APEC Policy Support Unit
POLICY BRIEF No. 44
April 2022

Stepping Outside the Shadows: Informality and Digitalisation

By Andre Wirjo, Sylwyn Calizo Jr. and Rodrigo Balbontín

KEY MESSAGES

- Informality exists everywhere, including in the APEC region. It can take many forms: the familiar street vendor near the office, the online seller whose Instagram stories everyone follows, or the popular community baker who, for the longest time, had been intimidated by the bureaucracy accompanying typical business registration.

- The COVID-19 pandemic has brought to the fore the pressing need to tackle informality and related issues. The pandemic affected the informal sector in at least two ways: (1) informal firms and workers tended to be found in sectors hard hit by COVID-19 mitigation measures and (2) more businesses and workers were pushed to the informal sector due to pandemic-induced economic challenges.

- Informality presents challenges to those in the informal sector and beyond. Informal workers and businesses usually do not have access to conventional financial services, social security or the protection of the judicial system, making them particularly vulnerable. For governments, the informal sector represents an unreached, untapped and unregulated portion of the economy with huge potential if formalised. There is also a gender angle to informality, in that it affects more women than men in a number of economies in APEC and globally.

- The advent of digitalisation has expanded the policy options available to governments. In the context of tackling informality and related issues, digital solutions have been particularly helpful in three areas: (1) facilitating the formalisation and delivery of public services; (2) improving access to financial services; and (3) expanding market reach.

- While digitalisation could help to address aspects of informality, it is not devoid of challenges. Issues include those related to the digital divide and infrastructure; cybersecurity, data privacy and exposure to digital fraud; and competition, data portability and platform dominance. Moreover, the anonymity offered by digitalisation could encourage a move toward informality.

- Informality and digitalisation are complex and multifaceted, which means that the use of digitalisation to address informality is usually not a straightforward endeavour. Policymakers need to consider a set of interventions that would not only encourage the informal sector to adopt digital solutions but also motivate them to formalise their businesses. It is also important to contextualise these interventions with respect to an economy's intrinsic characteristics.

Informality is a pervasive and complex issue. The impact of the COVID-19 pandemic on the informal sector has raised the urgency of tackling issues associated with informality. Meanwhile, the advent of digitalisation has expanded the policy options available to governments in overcoming varied challenges, including potentially informality.

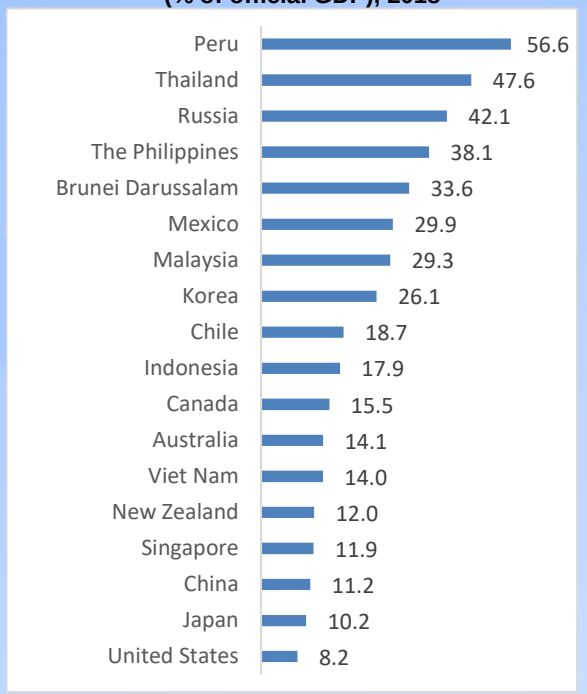
This policy brief explores the intersections between informality and digitalisation. It highlights the potential role of digitalisation in addressing issues related to informality, points out the challenges of digitalisation, and offers a set of policy recommendations as policymakers look to better harness digitalisation to tackle informality.

1. Informality in the Region

Informality exists everywhere. The International Labour Organization (ILO) estimates that about 61.2 percent of global employment in 2018 comprises informal workers, referring to those 'with remunerative work (i.e., both self-employment and wage employment) that is not registered, regulated or protected by existing legal or regulatory frameworks, as well as non-remunerative work undertaken in an income-producing enterprise. Informal workers also include those that do not have secure employment contracts, workers' benefits, social protection or workers' representation'.[1] In ASEAN economies, there is an estimated 62.2 million informal businesses that employ close to 97 million people. [2] This is comparatively higher than the 9.3 million formally registered businesses that collectively employ about 60 million people.

Data from the World Bank's Informal Economy Database reveal that in APEC economies where data are available, the share of total employment that could be categorised as informal ranges between 29.3 percent (Chile) and 82.4 percent (Indonesia).[3] In terms of output, the informal sector makes a significant contribution to the economy. For instance, the contribution of the informal sector in APEC economies was between 8.2 percent (US) and 56.6 percent (Peru) of the economy's official GDP in 2018. [4] Economies where the informal sector's contribution is more than one third of their official GDP include Brunei Darussalam; Peru; the Philippines; Russia; and Thailand (Figure 1).

