote-tonga-villages-still-cut-off-after>



- tsunami-2022-02-23/.
- 22 See C Duckett, 3 February 2019, Tonga has cable connection to outside world restored, Submarine Telecoms Forum, available at <https://subtelforum.com/tonga-has-cable-connection-to-outside-world-restored>.
 - 23 See E Seselja and R Ewart, 22 February 2022, Tonga cable successfully repaired, Submarine Telecoms Forum, available at <https://subtelforum.com/tonga-cable-successfully-repaired>.
 - 24 By the late 1970s, many Pacific SIDS – such as Cook Islands, Fiji, Solomon Islands, Tonga and Vanuatu – engaged Cable and Wireless (United Kingdom) for their international gateway access (UNESCAP, 2019).
 - 25 There were no data available for other countries for the period 2019–2020 (UNCTAD, based on ITU (2022f)).
 - 26 Internet satellite subscriptions start at about \$110–\$120 per month in Fiji, Kiribati and Vanuatu. UNCTAD calculations based on ISP.today for subscription prices, retrieved 20 October 2020 from <https://isp.today> and UNCTADstat for GNI. The GNI per capita concerns the latest available year, 2020.
 - 27 As of September 2022. For an update see <https://satellitemap.space/?constellation=starlink>.
 - 28 As of 20 October 2022. See more at <https://isp.today>.
 - 29 Internet bandwidth and connection speed are related but are different measurements of connection quality. The speed refers to the maximum rate of data transmission, measured as megabits per second (Mbit/s). Bandwidth refers to the maximum amount of data a connection can handle at any moment, also measured as Mbit/s. For international comparisons, the international bandwidth is expressed per Internet user in kilobits per second (Kbits/s).
 - 30 See also K Lee, 4 October 2021, The mystery of international bandwidth demand, TeleGeography.com, available at <https://blog.telegeography.com/the-mystery-of-international-bandwidth-demand>; and P Brodsky, 5 May 2021, International demand soars to new heights, TeleGeography.com, available at <https://blog.telegeography.com/2021-international-bandwidth-trends-demand-global-networks>.
 - 31 The comparison of Pacific SIDS and developing countries in 2017 shows that the latter's bandwidth capacity was still two times greater, at 68 Kbit/s per Internet user (UNCTAD, based on the same source as figure II.2).
 - 32 The comparison of growth rates between Pacific SIDS and other groupings in the same period, i.e. 2015–2017, indicates that Pacific SIDS (growth of 63 per cent) ranked second after developing economies (82 per cent) (UNCTAD calculations, based on the same source as figure II.2).
 - 33 Guam, an unincorporated territory of the United States, acts as a connection point for several intercontinental submarine cables between North America, Asia Pacific and Australia.
 - 34 See more at UNESCAP, 5 August 2020, Second working group on Pacific Internet exchange point (IXP) and capacity training workshop on IXP's operational modalities (virtual meeting), available at <https://www.unescap.org/events/second-working-group-pacific-internet-exchange-point-ixp-and-capacity-training-workshop-ixp-s>.
 - 35 See more at https://www.unescap.org/sites/default/d8files/event-documents/ESCAP_CICTSIT_2022_INF_1.pdf.
 - 36 See more at <https://www.unescap.org/events/2021/capacity-training-workshop-operationalizing-pacific-internet-exchange-point-ixp>. In November 2021, the “Pacific IXP – Operating Guidelines” working paper was made available at <https://www.unescap.org/kp/2021/pacific-ixp-operating-guideline>.
 - 37 See more at https://www.unescap.org/sites/default/d8files/event-documents/ESCAP_CICTSIT_2022_INF_1.pdf.
 - 38 While improvements in energy efficiency have been made, data centres come with high electricity demand and cost. See International Energy Agency, 2022, Data centres and data transmission networks, available at <https://www.iea.org/reports/data-centres-and-data-transmission-networks>.
 - 39 According to other sources, Vanuatu also has one and Papua New Guinea four colocation data centres (see respectively Peering DB, 2022; and Cloudscene, 2022, Oceania, available at <https://discover.cloudscene.com/region/datacenters-in-oceania> (accessed 2 October 2022)).
