

Measuring the Platform Economy: Concepts, Indicators, and Issues

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2.1. Introduction

In recent decades, the rapid diffusion of digital technology into social and economic activities, known as “digitalization,” has transformed national, regional, and global economies, including the nature of work.² Aside from the deluge of digital data, a major driver of digitalization is the increasing use of the internet. According to the International Telecommunications Union (ITU), as of the end of 2019, 53.6% of the global population, or 4.1 billion people, were using the internet, well up from 16.8% in 2005 (ITU 2019). However, past and current data also suggest a persisting digital divide that if unchecked can further exacerbate inequalities of opportunity and of outcome. The digital divide has undoubtedly contributed to the problems that arise from social and economic inequality and made managing the effects of the COVID-19 pandemic more challenging.

Alongside greater internet use and increased digitalization is the rise of the platform economy, i.e., a growing number of socioeconomic activities involving online intermediaries which provides a mechanism for customers and suppliers of goods and services to interact and transact (Kenney and Zysman 2016). Online platforms are becoming a primary mechanism in organizing a vast set of human activities. They may be viewed as online digital arrangements with algorithms organizing and structuring economic, sociocultural, and political activity.

¹ The author wishes to express his thanks to Jana Flor Vizmanos, research specialist at the Philippine Institute for Development Studies. Views expressed are those of the author and do not necessarily reflect the position of the Philippine Institute for Development Studies.

² This chapter was prepared as a background paper for ADB (2021) and draws from Albert (2020).

Platforms manifest in different forms, by purpose and size (OECD 2019). In the Philippines, where citizens are very active on social media, platforms such as Facebook, YouTube, Instagram, Google+, Twitter, Skype, Viber, LinkedIn, Pinterest, Snapchat, and WhatsApp are used by netizens to communicate with their social networks. Facebook, aside from enabling the sharing of digital media content, also offers a marketplace that competes with e-commerce platforms, of which, popular examples in the Philippines include Lazada, Shopee, and Zalora. Aside from these social media and e-commerce platforms, other popular online platforms in the Philippines include Google (search engine); Grab, Lalamove, and *Angkas* (for ride-sharing or logistics services); Netflix (for video streaming); Airbnb (accommodation services); CrowdFlowers and Microworkers (for crowdwork); and Zoom and Webex (for videoconferencing, online meetings, and group messaging).

The emergence of online or digital platforms is shifting competition toward platform-centric ecosystems in any economy. Platforms are providing new possibilities to consumers, businesses, and job seekers, enabling “innovative forms of production, consumption, collaboration and sharing through digital interactions” (OECD 2018,). The huge economic disruptions caused by the pandemic have spurred the use of these platforms. Some businesses also had an opportunity to get ahead of others that have not transformed digitally.

As of 2018, the total market size of companies in the global platform economy was estimated at \$7.2 trillion (Dutch Transformation Forum 2018), up from an estimated \$4.3 trillion 2 years earlier (Evans and Gawer 2016). About half (46%) of the platform companies with a value of at least \$1 billion, are based in the United States (US), while a third (35%) are based in Asia—mostly in the People’s Republic of China (PRC). These platform companies have a strong presence in four sectors: internet software and services, e-commerce and retail, social, and search. In recent years, however, platform companies have also shifted focus to a variety of other sectors. Platform companies are highly concentrated around seven superplatforms that each has a market value of over \$250 billion: US-based Apple, Amazon, Microsoft, Google, Facebook, and PRC-based Alibaba and Tencent, which together have an aggregate market value of \$4.9 trillion. This is 69% of the total market value of the 242 platform companies.

The importance of platforms in today’s business environment is indicated by the fact that seven of the top eight companies across the world by market capitalization use platform-based business models (UNCTAD 2019).

The rise of platforms has brought about a host of positive economic outcomes. Platforms reduce inefficiencies in markets; create new markets; and bring more choice, products, and services to consumers (often at a lower cost), and flexible income to platform workers. Thus, platforms have driven up productivity through the highly efficient matching of buyers and sellers in e-commerce. Platforms also create a lot of social good. For example, eBay, Facebook, Instagram, and Google, together with leading animal welfare charities, have cooperated to reduce the black-market trade for prohibited products such as ivory and rhino horn (Bale 2018). Platforms are also causing major disruptions in doing business, however, profoundly changing all elements of the value chain, including product design, supply chain, manufacturing, and customer experience, while creating new business models. Meanwhile, during the pandemic, platforms such as Zoom, Webex, and Skype have provided venues for people to meet virtually. They have also become mechanisms for online learning.

But while these disruptions can lead to economic benefits, platforms can also raise concerns about fair competition, privacy issues, labor welfare, and taxation. Some platforms have also weakened social cohesion through social media “echo chambers” where fake news can spread easily. Thus, while creating new business models, platforms have also been disrupting the entire industries at scale, causing more vulnerability, uncertainty, complexity, and ambiguity (or collectively referred to as VUCA).³

This study aims to describe various concepts on the platform economy, based on an examination of past studies, and enriched by results of interviews with key informants. It proposes a framework toward measurement of the platform economy, describes key indicators from a household survey on internet use in the Philippines, and discusses policy implications. Research questions the study intends to answer include: (i) What exactly do we mean by the platform economy and related terminology, and what key indicators can be used to measure economic activities of online platforms? (ii) What are key drivers of value creation and capture in the platform economy? (iii) What policy responses can facilitate and stir value creation and capture, and ensure an inclusive transformation from the growth of the platform economy?

To answer these questions, the next section in this chapter depicts the context of the platform economy, i.e., digitalization. This section also discusses issues pertaining to measurements of the wider digital economy. The third

³ See US Army Heritage and Education Center, <http://usawc.libanswers.com/faq/84869>.

section then describes challenges and solutions to measurements of the platform economy. The discussion also includes a definition and typology of platforms that identifies the main characteristics of digital platforms, a listing of requisite data and indicators for describing platforms, and possible data sources for the needed indicators. The fourth section provides a summary of key issues and policy implications.

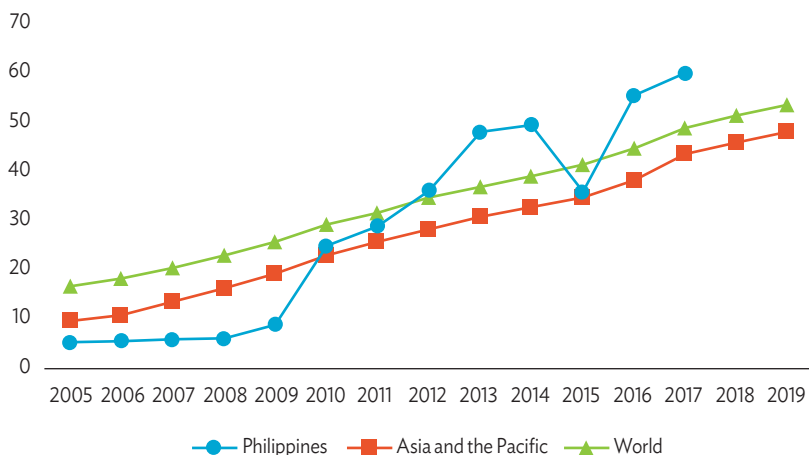
2.2. Digitalization, the Digital Economy, and the Platform Economy

Undoubtedly, economies, nationally, regionally, and globally, are digitalizing: they are transforming under the influence of the internet and other information technologies (IMF 2018). The impact of this process depends on the speed of digitalization, while “megatrends” are evident in the growth of digital footprints that provide business intelligence and opportunities for addressing gaps in merely using traditional data sources (Albert and Martinez 2018, Martinez and Albert 2018). Further, internet use is growing over time and internet penetration varies across countries. In Asia and the Pacific, the ITU estimated the percentage of people using the internet in 2019 at slightly less than half (48.2%) of the region’s population, a significant increase from about a tenth (9.7%) in 2015 (Figure 2.1). But this also reflects the digital divide: as half of people in the region are yet to use the internet. In the Philippines, ITU estimates internet penetration at 60.1%, as of 2017, even higher than the global and Asia and the Pacific averages, even though its internet penetration before 2011 was lower.

Global internet protocol traffic has also increased hugely, a proxy for data flows: from 100 gigabytes (GB) per second in 1992 to 46,600 GB per second in 2017. As reported by the United Nations Conference on Trade and Development (UNCTAD), global internet protocol traffic is projected to reach 150,700 GB per second by 2022 (UNCTAD 2019).

One of the main components of the platform economy is e-commerce. According to UNCTAD (2019), global e-commerce was valued at \$29.4 trillion in 2017, with business-to-business (B2B) e-commerce representing 87% of the total. Of the \$25.6 trillion B2B e-commerce in 2017, the US (\$8.1 trillion) took the lion’s share, followed by Japan (\$2.8 trillion), Germany (\$1.4 trillion), the Republic of Korea (\$1.2 trillion), and the PRC (\$0.9 trillion). In 2017, business-to-consumer (B2C) e-commerce sales that surpassed \$100 billion were reported in

Figure 2.1: People Using the Internet, 2005–2018
(%)



Note: Asia and the Pacific grouping is based on the definition of the source.

Source: International Telecommunications Union Statistics (accessed July 2020).

the PRC (\$1.1 trillion), the US (\$753 billion), the United Kingdom (\$206 billion), and Japan (\$147 billion). E-commerce also includes transactions through other platforms, such as those engaged in ride-hailing and accommodations-sharing.

UNCTAD also reports that a quarter of the global population aged 15 years and older, totaling about 1.3 billion people, shopped online in 2017, with the PRC having the largest number at 440 million (UNCTAD 2019). The growth of e-commerce and the platform economy is partly attributed to network effects, i.e., more users making the platform more valuable. Further, more users would mean more data: if the platform company knows how to leverage these data, it can improve its competitive advantage. Finally, given the traction, the platform can start offering different integrated services, making it more attractive to existing users and prospective customers. The WeChat platform and its payment solution WeChat Pay and Alipay of Alibaba, both based in the PRC, are excellent examples of the impact of network effects.