 - 40 Secure servers use the Secure Sockets Layer protocol for data encryption and decryption to protect data from unauthorized interception.
 - 41 See more at Techopedia, 12 November 2021, Secure server, available at <https://www.techopedia.com/definition/4091/secure-server>.
 - 42 As a comparison, without Papua New Guinea, the most populated country in the area, 96 per cent of the population lived in areas covered by 2G, 84 per cent by 3G and 57 per cent by 4G in the period 2020–2021 (same source as Figure II.3).
 - 43 See more at <https://www.itu.int/en/mediacentre/backgrounders/Pages/5G-fifth-generation-of-mobile-technologies.aspx>.
 - 44 Based on Ookla, 2022, Ookla 5G map, available at: <https://www.speedtest.net/ookla-5g-map>; and Docomo Pacific, 2022, Coverage checker, available at <https://www.docomopacific.com/about-us/network/coverage>.
 - 45 Based on Ericsson, 2021, the definition of fixed wireless access is a connection that provides primary broadband access through wireless wide-area mobile-network-enabled customer premises equipment. This includes various form factors of such equipment, such as indoor (desktop and window) and outdoor (rooftop and wall-mounted). It does not include portable battery-based Wi-Fi routers or dongles.
 - 46 See more at Metaswitch, 2022, What is 5G fixed wireless access (FWA)?, available at <https://www.metaswitch.com/knowledge-center/reference/what-is-5g-fixed-wireless-access-fwa>



- 47 UNCTAD calculations, based on Ookla, 2022.
- 48 Based on Ookla data from April 2022, UNCTAD found as well that in LDCs the median speed of mobile broadband connection (15.64 Mbit/s) was faster than the median speed of fixed broadband connectivity (9.50 Mbit/s).
- 49 The data for other country groupings concerned the year 2021. However, the statistics of 2020 for these groups indicated that they were still above the Pacific SIDS (ITU, 2022d). Without Papua New Guinea, the Pacific SIDS had 89 subscriptions per 100 people in 2020 (UNCTAD calculations, based on same source as figure II.5).
- 50 ITU, 2022f. Marshall Islands and Samoa were also among the countries with the lowest mobile telephony subscriptions rates in the world.
- 51 See more at ITU, 2018, Measuring the Information Society Report 2018 – Volume 2, available at https://www.itu.int/en/ITU-D/LDCs/Documents/2017/Country%20Profiles/Country%20Profile_Vanuatu.pdf.
- 52 The data for other groups concerned the year 2021. However, the statistics of 2020 for these groups indicated they were still above the Pacific SIDS (ITU, 2022d). Without Papua New Guinea, the Pacific SIDS had 67 subscriptions per 100 people in 2020, surpassing LDCs and SIDS (UNCTAD calculations, based on the same source as figure II.5).
- 53 Vanuatu, with 285 mobile broadband subscriptions per 100 people in 2021, is an outlier, reflecting widespread use of multi-SIM cards and dongles or routers that use SIM cards to connect to a mobile data network. Another factor which may explain this number is SIM card use by people who only temporarily stay in Vanuatu (for example tourists).
- 54 ITU, 2022f.
- 55 Without Papua New Guinea, the Pacific SIDS had almost four subscriptions per 100 people in 2020, surpassing LDCs but lagging behind the SIDS (eight in 2020) (UNCTAD calculations, based on the same source as figure II.5).
- 56 See more at Broadband Commission for Sustainable Development, 2022, 2025 Broadband advocacy target 2: Make broadband affordable, available at <https://www.broadbandcommission.org/advocacy-targets/2-affordability/>.
- 57 Countries reach and miss this Target, according to years. Based on the same source as figure II.6, Tonga reached the Target in 2019 (1.5 per cent), and Nauru in 2020 (1.9 per cent).
- 58 UNCTAD, based on Humanitarian Data Exchange, 2022.
- 59 The latest available data for the Pacific SIDS is from 2018. As a comparison, in 2021 the smartphone adoption rate globally was 75 per cent and in Asia-Pacific (without China) at 74 per cent (GSMA Intelligence, 2022a).
- 60 Non-income-related constraints also have an influence. These include awareness of mobile Internet, digital skills, mobile-related safety and security, and the social norms that constrain certain groups from accessing and using mobile and mobile Internet. Some of these constraints disproportionately impact certain groups, including women (GSMA, 2022).