The e-commerce market, however, does not solely depend on the extent of internet users. There may be issues of trust about digital transactions in some societies, as suggested by the dominance of “cash is best” paradigms. In the Philippines, for instance, cash accounted for practically all local financial

transactions as of 2018.⁴ This may be why, before the pandemic, e-commerce had shallower roots in the country. According to Statista (2019), total digital revenues in the Philippines were \$6.4 billion in 2019, but \$4.5 billion was for online travel purchases. Across Asia, digital spending is 10.7% of per capita consumer expenditure, with the corresponding share in the Philippines at only 2.3%.

While the platform economy is growing fast, it is currently below the radar for most national statistics offices, including the Philippine Statistics Authority, because of the absence of a commonly accepted definition of the term “platform.” Even the broader “digital economy” is not commonly measured by countries, likewise because definitions are lacking for “digital sector,” also called the information technology or ICT sector.

According to UNCTAD, in its Digital Economy Report (UNCTAD 2019), the entire digital economy is less than 10% for most economies in recent years, whether measured by valued added or employment. The same report pointed out how definitions matter: estimates of the global digital economy can range from 4.5% of world GDP (using a narrow definition) to 15.5% of GDP (using a broad definition) based on 67 economies. Of these 67 economies, eight of the top 10 with the largest shares of ICT manufacturing gross value added as a percentage of GDP are in Asia and the Pacific, led by Taipei, China and followed by the Republic of Korea, Singapore, Malaysia, the Philippines, Thailand, the PRC, and Japan. From 2013 to 2015, ICT sector value added in the Philippines was estimated in the range of 3.2%–4.5% of GDP. Further, the ICT sector employment share was 1.0% as of 2015.

As of 2018, e-commerce was estimated in the Philippines at 9.5% of GDP (Digital Filipino and I-Metrics 2018). This figure is based on the e-Commerce Index, a supply-side estimation of e-commerce engagement of firms that participate in the Purchasing Managers Index, a composite of economic activities based on interviews of a randomly selected panel of supply chain executives from private sector companies.

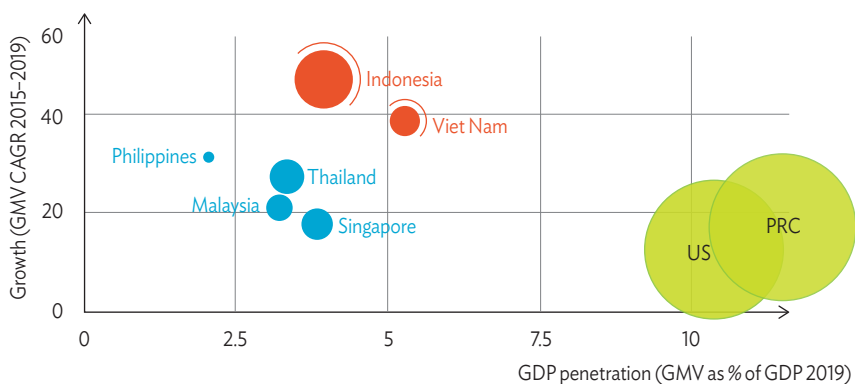
The Hinrich Foundation (2019) estimates the value of digital trade-enabled benefits to the Philippines at ₱160 billion, or about \$3.2 billion. Digital trade pertains to cross-border data flows, or the data exchange across

⁴ Refer to Lucas (2018).

national jurisdictions that create economic value (Serafica and Albert 2018). While there is no universally accepted definition of digital trade, the concept of digital trade builds on the concept of e-commerce to include the latest digital innovations and a cross-border element. An emerging consensus on the scope of digital trade is that it includes all cross-border resident/nonresident transactions that are either digitally ordered, online platform enabled, and/or digitally delivered (Serafica and Albert 2018). If digital trade is fully leveraged in the Philippines, its value could grow by nearly 12 times to ₱1.9 trillion (\$37 billion) by 2030. Further, digital exports are valued at ₱187 billion (\$3.7 billion), representing 5.4% of the country's total export value, and are expected to grow to as much as ₱594 billion (\$11.8 billion) by 2030. Currently, digital exports in the Philippines are largely driven by the Information Technology-Business Process Outsourcing (IT-BPO) firms.

In its latest e-economy SEA 2019 report, Google, Temasek, and Bain & Company (2019) estimate that the internet economy, valued at \$ 2.5 billion, contributes 2.1% of GDP in the Philippines, and has been growing between 20% and 30% annually since 2015. Compared to neighboring countries in the Association of Southeast Asian Nations (ASEAN), in the Philippines, the GDP penetration and growth of the internet economy during 2015–2019 was much lower (Figure 2.2), creating potential for higher impact.

Figure 2.2: Growth in Internet Economy, 2015–2019 versus GDP Penetration (%), Select Southeast Asian Countries



CAGR = compounded annual growth rate, GDP = gross domestic product, GMV = gross merchandise value, PRC = People's Republic of China, US = United States.

Source: Google, Temasek and Bain & Company. (2019).

The Philippines' online media sector (advertising, gaming, subscription, music, and video on demand), grew a remarkable 42% per year from 2015 to 2019 (Google, Temasek, and Bain & Company 2019). Four other sectors—online travel (flights, hotels, vacation rentals); ride hailing (transport, food delivery); e-commerce; and digital financial services (payments, remittance, lending, investment, insurance)—comprise the internet economy in this report. Across Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam, the overall GDP penetration of the internet economy was 3.7%.

In all of Southeast Asia, the gross merchandise value of the internet economy was \$100 billion in 2019, and was expected to triple by 2025 (Google, Temasek, and Bain & Company 2019). Half of Southeast Asia's 360 million internet users engage in the internet economy, which tripled from 1.3% of GDP in 2015 to 3.7% in 2019. Further, e-commerce and ride hailing across Southeast Asia have grown rapidly, with shifts in consumer behavior.

Varying estimates of the value of the internet economy (UNCTAD 2019; Hinrich Foundation 2019; Google, Temasek, and Bain & Company 2019; Digital Filipino and I-Metrics 2018) are due to differences in statistical frameworks, coverage, and data sources. The data ecosystem has expanded considerably beyond national statistical systems, especially in the wake of digital data (Albert et al. 2019). Data producers outside of government make use of various sources, from new surveys to *ad hoc* methods, such as web scraping of site usage to measure the economic performance of platforms, whether as part of the larger digital economy or a portion of the platform economy, such as the sharing economy. The direction and extent of bias in the use of these methods, however, is unknown and has not been specifically investigated.

The next section discusses how the platform economy can be measured comparably through a sound and robust statistical framework, especially as these measurements, when available, can help assess the impact that digitalization on countries and societies, and across countries. The chapter illustrates results in the Philippines using a household survey of internet use recently conducted by the Department of Information and Communications Technology, in cooperation with the Philippine Statistical Research and Training Institute.

2.3. Measuring the Platform Economy

The measurement of digital products and transactions, especially activities in platforms, should be tracked by governments to improve accuracy of economic and financial statistics, such as inflation, value added, employment, and productivity (IMF 2018). Measurements are helpful in designing policies and regulations to keep up with the rapid digitalization and its significant impact on wealth creation and inequality.

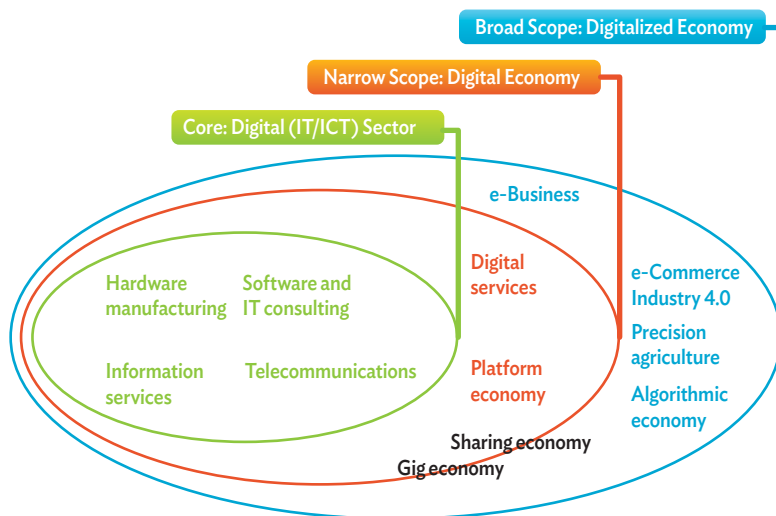
As noted, the platform economy is currently below the radar for most national statistics offices around the world. Again, this is primarily due to lacking definitions of “platform” or “digital economy.” Further complications in the valuation of the platform economy include the wide variety of types of platforms, and the fact that many platforms offer parts of their services for free.

In 2016, the Organisation for Economic Co-operation and Development (OECD) surveyed national statistics offices about national accounts compilation practices; a year later, the International Monetary Fund (IMF) extended the OECD survey to national statistics offices of non-OECD countries. Results of both surveys suggested that the digital sector is hardly measured either because of data issues or the lack of resources to do so (IMF 2018). Malaysia’s Department of Statistics was then considered an exception, as it was developing an ICT satellite account that included platforms. Last October 2019, the Philippines made public its plans to develop an ICT satellite account with the support of the World Bank (Ilarina, Polistico, and Pascacio 2019).

The digital economy can be viewed from three “scopes” (Figure 2.3). The core of the digital economy is the ICT sector, which produces foundational digital goods and services (e.g., IT and business process management services). Together with the ICT-producing sector, the emerging digital and platform services (e.g., Facebook and Google), constitute the digital economy in a narrow scope. The widest scope—use of ICT in all economic fields, such as automation, AI, and e-commerce as well as the sharing economy and the gig economy—is called the “digitalized economy” (ADB 2021).

Rather than defining the digital sector, an alternative approach is to examine digital transactions (Fortanier and Matei 2017). The OECD advisory expert groups on a digital economy satellite account in the national accounts and on digital trade in the balance of payments statistics take this approach. The conceptual framework identifies three mechanisms to classify digital

Figure 2.3: Three Scopes of Digital Economy



ICT = information and communication technology, IT = information technology.

Source: Bukht and Heeks (2017).

transactions: the nature of the transaction (how), the product (what), and the partners involved (who). Digital transactions can include those that are digitally ordered, digitally delivered, or platform-enabled, under one definition. This is related, though not equivalent, to the OECD (2011) definition of e-commerce, which emphasizes digitally ordered transactions. In this approach, a crucial issue is to obtain price data of digital products for estimating volume measures given the rapid quality changes of products.

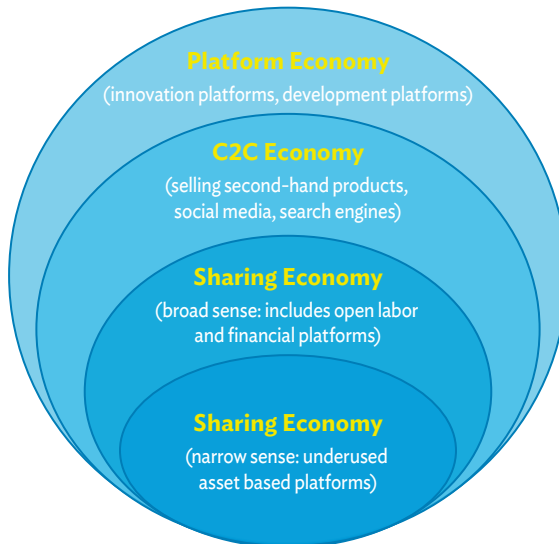
UNCTAD (2019) estimates the digital economy using a definition suggested by Bukht and Heeks (2017), as the part of economic output derived from digital technologies with a business model based on digital goods and services. The same report points out that Hong Kong, China; Malaysia; and New Zealand are currently the only economies in Asia and the Pacific, and among 10 economies globally, that compile data on the digital sector through ICT satellite accounts or through aggregation of the appropriate International Standard Industrial Classification (ISIC) codes.

Frequently, the platform economy and the broader digitalized economy are not distinguishable, with the latter including the sharing and gig economies (Bukht and Heeks 2017). The sharing economy, which is a part of the platform economy, can have a narrow or a broad scope. By narrow, it refers only to the supply of underutilized assets; by broad, open labor and financial platforms are included (Figure 2.4). These terms can cover an entire spectrum, with varying degrees. Nonetheless, we can identify characteristics of platforms and, from which, define these terms as well as look into various typologies toward a measurement scheme.

Defining Platforms

In measuring the platform economy, the first step is to define platforms. The literature provides various, interrelated definitions of a platform (Box 2.1). This chapter defines a platform as a digital intermediary and infrastructure that brings together parties through the internet to interact, matching supply and demand in a multisided market. In short, platforms are digital matchmakers in the sense that they provide an avenue for consumers and

Figure 2.4: Senses of the Platform Economy



C2C = customer-to-customer.

Source: Heerschap, Pouw, and Atmé (2018).

Box 2.1: Definitions of Platform

Source	Definition
OECD 2019	Digital services that facilitate interactions between two or more distinct but interdependent sets of users (whether firms or individuals) who interact through the service via the internet
World Economic Forum (WEF 2017)	Technology-enabled business models that create value by facilitating exchanges and interactions.
Heerschap, Pouw, and Atmé 2018	A digital service based on technological, sociocultural, and economic infrastructure for facilitation and organization of online social (interactions) and economic (transactions) traffic between two or more distinct but interdependent groups of providers and users, with data as fuel (Van Dijck, Poell, and De Waal 2016, p. 11; OECD 2018, p. 13). Providers and users can be individuals and businesses as well as science organizations and government.
Langley and Leyshon 2017	<p>A distinct mode of socio-technical intermediary and business arrangement that is incorporated into wider processes of capitalization.</p> <p>Intermediaries between two or more groups of participants with interdependent demands .. (with a) ... main market function .. typically described as the facilitation of interactions and transactions between producers of goods on one side and buyers or users on the other.</p>
Tan et al. 2015	A commercial network of suppliers, producers, intermediaries, customers . . . and producers of complementary products and services termed “complementors” . . . that are held together through formal contracting and/or mutual dependency.
Kenney and Zysman 2016	<p>A set of online digital arrangements whose algorithms serve to organize and structure economic and social activity; a set of shared techniques, technologies, and interfaces that are open to a broad set of users who can build what they want on a stable substrate; a set of digital frameworks for social and marketplace interactions.</p> <p>Catalyst that allows value to be created through interactions between various groups of market participants.</p>
Koh and Fichman 2014	Two-sided networks . . . that facilitate interactions between distinct but interdependent groups of users, such as buyers and suppliers.
Pagani 2013	Multisided platform . . . exists wherever a company brings together two or more distinct groups of customers (sides) that need each other in some way, and where the company builds an infrastructure (platform) that creates value by reducing distribution, transaction, and search costs incurred when these groups interact with one another.

OECD = Organisation for Economic Co-operation and Development.
Source: Author.

suppliers of products and services to perform economic activities, including information exchange, demand matching, payment, and receipt and delivery of goods and services. Platforms not only match providers and users, but also facilitate likely transactions resulting from interactions; they differ in their role and the “products” they “exchange.”

A platform has two functional layers: interactions and infrastructure. Platforms play a catalytic role for value creation in the interactions of various groups of market participants, leading to the exchange of information, trading, logistics, and other facilities to consumers from service providers. Two-sided platforms, such as ride-hailing platforms, enable two diverse types of participants to more readily engage in trade or some other interaction (Evans and Schmalensee 2007). Multisided platforms consist of more than two sets of participants (Evans 2018). Social media platforms such as Facebook, LinkedIn, and YouTube connect platform users to share various content (e.g., ideas, news, photos, and videos), as well as advertisers and content developers.

A platform essentially acts as a mediator of peer-to-peer services, empowering participants to transact goods, services, or even data. The kind of digital infrastructure in a platform increases the ease and speed of interactions of platform users, changes the scope of possible transactions from local to global, enlarges the choices of platform users, and lowers transaction costs for users to find each other and interact (Heerschap, Pouw, and Atmé 2018). While platform firms do not, by themselves, own the means of production, they establish a mechanism to connect suppliers and consumers of goods, services, and data (ADB 2021).

The platforms also proved beneficial to their respective users, enabling people, usually consumers, to become suppliers. With the rise of platforms, individuals have now become suppliers of services (as Grab drivers), food and accommodation industries (specifically in GrabFood and Airbnb, respectively), and culture and recreational industries (as individuals earning income from uploading vlogs and music or uploading content that influences other users onto social media platforms such as YouTube and Instagram) (ADB 2021).

Platforms have also managed to create jobs, such as drivers of ride-hailing platforms and riders of food delivery platforms, and cleaners. While these jobs may be new, matching workers to jobs on platforms is novel, including payment schemes (ADB 2021, Albert 2020). CrowdFlowers, Microworkers, and other digital labor or crowdwork platforms have facilitated

the connection of employers with workers who may be spread across the world for the conduct of either microwork that requires low-level skills, or macrowork that involves complex tasks requiring particular skillsets (ILO 2018). These platforms may have helped people perform other kinds of jobs during the pandemic. Further, work engaged through platforms allows people to engage in gig work. Platform-mediated online jobs, however, may also just be retrofitting traditional issues of labor exploitation in a new form, and creating more precarious situations for workers (Chen 2019; Liu 2019). A report by JPMorgan Chase & Co. suggests that in the case of drivers for ride-sharing apps, driving is not a full-time job. Meanwhile, even if the number of drivers for platforms has risen rapidly, their average monthly earnings have also declined (Farrell, Greig, and Hamoudi 2018).

Value creation in platforms is driven by underlying technologies and infrastructure: cloud, social networks, and mobile. The cloud enables global infrastructure, allowing platforms to create content and applications for a global set of actors. Social networks connect people and allow them to maintain an online identity. Mobile allows interconnections anywhere, anytime.

Network effects distinguish platforms from other business models and are one of the main drivers of value creation in the platform economy (Evans 2016). The more people use a platform, the more attractive the platform becomes to potential new users, triggering a self-reinforcing feedback loop of growth for value creation. Network effects may either be direct or indirect (ADB 2021).

The market model behind platforms is not new. Even in ancient times, bazaars brought together retail merchants and buyers. In modern times, classified advertisements have linked advertisers to consumers. The difference of bazaars and classified ads from platforms is that the latter are (i) leveraging technology and interconnectivity, along with the power of digital data and data analytics; (ii) linking user groups; and (iii) allowing these groups to interact (Koskinen, Bonina, and Eaton 2019).

A key characteristic of the matching of supply and demand in platforms involves multisided relations built on trust. As Heerschap, Pouw, and Atmé (2018) point out, the relationships among actors in a platform can be identified as B2B, B2C, and customer-to-customer (C2C) (also called peer-to-peer), etc. (Table 2.1). But over time, the distinction between C2C and B2C transactions in platforms has become more and more vague. Booking, which was initially a B2C platform, has also been offering C2C accommodation services.

Table 2.1: Possible Relations between Actors in Platforms

Item		Buyer or Client			
		Consumer	Business	Government	Science
Seller or Provider	Consumer	C2C	C2B	C2G	C2S
	Business	B2C	B2B	B2G	B2S
	Government	G2C	G2B	G2G	G2S
	Science	S2C	S2B	S2G	S2S

B2B = business-to-business, B2C = business-to-customer, B2G = business-to-government, B2S = business-to-science, C2C = customer-to-customer, C2B = customer-to-business, C2G = customer-to-government, C2S = customer-to-science, G2B = government-to-business, G2C = government-to-customer, G2G = government-to-government, G2S = government-to-science, S2B = science-to-business, S2C = science-to-customer, S2G = science-to-government, S2S = science-to-science.