- 61 See also <https://www.broadbandcommission.org/advocacy-targets>.
- 62 2017 data were the latest available year covering most Pacific SIDS.
- 63 In order to compare in the same year and based on the same source as figure II.9, Internet use in 2017 in all SIDS was 49 per cent, therefore significantly above the level of Pacific SIDS.
- 64 As a comparison, based on the same source as figure II.9, the Internet use weighted average of the Pacific SIDS without Papua New Guinea was 42 per cent in 2017.
- 65 The gender divide is described by ITU as a gender-driven imbalance in access to ICTs, general ICT literacy and presence in science, technology, engineering and mathematics studies. See ITU, 2016, The Gender Digital Inclusion Map: Research Methodology, available at <https://www.itu.int/en/action/gender-equality/PublishingImages/Pages/EQUALS/The%20Gender%20Digital%20Inclusion%20Map%20-%20Research%20Methodology.pdf>.
- 66 See more about the United Nations SDGs at <https://unstats.un.org/sdgs/metadata/>.
- 67 ITU, 2022b.
- 68 According to Weber et al., 2018, Facebook online advertising audience estimates hold for complementing existing traditional data sources such as surveys and censuses for improving global development statistics. They can help fill data gaps on important topics such as gender gaps. For instance, Facebook data appear to capture gender inequalities in Internet access most effectively in LDCs, where gender inequalities are the most important.
- 69 Gender parity is calculated as the proportion of women's device ownership or Internet use divided by the proportion of men's ownership or Internet use. A value smaller than 1 indicates a larger proportion among men than among women. A value greater than 1 indicates the opposite. Values between 0.98 and 1.02 reflect gender parity.
- 70 These results may be biased by the fact that both groups have a low number of countries with available data and that Facebook users are already online, connected via smartphones and computers, which they may also own.
- 71 Based on ITU, 2022c, Statistics: Gender ICT Statistics (by country), available from <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx> (accessed 12 November 2022).
- 72 Despite its limitations, Facebook user data can be considered as a proxy for overall Internet users as this is one of the most widely used platforms in developing countries, including in the Pacific. In some countries and within some populations in the Pacific, Facebook is, or has been, the only access to Internet. See more at A Watson and J Garrett, 26 March 2021, Facebook's monopoly danger in the Pacific, The Interpreter, available at <https://www.lowyinstitute.org/the-interpreter/facebook-s-monopoly-danger-pacific>.

- 73 The true data gap in all Pacific SIDS is even wider given that the indicators include ITU estimates and therefore the data coverage would be even lower if accounting only for official data provided by countries.
- 74 See UNCTAD, 2022b.
- 75 The OECD, World Trade Organization and International Monetary Fund have defined digitally delivered trade as “international transactions that are delivered remotely in an electronic format using computer networks”; and digitally ordered trade as “the international sales or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders”. See more information at OECD, 2020, Handbook on measuring digital trade, version 1, available at <https://www.oecd.org/sdd/its/Handbook-on-Measuring-Digital-Trade.htm>.
- 76 On digital platforms, there is generally a lower barrier to entry for firms seeking to provide a diverse range of products, services and customers. Consumers can benefit from greater choice and lower prices for a range of goods and services.
- 77 See UNCTAD, 2022b.
- 78 See figure III.8.
- 79 UNCTAD interviews conducted in the Pacific region.
- 80 UNCTAD research, based on publicly available information.
- 81 See Telecom Fiji, 2022, Broadband, available at <https://www.telecom.com.fj/your-home/your-home-broadband/>.
- 82 Per discussions with ANZ Fiji representatives.
- 83 Mobile money products have been launched in Fiji, Papua New Guinea, Samoa and Tonga. Vodafone is currently preparing to launch one in Vanuatu. Solomon Islands also has some early stage mobile wallet applications such as EZPay.
- 84 Discussion with M-PAiSA manager.
- 85 The average in Pacific SIDS without Papua New Guinea is 8.7 per cent (UNCTAD calculations, based on the same source as annex table 2).
- 86 UNCTAD, based on World Bank, 2022, Remittance prices worldwide [database], available at <https://remittanceprices.worldbank.org/> (accessed 29 April 2022).