Source: Author.

Multisided matching of supply and demand involves individual consumers and businesses, as well as governments and science. Each of these actors can be sellers (or providers of products or services) and buyers (or platform clients). In the strict sense of the word, a buyer in a platform need not always be a consumer. Consider a business, government agency, or person maintaining a profile on Facebook, Twitter, or another social media platform as a way to interact with the public. These platform actors are not necessarily buyers but merely users or clients of the platform.

The platform ecosystem always has at least three varied but interdependent actors: (i) sellers, (ii) buyers, and (iii) the platform itself. The platform sellers offer goods (e.g., Shopee and Lazada), services (e.g., MyKuya, Grab, YouTube, and Netflix) and/or information (e.g., Google and Facebook) to potential buyers. These products and services can be delivered either physically or digitally. Platform sellers receive data from the platform of their buyers. On the other hand, potential buyers search the platform for goods, services and/or information, and receive data from the platform about sellers. The platforms themselves are another actor in the ecosystem. The platform can have other roles, such as processing payments between buyers and sellers, and even taking charge of distribution of the product to the client. Advertisers constitute a fourth set of actors. On video-sharing platforms such as YouTube, advertisers subsidize the value of the attention provided by demand-side participants (viewers) for supply-side participants (uploaders).

The matching process can be transparent, e.g., initiated by the user, although it is often nontransparent (using algorithms involving governance rules for the matching). These algorithms are used for matching or ranking of search results, for setting prices, and for matching users with advertisements. Together with the ecosystems of participants, this distributed network of people is the social infrastructure of platforms.

Aside from the matching, transaction, and governance, other process elements of platforms include payment systems and ratings of users, as well as after-sales and support including complaints and their resolution (Figure 2.5). The matching and transaction processes in platforms are typically based on a user-driven trust mechanism that includes reviews and rating systems. Often, the providers are reviewed and evaluated, but sometimes users are as well.

Some platforms are characterized by switching costs. That is, users cannot easily transfer to other platforms. For instance, on Facebook, when users invest time and energy setting up their accounts; connecting with a community of friends and followers; and uploading content including posts, photos, and videos, this discourages them from switching to another platform, despite ethical scandals about Cambridge Analytica, or other social experiments on Facebook undertaken without their consent. When such are tied to an entire ecosystem of linked platforms, users may be even less willing to switch to another platform. Competition in platforms can be stifled when the market positions of platform giants are highly entrenched by positive network effects, economies of scale, and scope, especially switching costs (ADB 2021).

Figure 2.5: Process Elements of Platforms



Source: Author.

Relationships and transactions of platform users need not always be bi- or multidirectional. In the case of advertisers in a video-streaming platform, for instance, the interaction between the advertiser and users can occur in only one direction. Advertisers can reach users, but there is often no feedback from the user to the advertiser, and even when there is, it takes place outside the platform.

Sometimes the user turnover in the platform is generated by investors or the inclusion of extra services, such as insurance, logistic services, or cancellation fees. To attract more users, it is sometimes taken for granted that some platforms (e.g., Google and Facebook) provide free services. This kind of free use is an incentive to reinforce the participation of users and value creation within the platform.

Platforms can also have either a local or global reach. They can potentially reach clients from across the world, especially if the platforms offer goods or services that can be provided digitally, such as data, video, books, and music. Since it can scale without mass, a platform can grow quickly and efficiently to meet the demand that clients generate.

Platform-enabled companies, like other firms, generate data. The difference lies in the amount of digital data being collected from platform users, and the analytics that can be employed on these big data. Aside from the infrastructure of the platform and network effects, data is also another determinant of value creation. A platform utilizes user-generated data to match providers and clients (for example, by ranking providers or search results), set prices, and target users with advertisements. Platforms can use vast amounts of data, including user behavior data, to build detailed profiles of their providers and clients, and such processed data can even be sold as commodities. Classified ads can be customized with such data by inferring the moods, desires, and even fears of platform users through their app data, and even the rhythm of keyboard typing on the platform. While this can allow platforms to have better client relationship management, it can also intrude on privacy. Thus, the data collected on a platform are valuable.

Several platforms have also been disruptive, strongly challenging the traditional business models. Platform-enabled companies have significantly reduced the market shares of erstwhile dominant firms in some cases. Sharing platforms, in particular, leverage technology by matching excess capacity in private durable goods with demand, without transfer of ownership.

“Alibaba, the world’s most valuable retailer, actually has no inventory. Uber, the world’s largest taxi company, does not own any vehicle, while Airbnb, the world’s largest accommodation provider, owns no real estate.” (Goodwin 2015)

Since platforms do not incur costs of production, platform firms can scale faster and at much lower cost than traditional firms (World Bank 2019). Take, for example, Alibaba, the Chinese platform giant which specializes in e-commerce, retail, internet, and technology. This platform firm has gained 1 million users in merely 2 years and has more than 9 million online merchants and garnered annual sales of as much as \$700 billion in 15 years. In contrast, IKEA, the Swedish multinational homewares firm, generated global annual sales of \$42 billion in more than 7 decades of its existence (ADB 2021).

Platforms are either profit- or nonprofit-oriented. If access and use of the platform is not free-of-charge, providers and/or users pay commissions to the platform to be able to access and conduct transactions on the platform (Heerschap, Pouw, and Atmé 2018). Some video-streaming platforms may offer free access but provide top-up services for access to premium services. Finally, if a transaction between a provider and a client is completed on the platform, the buyer pays the seller if the transaction is not free. Platforms nearly always have electronic ordering, and usually the goods and services advertised on platforms can only be purchased digitally. Occasionally, the platform provides digital wallet and payment services to facilitate transactions. For instance, retail platform Shopee partnered with AirPay Technology, an electronic money issuer, and offers ShopeePay (in-app digital wallet) to clients for them to digitally pay for transactions.

Typology of Platforms

Platforms can be categorized either in specific or broad terms based on several criteria (OECD 2019; Heerschap, Pouw, and Atmé 2018). These typologies can help facilitate focused profiles that provide insights on the business environment. Typologies of platforms can also give policy makers an understanding of the traits of platforms, their similarities and differences, that can serve as inputs to policy formulation. A natural way to classify platforms is by functionality, i.e., according to what the platforms do or how they do it. Such an approach could involve a few broad categories or a large number of narrow categories.

The Center for Global Enterprise (Evans and Gawer 2016) groups platforms into four mutually exclusive types using a functional base. These groups include:

- i. Transaction platforms which link parties (for example, drivers and passengers in Grab and Uber) more easily on the internet and through platform infrastructure, thus reducing costs and possible conflict in the transaction process. Nearly all platform companies (from social media platforms, to marketplaces, and those on media, music, money, financial technology, and gaming) are reported to fall into the transaction platform type. Further, most of the biggest digital platforms in the global “South” are transaction platforms, and this yields both positive and negative impacts on local institutional settings.
- ii. Innovation platforms (such as Apple’s iOS and Google’s Android operating systems for mobile devices). These are technological building blocks, i.e., they supply technological infrastructure as the basis for third-party developers (Heerschap, Pouw, and Atmé 2018) to foster other services or products (such as apps for the iPhone and Android smartphones).
- iii. Integration platforms which have characteristics of both transaction and innovation platforms. Further, they are more distinctive than the other platforms, because companies such as Google, Apple, Facebook, Alibaba, and Amazon have manufacturing supply chains.
- iv. Investment platforms which includes companies that are not platforms per se (Heerschap, Pouw, and Atmé 2018). Instead they invest in platform companies or act as a holding company. These companies have clear investment approaches and provide investors “the back-end infrastructure and the front-end user experience.” One example is Rocket Internet, which sets out to build a portfolio for companies in “undeserved” markets through regional domestic investment groups.

Platforms can also be divided broadly and functionally into

- i. “those that are set up purely to act as intermediaries, matching buyers and sellers, where typically one or other pays an intermediation fee” (Ahmad and Ribarsky 2018); and
- ii. those that are set up as electronic retailers, or e-tailers, who own the products being sold.

This distinction is important since, in national accounts, how transaction flows are recorded necessarily differs. In the case of e-tailers, products are sold through their platform, on which a distribution margin is applied and paid by the final buyer. For an accommodations or transportation platform in the sharing economy (such as Airbnb and Grab, respectively), the “platform does not take ownership of any of the goods or services, it merely provides a matching service charging commission fees” (Ahmad and Ribarsky 2018) that may be implicitly or explicitly stated on the invoice. Often, both the buyer and the seller pay these matching fees.

Typologies of platforms may also be based on the users that platforms have, the kinds of data they collect, and the strategies for platform participation. Another broad approach that uses a structural rather than functional base, but that does not suffer from problems of hybrids, is to separate platforms into three groups according to their overall scope and structure: (i) superplatforms, (ii) platform constellations, and (iii) stand-alone platforms (OECD 2019). The first group is a platform of platforms (such as WeChat and Facebook), with users entering through a single portal (either a website or an app); superplatforms contain many individual platforms. On the other hand, platform constellations (such as Google’s main platforms) are collections of several platforms that are offered under one brand umbrella, co-existing in parallel and closely connected to one another. Unlike superplatforms, platform constellations can all be accessed separately without having to go through a single portal.

Platforms can also be classified by profit motive. In order “to attract more users, it is sometimes taken for granted that no profit is made” (Heerschap, Pouw, and Atmé 2018) for some platforms, especially at inception. Heerschap, Pouw, and Atmé (2018) add that “part of the use of the platform by users can be for free” and this is “an incentive to reinforce the participation and value creation of the platform.” Sometimes the turnover is generated by investors or the inclusion of extra services, such as insurance, logistic services,

or cancellation fees. According to Van Gorp and Batura (2015), for-profit platforms often use several revenue approaches:

- i. subscriptions where end users pay for the provision of a service (like Netflix or Spotify);
- ii. advertisements where end users access free services within the platform and this access is sustained by advertising revenue (examples include YouTube or Facebook); and
- ii. an access model where content or app developers pay platforms to reach end users (such as iPhone or Android app stores).

Platforms, however, may derive revenues from multiple sources. Thus, this typology cannot also be expected to produce clear-cut mutually exclusive categories.

OECD (2019) provides another example of a broad functional typology of platforms that classifies platforms into

- i. “capital platforms” (e.g., Airbnb which relies on matching capital owners with clients who rent the accommodations); and
- ii. online labor platforms (such as CrowdFlowers and Microworkers that match workers with employers).

As in the case of the platform typology espoused by Gawer (2015), this typology has for its major limitation the existence of hybrid platforms. Transportation platforms such as Grab match drivers as well as cars with passengers, and thus fall into both capital platforms and online labor platforms.

OECD (2019) points out that broad functional typologies may not be useful on their own, but can be useful together with other approaches. The typology of Evans and Gawer (2016), which categorizes platforms into transaction, innovation, and investment, could, for instance, be seen as using criteria on product and services. Two other examples are the two sets of typologies (Codagnone et al. 2016), each involving two criteria. The first set uses profit orientation and interaction modality, while the second set is based on interaction modality and asset mix. “Profit orientation varies from not-for-profit to for-profit; interaction modality varies from organization-centered/led

to peer-to-peer centered/led; and asset mix varies from capital to labor” (Heerschap, Pouw, and Atmé 2018). They provide examples to illustrate that platforms are in a continuum underlying the categories, rather than falling neatly into mutually exclusive types, and that some platforms are hybrids under both typologies.

A narrower functional typology could also be used to eliminate certain subcategories of platforms within broader groups in order to come up with a typology suitable for policy or business use. For instance, Platform Hunt (2016) suggests nine types of platforms: innovation platforms were broken down into (i) technology platforms and (ii) computing platforms; search engines were called (iii) utility platforms; social media platforms were categorized into (iv) interaction networks and (v) content crowdsourcing platforms; transaction platforms into (vi) marketplaces and (vii) on-demand service platforms; and other platforms were grouped into (viii) data-harvesting platforms and (ix) content distribution platforms.

Another example of narrow functional type of typologies is that given by OECD (2019), which groups platforms into: (i) ad-supported messaging platforms (WeChat, Facebook Messenger); (ii) app stores (Amazon Appstore for Android, Apple App Store, Google Play); (iii) C2Cs (MercadoLibre Marketplace, Taobao); (iv) labor freelancing/crowdsourcing (Freelancer, Mechanical Turk); (v) long-distance carpooling (BlaBlaCar); (vi) mobile payments (WeChat Pay, Alipay); (vii) search advertising (Baidu, Google); (viii) short-term accommodation (Airbnb); (ix) social media (Facebook, WeChat, YouTube); (x) superplatforms (WeChat, QQ); (xi) third-party B2Bs (e.g., Alibaba, Amazon Business); and (xii) third-party B2Cs (Amazon Marketplace, MercadoLibre Classifieds, Rakuten, Tmall).

Whether broad or narrow functional typologies are used, it will be challenging to have categories that do not overlap, since some platforms, especially superplatforms, have features across several categories. Functional typologies are also easily outdated as platforms evolve, thus requiring typologies to be regularly revisited for these to be relevant (ADB 2021).

Indicators and Measurements

In practice, the definition, features, and typologies of platforms entail a number of statistical challenges. Measurement of the platform economy in each country can be extremely challenging, beyond the absence of a common

definition of what is meant by a platform. First, platforms may also not be physically located in a country concerned, thus their economic transactions are not actually directly part of national economic statistics. Given the possible cross-border scope of transactions in platforms, developing a complete list of platforms in a country can be challenging. Even if this could be done, gathering data from foreign-based platform companies may not be feasible, unless they are forced by laws in a country to set up a local branch or office.

Furthermore, “there is no specific economic activity code for platforms” (Heerschap, Pouw, and Atmé 2018). If platform companies are part of the business register or the census of business and industry in a country, Heerschap, Pouw, and Atmé (2018) note that “they will often not be included in the industry in which they are active, but rather in other industries.” The authors also opine that “there is a growing tendency for horizontal and vertical integration of activities of platforms,” which can be cross-sectoral, i.e., platforms could be active in several sectors. For example, Amazon, which used to sell only pre-owned music and books, now sells all kinds of products. The social media platform WeChat adds other services and functions to support its social media activities, including transportation services, marketplace activities, and payment options. “These types of combined [economic] activities of platforms usually do not fit well with the current classifications of official statistics” (Heerschap, Pouw, and Atmé 2018).

Platform companies are likely to be included in ICT or trade, but platforms are cross-sectoral and thus, they do not straightforwardly fit into official classification systems such as industrial classification codes. For instance, while the Philippine Standard Industrial Classification includes a sub-class class code [47913] for “retail sale via internet” within Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles [Section G], there is no comparable sub-class code for platforms beneath specific services sectors (PSA n.d.). The classification is consistent with the ISIC of All Economic Activities Revision 4 (UN 2009), which recognizes e-commerce, i.e., “ownership of the goods or service through the Internet or by other electronic means,” but not economic activities related to sharing of goods or services in ride-sharing or accommodations-sharing platforms.

Another measurement challenge is that transactions are not always financial. In social media platforms, for instance, transactions involve exchange of data and information, and thus, the valuation of such transactions can be quite challenging. Economic variables such as revenue and employment can

also often be difficult to trace, since platforms spread supply across small-scale nonprofessional providers. Earnings and employment of these platforms may be underestimated in traditional business surveys and labor force surveys conducted by national statistics offices. Many digital platforms also do not publish their accounts or disaggregate these data across country boundaries.

Heerschap, Pouw, and Atmé (2018) posit that the “increase of international trade through platforms is difficult to visualize through traditional [economic] statistics, [especially] the national accounts [and] many platforms and providers are not [physically] located in the country concerned, therefore their economic transactions are not directly part of national statistics.”

Despite all the challenges in measuring the platform economy, some national statistics offices, e.g., Statistics Canada (2017), the United Kingdom’s Office for National Statistics (ONS 2017), and Eurostat (2018), have begun measurements given the growing importance of the platform economy. Many of these undertakings have focused on the sharing economy, which narrows platforms down to mostly C2C relations and transactions. Again as noted, in sharing platforms, transactions do not have transfer of ownership. Eurostat (2018) only considers sharing and lending of assets, such as homes, cars, etc., as part of the sharing economy. In other words, the gig economy, which provides supply of labor for small jobs, as well as crowdfunding platforms, are not part of the sharing economy in the Eurostat approach, but are separate categories of the C2C economy.

UNCTAD (2019) provides a conceptual framework for measuring the digital economy that uses national accounts prisms on products, production, and the nature of the transactions. This framework can also identify cases that need to be addressed for platform economy measurement within the scope of classification, output, and price measurement of services. As Barrera et al. (2018) point out, for the most part, the goods and services on platforms are not new but rather only transacted and delivered in new ways, and thus most of the relevant transactions in the digital economy, and the platform economy, in particular, are within the System of National Accounts production boundary (Table 2.2). That is, measuring the broader digital economy and the platform economy, in particular, through the national accounts is straightforward. Making use of a satellite account within the national accounts ensures that estimates of resulting indicators of the platform economy, when applied across countries, are comparable given the consistency in definitions, concepts, and classifications. This also recognizes conceptually the role of the enablers for

the functioning of the platform economy, from technology to network effects to digital data.

Beyond a conceptual framework, a statistical framework requires “institutional arrangements—legislative, budgetary, organizational, collaborative and coordinative, managerial and customer relationship arrangements—to support the environment for integration of data compiled from various sources” (UN 2017). Further, the conceptual framework should be operationalized through “the statistical production process as an integrated production chain from the collection of basic data to the dissemination and communication of resulting statistics” (UN 2013). After identifying required data and their sources, the estimation would involve: (i) deciding on a conceptual definition of the platform economy; (ii) identifying the goods and services within the supply-use framework relevant for measuring the platform economy; (iii) identifying the industries responsible for producing these goods and services; and (iv) estimating the output, value added, employment, compensation, and other variables associated with socioeconomic activities of platforms (World Bank 2020).

The challenge in measurement is largely that the nature of digital goods and services are changing rapidly. New products such as digital intermediation services should be added to classification systems and properly recorded. An added complexity is the strong possibility that these transactions often include a cross-border component, and thus, such transactions should be unbundled into their separate flows (Loranger, Sinclair, and Tebrake 2018).

National statistics offices should revise their classification systems and update other statistical infrastructure more frequently to be able to adequately capture these rapid changes, otherwise key official economic statistics may not suitably describe the economy.

Further, despite the seeming suitability of using current conceptual frameworks on national accounts to estimate the platform economy, there is valid criticism that GDP does not properly account for the benefits obtained from free goods arising as a result of digitalization. Activities related to free data and knowledge are not in the production boundary of national accounts. Further, current increased production from households is not operationally accounted for, as households have always been considered only from the expenditure side. Yet, there is growing evidence that household production and income have been increasing recently on account of the platform economy.