- 87 However, mobile operators only account for a very small share (less than 1 per cent) of the sample size analysed by World Bank.
- 88 It is worth highlighting that among these two service providers, Internet access represented the cheapest option (access point) for sending remittances (6.13 per cent), as compared to using agents (8.23 per cent), call centres (9.98 per cent), bank branches (13.35 per cent) or bank branches/call centres (15.14 per cent).
- 89 UNCTAD research.
- 90 See Facebook, 2022, Buy and sell in Honiara (Solomon Islands), available at <https://www.facebook.com/groups/1825531240998237>.
- 91 See Facebook, 2022, Cars for sale in Fiji, available at <https://www.facebook.com/groups/802405563137955/>.
- 92 The average for Pacific SIDS is slightly over 20 per cent. Without Papua New Guinea, the average would be 43 per cent (UNCTAD calculations, based on same source as figure III.8).
- 93 Compared with ITU data on Internet users in Chapter II, Facebook users have larger shares among the population because these data concern active user accounts (one Internet user may have more than one Facebook account). Furthermore, the Facebook data are from 2022 while the latest ITU data are from 2017 for most Pacific SIDS. It is assumed that Internet use among the population in 2022 is significantly higher than in 2017.⁹⁴ See more at <https://www.jumvea.or.jp/>.
- 95 Per Land Transport Authority data in Fiji. Similar supply chains exist across the Pacific, with all islands supplied by two car carrier shipping companies.
- 96 See more at https://www.kyowa-line.co.jp/en/service/route.html#_w003.
- 97 UNCTAD, based on Fiji Revenue and Customs Service, 2022, Motor vehicle landing cost, available at <https://www.frccs.org.fj/our-services/customs/doing-business-in-fiji/motor-vehicles/> (accessed 2 November 2022).
- 98 Many e-commerce businesses in the Pacific depend heavily on international experience. Bulk Shop in Solomon Islands is owned by a New Zealand/Solomon Islands family and its web operations are managed by a South African manager. VitiKart in Fiji hired a number of experienced e-commerce professionals from abroad, especially Sri Lanka. The founder of Sky Eye in Samoa also spent his formative years in Australia.
- 99 See more at <https://bulksolomons.com.sb/>. With support from both UNCDF and UNDP, Bulk Shop moved to transform its online presence from what had previously been a Facebook Marketplace page to its own dedicated website. See Pacific Trade Invest, 2021, Success story: Bulk Shop Solomon Islands finds ecommerce success, available at <https://pacifictradeinvest.com/en/stories/focus/success-story-bulk-shop-solomon-islands-finds-ecommerce-success/>.
- 100 See more at <https://retail.dynamicvanuatu.com/>.
- 101 See more at <https://www.vinodpatel.com.fj>.
- 102 UNCTAD, based on interviews with retailers in Fiji that have developed online stores.

- 103 MSMEs received a subsidy in 2021 to help them get registered and start marketing their goods on Vitikart. See Reserve Bank of Fiji, 2021, Micro, small and medium enterprises Vitikart subsidy scheme guidelines, available at <https://www.rbf.gov.fj/msme-vitikart-subsidy-scheme-guidelines-august-2021/>.
- 104 UNCTAD, based on interviews with platform owners and operators in Fiji.
- 105 See annex table 2.
- 106 The Federated States of Micronesia signed a Compact of Free Association with the United States in 1982.
- 107 UNCTAD, 2021, Cyberlaw tracker: Country detail, available at <https://unctad.org/page/cyberlaw-tracker-country-detail>.
- 108 UNCTAD, based on UNCTADstat, 2022.
- 109 UNCTAD, based on discussions with e-commerce platform owners in Fiji.
- 110 See more at L Schou-Zibell and N Phair, 6 July 2020, COVID-19 has created digital opportunities in the Pacific, Asian Development Blog, available at <https://blogs.adb.org/blog/covid-19-has-created-digital-opportunities-pacific>.
- 111 UNCTAD, based on interviews with platform managers in the region.
- 112 UNCTAD, based on an interview with an online store in Fiji.
- 113 UNCTAD, based on UNCTADstat, 2022.