Table 2.2: Platform Economy Cases by Type of Industry, Product, and Transaction

Case	Examples	SNA Production Boundary		Type of Industry			Transaction			Product			
		within	outside	non-digital	digital enabling	digital platform	digitally delivered	digitally ordered	platform enabled	non-digital services	digital services	information/data	
1 Non-digital services intermediated by platforms (C2C)													
1.1	Sharing economy services (C2C transactions) intermediated via platforms	X		X				X	X		X		
1.2	Digital intermediation services for the sharing economy	X				X	X	X			X		
2 Non-digital services intermediated by digital platforms (B2AII*)													
2.1.1	Non-digital service ordered online	X		X				X					
	Air transport/accommodation, ordered via airline/hotel own website												

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Table 2.2 continued

Case	Examples	SNA Production Boundary		Type of Industry			Transaction				Product		
		within	outside	non-digital	digital enabling	digital platform	digitally delivered	digitally ordered	platform enabled	non-digital services	digital services	information/data	
2.1.2	Air transport/accommodation, ordered via intermediary platform	X		X				X	X	X			
2.2	Digital intermediation for corporate non-digital services	X				X	X	X			X		
3 Online product sales													
3.1	Online retailers	X				X	(X)	X			X		
3.2	Online sales by storefront retailers	X		X				X		X			
4 ICT Service Sector**													
4.1	ICT services: Data processing, hosting, and related activities; web portals	X			X		X			X			

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Table 2.2 continued

Case	Examples	SNA Production Boundary		Type of Industry			Transaction			Product		
		within	outside	non-digital	digital enabling	digital platform	digitally delivered	digitally ordered	platform enabled	non-digital services	digital services	information/data
5	Digitally delivered content and media											
5.1	Paid For a fee: Netflix, Spotify, eBooks	X				X	X	X			X	
5.2	Free For free-collaborative: Wikipedia, Reddit		X		X		X	X			X	X

B2B = business-to-business, B2C = business-to-customer, B2G = business-to-government, B2S = business-to-science, C2C = customer-to-customer, ICT = information and communication technology, SNA = System of National Accounts.

* B2All includes B2B, B2C, B2G, and B2S.

** Other cases in the ICT service sector are part of the wider digital economy but not part of the platform economy.

Note: The framework is based on Barrera et al. (2018).

Source: Author and Barrera et al. (2018).

Although the economic activities of platforms are partly taken into account in the national accounts (Table 2.3), it is crucial to make a distinction between market and nonmarket transactions. In the latter, for example, trading of second-hand goods is not part of the valuation in national accounts (ADB 2021).

Working within the national accounts conceptual and statistical frameworks for measuring the platform economy can pose a limitation as traditional economic statistics from the national accounts do not always allow for gender, age, and other relevant disaggregated data to examine how various groups in society are affected by platforms and the emerging digitalization. Data constraints also limit the operationalization of a conceptual framework for any satellite account.

According to the Dutch Transformation Forum (2018), the total market size of companies in the global platform economy was \$7.2 trillion in 2018, up from an estimated \$4.3 trillion in 2016 (Evans and Gawer 2016). The 2018 estimate was based on a survey of 242 platform companies, while the 2016 estimate was based on 176 platform companies. The digital platform companies in 2018 were dominated by the US and the PRC: 72% of total market value were platforms based in the US, while 25% were from the PRC.

For a meaningful profile of platforms in a country, data from the actors on the platform are needed: providers, users, and the platforms themselves (Box 2.2). In other words, surveys have to be undertaken for these three different groups.

Table 2.3: Providers and Clients of Platforms

Case	Examples	Providers or Sellers/Producers (institutional sector)					Clients or Buyers/Users (institutional sector)				
		Corporations	Household	Government	NPISH*	RoW**	Corporations	Household	Government	NPISH	RoW
1	Non-digital services intermediated by platforms (C2C)										
1.1	Sharing economy services (C2C transactions) intermediated via platforms		X					X			
1.2	Digital intermediation services for the sharing economy	X				X		X			
2	Non-digital services intermediated by digital platforms (B2All*)										
2.1.1	Non-digital service ordered online	X						X	X	X	X
2.1.2	Air transport/ accommodation, ordered via airline/hotel own website	X						X	X	X	X
2.2	Digital intermediation for corporate non-digital services	X				X	X	X	X	X	X

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Table 2.3 continued

Case		Examples	Providers or Sellers/Producers (institutional sector)					Clients or Buyers/Users (institutional sector)				
			Corporations	Household	Government	NPISH*	RoW**	Corporations	Household	Government	NPISH	RoW
3 Online product sales												
3.1	Online retailers	Shopee, Lazada, Amazon	X				X		X	X	X	X
3.2	Online sales by storefront retailers	Department stores selling a portion of their sales via own website	X					X	X			
4 ICT service sector**												
4.1	ICT Services: Data processing, hosting, and related activities; web portals	Data platforms: Google, Facebook	X				X		X	X	X	X
5 Digitally delivered content and media												
5.1	Paid	For a fee: Netflix, Spotify, eBooks	X					X		X		X
5.2	Free	For free-collaborative: Wikipedia, Reddit	X	X	X		X	X	X	X	X	X

B2B = business-to-business, B2C = business-to-customer, B2G = business-to-government, B2S = business-to-science, C2C = customer-to-customer, ICT = information and communication technology, NPISH = nonprofit institutions serving households, RoW = rest of the world.

* B2All includes B2B, B2C, B2G, and B2S.

** Other cases in the ICT service sector are part of the wider digital economy but not part of the platform economy.

Note: The framework is based on Barrera et al. (2018).

Source: Author and Barrera et al. (2018).

Box 2.2: Data and Indicators Needed for Measuring the Platform Economy

Dimension	Data	Indicators
General Information on Platforms	<ul style="list-style-type: none"> ■ Business name, registered name, and address of platform owner (including headquarters/main office and parent company, if any) ■ Website(s) of the platform(s) ■ Birth date/year that the platform(s) started operations ■ Geographic reach of the platform's operations (i.e., local, national, global) ■ Type of platform: (based on either general or specific functional base, or other typology) ■ Whether platform is part of C2C economy (yes/no) ■ Whether platform is part of sharing economy (broad and narrow definition) (yes/no) ■ Product(s) and service(s) exchanged between providers and users: asset and service mix (economic activity group) ■ Breakdown of providers by type (professional or nonprofessional) ■ Advertisement parties involved 	<ul style="list-style-type: none"> ■ Number of platforms by region ■ Proportion of platforms by age ■ Number of platforms by geographic reach ■ Proportion of platforms by type of platform ■ Number of platforms in the C2C economy; in the sharing economy ■ Number (and size) of platforms by economic activity group ■ Number of (and size) of platforms by type of provider ■ Number (and size) of platforms by advertisement parties involved
Economic Information on Platforms	<ul style="list-style-type: none"> ■ Business model: profit orientation (profit, nonprofit, commission-based, advertisement-based or a combination); Other sources of income from other services or add-ons. Or more general: how the platform makes money ■ Employment: number of directly persons employed by platform (employers + employees, e.g., those maintaining tech infrastructure, administration, and marketing); 	<ul style="list-style-type: none"> ■ Number (and size) of platforms by business model ■ Number of employed (by sex) by type of platform (or economic group) ■ Number of employed by educational attainment and by type of platform (or economic group) ■ Hours worked by type of platform (or economic group) ■ Number of platforms by type of investors (or investments made) ■ Percentage of platforms that paid taxes

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Box 2.2 *continued*

Dimension	Data	Indicators
	<p>Characteristics of employed: breakdown by sex, breakdown by educational attainment; hours worked</p> <ul style="list-style-type: none"> ■ Type of investors and investments made in the platform ■ Tax payment (and type, i.e., income tax, value-added tax, etc.) ■ Type of network effects: what drives the growth of the online platform (e.g., more participants, more transactions, more content, etc.) ■ Who sets the prices and circumstances of logistics (e.g., delivery of good or service) ■ Turnover, including source(s) of the turnover ■ Value added, i.e., turnover minus costs for intermediate goods and services ■ Investments made in the platform, including the type of partners ■ Type of providers: noncommercial and commercial 	<ul style="list-style-type: none"> ■ Number of platforms by type of network effects ■ Number of platforms by mechanism for setting prices and logistics ■ Average turnover, by source and by type of platform ■ Average value added, by type of platform (or economic activity group) ■ Average investments in platform, by type of platform (or economic activity group) ■ Number of platforms by type of providers
Social Information on Platforms	<ul style="list-style-type: none"> ■ Verifying providers and their offers and checking for illegal content ■ Verifying clients ■ Advertisement parties involved ■ Collection of data of providers and clients and the uses of these data (e.g., algorithms and selling of data) 	<ul style="list-style-type: none"> ■ Number of platforms by type of verification process for providers ■ Percentage of platforms with verification process for clients by type of platform (or economic activity group) ■ Percentage of platforms with advertisement parties involved by type of platform (or economic activity group) ■ Number of platforms by type of platform and by type of data collection activities on platform users ■ Number of platforms by type of platform and by data collection use

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Box 2.2 *continued*

Dimension	Data	Indicators
Basic Information on Platform Sellers	<ul style="list-style-type: none"> Name of individual/household respondent or Business Background characteristics: location; year that the provider(s) started offering good or service in platform(s); individual/household or business Reasons to use a platform Type of goods or services offered (relative to some classification system); Part of sharing economy (i.e., offering use of idle asset, or not) Number of transactions per year (including turnover) 	<ul style="list-style-type: none"> Total number of unique sellers by type (individual/household vs business) Total number of unique individual sellers (active or passive) by location (urban/rural, or region) Growth rates in number of unique sellers (active or passive) Total number of sellers by reasons to use a platform Total number of sellers by type of goods or services offered Percentage of sellers in sharing economy, by location
Economic Information on Platform Sellers	<ul style="list-style-type: none"> Number of transactions per year in past 2 years Average prices per transaction Average transaction costs made to use the platform (commission and/or access) Investments and value added Tax payment International trade/cross-border transactions (percentage compared to all transactions) Main source or supplementary source of income 	<ul style="list-style-type: none"> Total number of transactions per year by location Growth/decline of transactions per year, including total turnover. Estimate of total turnover: average price x number of transactions per year (minus transaction costs) Total investments and value added Percentage of sellers paying tax Share of international trade/cross-border transactions (in percent) to total transactions Percentage of sellers whose income from platforms is main source (or supplementary source) of income
Social Information on Platform Sellers	<ul style="list-style-type: none"> If the seller has a working relationship with the platform (relates mostly to indirect employment): hours worked and earnings (does this constitute the main income). Account should be taken of the fact that people can work for or be associated with more than one online platform Total income Social security Legal contract Training possibilities 	<ul style="list-style-type: none"> Percentage of sellers with working relationship to the platform Average hours worked by sex and by location Average earnings by sex and by location (for those with platform incomes constituting the main source of income, and for others) Average income by sex and by location Percentage of sellers with social security Percentage of sellers with training possibilities

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Box 2.2 continued

Dimension	Data	Indicators
Basic Information on Platform Clients	<ul style="list-style-type: none"> ■ Name of platform client ■ Background characteristics: Location; Year that the client(s) started purchasing good or service in platform(s); individual-household or business; number of visits to a platform per year; type of goods or services bought or shared, including prices; Reasons to use platform(s) ■ Number of visits to an online platform per year (or month or week) ■ Number of transactions per year (money spent, including the commission to the platform) ■ Type of goods or services bought or shared ■ Reasons to use online platform(s) ■ Trust in platforms (e.g., role of reviews and rating systems) ■ International trade/cross-border transactions (percentage compared to all transactions) 	<ul style="list-style-type: none"> ■ Total number of unique clients by type (individual/household vs businesses) ■ Total number of unique clients by sex and by location (and growth or decline) ■ Average number of visits to a platform per year (or month or week) ■ Total number of clients by type of goods or services bought or shared ■ Average prices for major goods or services bought or shared ■ Total number of clients by reason for using platform(s) ■ Average share of cross-border transactions to total transactions
Economic Information on Platform Clients	<ul style="list-style-type: none"> ■ Average number of transactions per year (or month or week) ■ Average expenditures on platforms, including the commission to the platform) ■ International trade/cross-border transactions (to total transactions) in platform 	<ul style="list-style-type: none"> ■ Number of transactions per year ■ Growth/decline of transactions per year ■ Average expenditures on platforms by type of platforms (including the commission to the platform) ■ Share of cross-border transactions to total transactions in platform
Social Information on Platform Clients	<ul style="list-style-type: none"> ■ Trust in platforms (e.g., role of reviews and rating systems) ■ Number of complaints on the platform (and of which, how much got sufficiently resolved) 	<ul style="list-style-type: none"> ■ Average trust rating of platforms by type of platform ■ Average number of complaints in platform(s) by type of platform

Note: Adapted from Heerschap, Pouw, and Atmé (2018).
Source: ADB (2021).

Key data and statistical indicators are needed to measure the platform economy. Heerschap, Pouw, and Atmé (2018) explain that “on the one hand, there is the need to separate platforms from the traditional economy. This means that specific indicators for platforms (and their operations), the providers (supply), the users (demand), and the advertisers, as well as the transactions, [are needed]. On the other hand, for comparison, [indicators of platforms need to be] linked with existing statistical indicators and domains.”

A precondition for any new set of measurement processes is ensuring that the cost of collecting new data and the respondent burden has to be kept as low as possible. Descriptive indicators suggested below are restricted to basic characteristics of the platforms themselves, the providers of the platforms, and the users of the platforms.

Data Sources

The data for the proposed indicators listed can be collected from various sources. Regardless, it is initially important to have a sampling frame of platforms, which is unlikely to be available in many countries. National statistics offices could start with the most “important” platforms in terms of public visibility (ADB 2021).

Some data collection methods are better for platform firms. Since transactions on platforms concern cross-border digital trade, international cooperation is necessary. Possible options for data collection are (ADB 2021):

- i. Setting up a new dedicated survey for measuring the platform economy. Survey questionnaires can be sent to providers and users, but especially to the platforms. Households are both consumers and producers; thus, the nature and extent of their consumption and productive activities needs a new survey that should also capture information on imports of goods and services directly undertaken by households. That households are now direct importers and exporters needs to be properly valued in national accounts. National statistics offices need to work with platform firms to obtain aggregate information on productive activities of households and cross-border flows. Since most platforms will not be very willing to share information, data sharing with national statistics offices needs to be mandatory by law, even when the headquarters of a platform company are outside the country (Scassa 2017), though there will be challenges in assuring cooperation.

- ii. Alternatively, national statistics offices could make use of existing surveys (i.e., the Labor Force Survey, household surveys of ICT use, business surveys of ICT use) and add a module of questions on the platform economy. These surveys can target providers and users of platforms, but not the platforms themselves.
- iii. The available digital footprints on platforms could be web-scraped. If there is already a list of platforms (with URLs) available in a country, national statistics offices can use web scraping and application programming interfaces to collect desired information from the websites of platforms (such as site visits of users, and possibly financial accounts) though this is not always an easy task. If a sampling frame of platforms is not available, an initial list could be created on the basis of a web search of the whole internet (focusing on a country domain) with a bot. With the aid of machine learning, a bot should be able to distinguish “normal” websites from websites with platforms.

The various typologies of platforms discussed in the previous section show the challenge in coming up with a single survey for all classifications of platforms, which can vary considerably in features from each other. For a sharing platform, the distinction can be blurry “between a natural person (peer) offering a service and a (micro) enterprise offering the same service” (Heerschap, Pouw, and Atmé 2018). Even in a gig or online labor platform, the difference between a natural person seeking a gig through a temporary employment agency or through a platform may not be straightforward. If all possible typologies of platforms and platform users are taken into account in a survey of platforms, providers, and clients, the survey questionnaires are likely to be long and complicated.

International organizations such as the UNCTAD, IMF, and OECD have set up work programs and international working groups to advance the statistical and conceptual frameworks that will help national statistics offices measure the digital economy and the platform economy in a consistent manner (European Commission et al. 2009). These international organizations have also conducted knowledge-sharing activities, bringing together experts and representatives of national statistics offices to look at measurement issues. Dedicated surveys could possibly be coordinated at regional levels by international organizations for developing economies that could target platforms especially, as well as platform users.

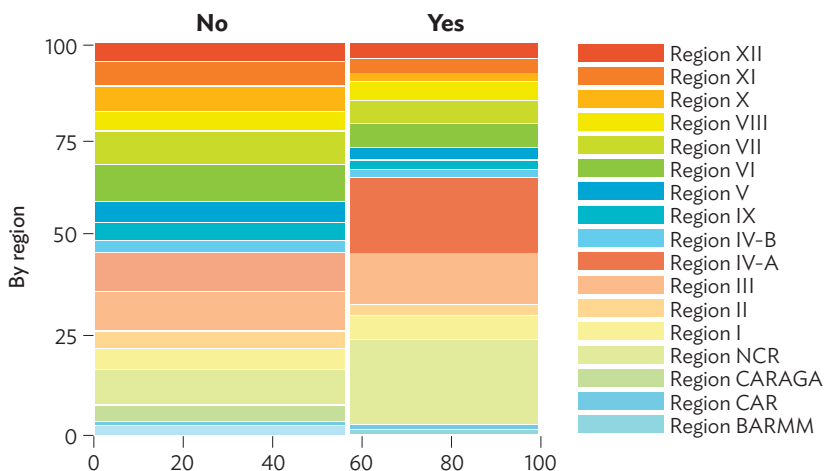
Some national statistics offices in advanced economies have been undertaking methodological work. The US Bureau of Economic Analysis is experimenting with approaches to look into transactions outside the production boundaries of national accounts to obtain a value of the consumption of “freely” available information, while the UK’s Office of National Statistics has been re-examining its approach to accounts for quality change in the prices of digital products and services such as household broadband services (Loranger, Sinclair, and Tebrake 2018).

Developing countries should conduct household and business surveys on ICT use more regularly, harnessing administrative records and exploring data from innovative sources (such as web scraping) and integrating these with available data from traditional data to address data gaps. In the Philippines, the Department of Information and Communications Technology, in cooperation with the Philippine Statistical Research and Training Institute, in 2019 conducted the first ever National ICT Household Survey to gather baseline data on household access and use of ICT services and equipment. The survey provides measures of key indicators of household ICT use in support of national ICT development planning and policy making. The results suggested that among Filipinos aged 10 years and over, 43% use the internet, of which, more than half (53%) are in Metro Manila, i.e., the National Capital Region and its neighboring regions Calabarzon and Central Luzon (Figure 2.6). Since internet use of households is much lower outside of Metro Manila, much can be done to reduce the digital divide to ensure that digital dividends on platform use are made more inclusive.

Figure 2.7 shows that among Filipinos aged 10 years and above who go online, the bulk of internet activity for private or personal purposes is on social activities/communication (91%), access to information (41%), and leisure and/or lifestyle (34%). Around a tenth or less go online for creativity (12%), online transportation and/or navigation (8%), and professional life (6%) and online transactions (1%). These results validate information from We Are Social and Hootsuite (2020) that Filipinos connected to the internet are global leaders in the use of social media, and that the extent of e-commerce activities and online banking transactions are limited and thus should be an area of growth. There is evidence that in the COVID-19 pandemic,⁵ Filipinos

⁵ Refer to ABS-CBN (2020).

Figure 2.6: Distribution of Filipino Internet Users Aged 10 Years and Above by Region, 2019
(%)

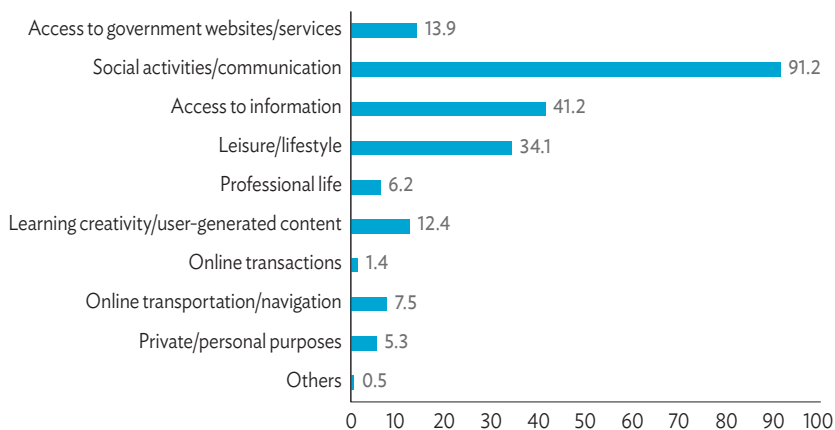


BARMM = Bangsamoro Autonomous Region in Muslim Mindanao, CAR = Cordillera Administrative Region, CARAGA = Caraga Administrative Region, NCR = National Capital Region.