- 114 See H Kuteesa, 31 December 2020, Rwanda online coffee sales in China rise by 400 per cent, The New Times, available at <https://www.newtimes.co.rw/article/182893/News/rwanda-online-coffee-sales-in-china-rise-by-400-per-cent>.
- 115 See Pacific Trade Invest, 2021, PTI China: Supporting Pacific SMEs in business diversification and exploring new markets, available at <https://pacifictradeinvest.com/en/stories/focus/pti-china-supporting-pacific-smes-in-business-diversification-and-exploring-new-markets/>.
- 116 See more on this topic in UNCTAD, 2021b.
- 117 See more at Pacific E-Commerce Initiative, 2022.
- 118 Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Tonga and Vanuatu. See also UNCDF, 2022, Inclusive digital economy scorecard, available at <https://ides.uncdf.org>.
- 119 IDES and the eT Ready frameworks both promote this approach, for instance in the area of model laws, regional sandboxes and best-practice guidelines, technical infrastructures such as payment switches and digital identities.
- 120 See Pacific Islands Forum, 2022.
- 121 See also ASYCUDA, 2022, User countries [database], available at <https://asycuda.org/en/user-countries/>.
- 122 See also UNESCAP, 2022, Readiness assessment guide for cross-border paperless trade, available at <https://readiness.digitalizetrade.org/>.
- 123 World Bank, 4 March 2019, Samoa, Solomon Islands and Vanuatu to introduce digital payment systems, available at <https://www.worldbank.org/en/news/press-release/2019/03/04/samoa-solomon-islands-and-vanuatu-to-introduce-digital-payment-systems>.
- 124 See more at Pacific Islands Forum, 2022.
- 125 At the time of writing this report, members of the Pacific E-commerce Committee still had to decide on whether the subcommittees will be established.
- 126 See more at <https://asean.org/ecommerce/>.
- 127 See more at <http://agreement.asean.org/media/download/20190306035048.pdf>.
- 128 See more at https://www.miti.gov.my/miti/resources/Media%20Release/49th-AEM-JMS_FINAL11.pdf.
- 129 See more at <https://caricom.org/ict-for-development-overview/> and <https://caricom.org/communique-thirty-eighth-caricom-heads-of-government-meeting/>.
- 130 See more at <https://etradeforall.org/>.
- 131 See more at <https://www.allianceforetradedevelopment.org/>.
- 132 Cargill, DHL, Element, Etsy, Google, eCommerce Institute, Mastercard, Mexican Association for Online Sales, Paypal, Ringier One Africa Media, UPS, Visa, Palladium (implementing partner) and Nextrade Group (implementing partner).
- 133 See more at <https://pacerplus.org/resources/public/strategic-plan-2022-2/download/802x6mav6oqi/PACER-Plus-Implementation-Unit-Strategic-Plan-2022-2025.pdf>.
- 134 See more at <https://pacerplus.org/>.
- 135 See more at <https://pacific.asycuda.org>.
- 136 See also <https://readiness.digitalizetrade.org/>.
- 137 See also <https://www.unescap.org/our-work/trade-investment-innovation/trade-facilitation-digital-trade/paperless-trade>.
- 138 See more at <https://pacificcommerce.org/programs/>.

- 139 See for instance T Tuuhia, 29 March 2022, Online shopping in the middle of the ocean, available at <https://restofworld.org/2022/online-shopping-in-the-middle-of-the-ocean/>.
- 140 In 2021, UNCDF provided grants to several MSMEs that sell goods and services online including Cyber Foods (Fiji), Solved Fiji, Island Tech Solomon (Solomon Islands) and SkyEye (Vanuatu).
- 141 As of September 2022: see table II.1 of chapter II. In the Pacific, Norfolk Islands and Pitcairn were also not connected to any submarine cable.
- 142 See more at https://unctad.org/system/files/information-document/Training_course_on_Production_of_Statistics_on_the_Digital_Economy_Pacific_2022.pdf.
- 143 See, for instance, efforts in this area by the Economic Commission for Latin America and the Caribbean (Economic Commission for Latin America and the Caribbean, 2014; and Abdulkadri, Evans and Ash, 2016).
- 144 See more at <https://pacificecommerce.org>.
- 145 See more at <https://etradeforall.org/>.



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