Note: The question is: In the last 3 months, have you used the internet from any location?

Source: Author, based on Government of the Philippines, Department of Information and Communications Technology, 2019 National ICT Household Survey.

Figure 2.7: Private or Personal Internet Use among Filipinos Aged 10 Years and Above by Activity, 2019
(%)



Note: The question is: In the last 3 months, and from any location, for which of the following activities did you use the internet for private or personal purposes?

Source: Author, based on Government of the Philippines, Department of Information and Communications Technology, 2019 National ICT Household Survey.

have used platforms more to cope with restrictions on movement imposed by the government, and it is likely that such changes in consumption behavior will be sustained in a post-COVID-19 world.

A total of ₱15.5 billion was spent monthly on online purchases, led by Calabarzon, Metro Manila, and Central Luzon, which have a combined 70% share of total expenditures in the country. A third of total online spending was on clothing, while about a fifth was on household goods, with a tenth each on electronics and on cosmetics (Table 2.4).

**Table 2.4: Total Monthly Expenditure from Online Purchases,
by Type of Good/Service, 2019**
(₱ hundred thousand)

Good/Service	Total Expenditure	Share to Total (%)
Creative content	105	0.1
Professional services	177	0.1
Financial products	303	0.2
Music downloads and music streaming subscriptions	752	0.5
Video downloads and video streaming subscriptions	884	0.6
Medicine	1,105	0.7
Books, magazines, or newspapers	1,288	0.8
Computer or video games	1,855	1.2
Tickets or bookings for entertainment events	1,863	1.2
Computer software	2,042	1.3
Food, groceries, alcohol, or tobacco	3,558	2.3
Travel products	4,494	2.9
Computer equipment or parts	7,429	4.8
Cosmetics and fragrances	14,910	9.6
Consumer electronics and accessories	16,100	10.4
Others	16,650	10.8
Household goods	28,100	18.2
Clothing, footwear, sporting goods, or accessories	53,080	34.3
TOTAL	154,695	100.0

Source: Author, based on Government of the Philippines, Department of Information and Communications Technology, 2019 National ICT Household Survey.

Table 2.5 shows that total monthly income from online selling across the country averaged ₱12.3 billion, with clothing garnering a fifth of online income, while a tenth each went to cosmetics (and fragrances), and another tenth came from income from food (including groceries, alcohol and tobacco).

**Table 2.5: Total Monthly Income from Online Selling,
by Type of Good/Service, 2019**
(₱ hundred thousand)

Good/Service	Total Monthly Income	Share to Total (%)
Books, magazines, or newspapers	38	0.0
Tickets or bookings for entertainment events	481	0.4
Computer software	1,123	0.9
Travel products	1,333	1.1
Medicine	1,869	1.5
Creative content	2,293	1.9
Computer equipment or parts	2,999	2.4
Household goods	5,273	4.3
Financial products	5,929	4.8
Computer or video games	7,413	6.0
Professional services	8,031	6.5
Consumer electronics and accessories	8,231	6.7
Food, groceries, alcohol, or tobacco	14,690	11.9
Cosmetics and fragrances	15,090	12.2
Clothing, footwear, sporting goods, or accessories	24,190	19.6
Others	24,330	19.7
TOTAL	123,313	100.0

Source: Author, based on Government of the Philippines, Department of Information and Communications Technology, 2019 National ICT Household Survey.

Average monthly income of Filipinos was estimated at around \$175 (₱8,700) from online selling in the Philippines. Across regions, Davao and Eastern Visayas led in mean income from online selling, suggesting that while spending is skewed toward Metro Manila and surrounding districts, the income from online transactions tend to go outside of the urban area. The challenge here is for the Philippine Statistics Authority to integrate such information on household income (and production) into the production side of national accounts, as current accounting of household activities are treated more on

the expenditure side. Further, the increasing production from households also has important implications on the measurement not only for economic, but also labor market performance. This chapter has hardly touched on issues about measuring the contribution of platforms to the labor market.

2.4. Conclusion

The emerging platform economy is a catalyst for wealth creation, social good, and innovation, providing groundbreaking benefits for producers and consumers. But the platform economy also brings many risks to fair competition; trustworthiness; and consumer rights, including data privacy and decent working conditions (Heerschap, Pouw, and Atmé 2018). This requires at least new regulatory frameworks that make socioeconomic growth inclusive, while exercising some restraint so as not to stifle digital innovations.

To get a good picture of the platform economy, new data and indicators are needed, and national statistics offices need to start work on measuring the platform economy, giving attention to national accounts compilation, as well as conduct of business surveys and new household surveys. Given the complex business processes of platforms, it is, however, a statistical challenge to obtain information from platforms, and even to make use of traditional data sources. Households are no longer just consumers but obtaining information on productive activities of households is challenging, so national statistics offices need to work with platforms to obtain this information.

Work has begun in the international statistical system on measuring the larger digital economy, and for some national statistics offices from more developed countries, work has also begun even on platform economy measurement, with a focus on the sharing economy. Measuring the platform economy and its impact can be challenging, however, because of the complexity, cross-sector and cross-border capacity, and rapid growth of platforms amid vastly changing goods and services. Usage data in platforms can proxy for economic value, thus web-scraping of platforms by national statistics offices can be a valuable tool for obtaining information on socioeconomic activities in platforms, aside from conducting new surveys of users of platforms as well as the platforms themselves.

Private organizations are also currently collecting various data, and generating information on the platform economy, but details on their methods and the extent of coverage of their work are unknown. National statistics offices can start working with these organizations, and re-engineer their existing surveys, e.g., labor force surveys, business surveys, household and business surveys on ICT usage, and supplement traditional data collection with alternative data sources.

National statistics offices need to develop mechanisms for integrating new data and new data sources into national accounts compilations. For instance, households have been typically viewed only from the expenditure side, but household production is increasing especially in the platform economy, and this has not been incorporated into national accounts estimation. Regional cooperation is required to address the cross-border nature of platforms, and how this affects economies. International cooperation is especially necessary for reaching out to platforms, which may not be physically present in countries. Further, guidance on statistical standards will need to be developed.

Measurements of the platform economy have wide policy implications for ensuring that a positive dynamic of social good from the platform economy continues while preventing possibilities for widening inequalities and power imbalances in society. Digital footprints left in platforms can expose platform users to misuse of personal data. Lack of trust, even by those connected to the internet on how personal data is kept and managed by platforms, can make platform users reluctant in engaging in electronic money transactions, and thus limit growth in electronic commerce, as has been in the case in the Philippines. While policies and laws have been in place in the Philippines to protect individuals from risks pertaining to privacy and cybersecurity, especially with the enactment of the Data Privacy Act of 2012 and the National Cybersecurity Plan 2022, these regulations must be regularly revisited in the wake of possible implementation deficits in these laws.

Governments should understand the dynamics in the platform economy given the many challenges in enforcing regulations on cross-border trade in digital services and products, as well as the current ambiguities in laws on digital taxation.⁶ Even prior to the onset of the COVID-19 pandemic, several Asia and the Pacific economies, i.e., Australia, Bangladesh, Japan, New Zealand, the Republic of Korea, and Taipei, China, have had digital tax laws. In July 2020,

⁶ Refer to Quaderno (2020).

Indonesia introduced a 10% value-added tax (VAT) on all online transactions with no threshold, which means from the very first sale. Meanwhile, Malaysia introduced 6% VAT on digital services for foreign providers whose services rendered exceeds the threshold of RM500,000 (about \$120,000) for a period of 12 months, while Singapore introduced a 7% VAT to foreign suppliers of digital services whose annual global turnover exceeded S\$1,000,000 and whose sale of digital services to consumers in Singapore exceeded S\$100,000. Given government need for other revenues in the wake of expected deficits for fighting the pandemic, increasing social protection coverage, and rebooting economies, the Philippines and several countries in the Asia and Pacific region, such as the PRC and Thailand, are also looking into digital taxation.

Policies need to be in place on the protection of consumer rights that can enhance trust toward platforms, specifically digital payments. Encouraging platforms, especially logistics and ride-sharing providers, to only use digital payment instruments will require a strong consumer protection policy framework, including a return-and-refund policy. Consumer confidence in the right to return a defective product and receive a refund can likely improve trust in digital payments. The difficulty is sometimes on the part of enforcement of laws. For instance, while the Consumer Act of the Philippines (or Republic Act 7394) provides for physically including price tags of goods and services, providers may not do so, and instead resort only to negotiations on private messages with platform clients.⁷

The pandemic has accelerated the shift toward online expenditure, boosting the growth of digital delivery models, including online banking, online learning, and online entertainment. This shift in consumer behavior may continue in the post-pandemic world as consumers increase their trust in platforms. Regulatory frameworks should address how to enhance safety and security, particularly how to observe data privacy for protecting the personal information of consumers in platforms. A key characteristic of platforms is that they are in winner-take-all situations and markets. Even when barriers to entry can be low, it is possible for first movers to have a huge advantage because of the high cost of switching platforms, and this can pose significant issues in fair competition.

⁷ Refer to Malasig (2020).

While a regular review of regulations especially about platforms is in order, regulators must also remember the need for an enabling environment that promotes wealth creation. Regulations should not easily stifle innovative activity but work toward ensuring that whatever benefits from platform use are ultimately shared within a country, so that prosperity can be more inclusive and sustainable especially in the new normal.

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