Figure 1. Estimates of informal output (% of official GDP), 2018



Note: Data for Hong Kong, China; Papua New Guinea; and Chinese Taipei are not available.
Source: World Bank; APEC Policy Support Unit (PSU) calculations.

COVID-19 has had a significant impact on the informal economy. Since informal firms and workers tend to have a higher presence within the service sector and other labour-intensive activities, they are more affected by social distancing and other measures aimed at mitigating the spread of COVID-19.[5] At the same time, the challenges of the COVID-19 pandemic (e.g., growing unemployment, work stoppages) are likely to have pushed more businesses and workers to the informal sector, undermining efforts to achieve inclusive growth in the APEC region.

[1] International Labour Organization (ILO), *Women and Men in the Informal Economy: A Statistical Picture,* 3rd edn (Geneva: International Labour Office, 2018), https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_626831.pdf.
The definition of informal workers was raised during the 17th International Conference of Labour Statisticians in 2003. See: ILO, "4.5 Informal Economy Workers," accessed 14 January 2022, https://www.ilo.org/global/topics/wages/minimum-wages/beneficiaries/WCMS_436492/lang—en/index.htm.
Although this definition broadly includes non-standard forms of employment (e.g., gig economy workers), this policy brief has focused on informal firms and workers beyond the regulatory and monitoring reach of governments, such as home-based businesses and side-walk vendors.
[2] Organisation for Economic Co-operation and Development (OECD), "Formalisation of Micro Enterprises in ASEAN" (Jakarta: OECD, 2020), https://asean.org/wp-content/uploads/2012/05/Formalisation-of-Micro-Enterprises-in-ASEAN-POLICY-INSIGHT-2020-final-3.pdf
[3] World Bank, "Informal Economy Database," accessed 5 April 2022, https://www.worldbank.org/en/research/brief/informal-economy-database
[4] Based on economies where data are available.
[5] F. Ohnsorge and S. Yu, eds, The Long Shadow of Informality: Challenges and Polices, advance edn (Washington, DC: World Bank, 2021), https://thedocs.worldbank.org/en/doc/37511318c092e6fd4ca3c60f0af0bea3-0350012021/related/Informal-economy-full-report.pdf

2. Why Does Informality Exist?

It is important to understand that not all of those engaged in the informal sector do so for the same reasons. One useful taxonomy describes three types of informality: Survival View (Type 1), Parasite View (Type 2) and De Soto's View (Type 3).[6]

Type 1 refers to those whose remuneration is too low to become formal, regardless of entry costs. Examples include ad hoc and seasonal part-time workers. They typically engage in informality due to the lack of opportunities in the formal sector (e.g., difficulty finding employment because of limited formal education) and view the informal sector as the only way to meet their basic needs amid precarious conditions.

Type 2 pertains to those that are productive enough to survive as formal firms if entry barriers are removed, but choose not to do so because it is more profitable to remain informal. Examples include unregistered freelancers and online businesses. These workers and firms could have chosen to remain informal to avoid regulatory costs (e.g., taxes or burdensome government regulations) or because they do not perceive any advantage to becoming formal. This is the case for just over half (52.2 percent) of small and medium enterprises (SMEs) surveyed in Indonesia, who choose to remain informal despite not finding existing regulations particularly burdensome.[7]

Type 3 refers to those with higher productivity but are kept out of formality by high entry costs (e.g., burdensome government bureaucracy) and would likely become formal if these were removed. This is the case in many ASEAN economies where small-scale firms have chosen to remain informal because domestic regulations and procedures are overwhelming or burdensome. [8] For example, estimates from Viet Nam show that starting a business can cost up to 5.6 percent of income per capita, while in the Philippines that figure could be as much as 23.3 percent; and this is not to mention the actual time spent following procedures that could take several days or weeks. Moreover, registered firms face additional compliance costs pertaining to taxes or social and labour requirements.

It should be acknowledged that some developing economies also tolerate certain forms of informality due to a lack of institutional capacity to administer social programmes, manage unemployment or maintain social cohesion, among other reasons.[9]

3. Why Is Informality an Issue?

While informality arises out of necessity or perceived benefits, it is worthwhile to note that it has negative implications for various segments.

From the perspective of informal workers and firms, they usually have no access to conventional financial services, social security or the protection of the judicial system. Informal micro, small and medium enterprises (MSMEs) consistently identified access to finance as their greatest constraint.[10] This could limit their business growth and they may be unable to save a viable business amid shocks such as a pandemic.

For governments, informal workers and firms represent a section of the economy that, if formalised, could boost tax revenues. One estimate shows that about USD 3.1 trillion or 5 percent of global GDP is lost from tax evasion because of informality.[11] Informality also causes a pernicious cycle. By impeding governments from collecting sizable tax revenues, and hence their ability to provide basic public goods and services efficiently, informality further disincentivises workers and firms from formalising. [12] Additionally, the informal economy's invisibility could prevent governments from targeting programmes and evidence-based policies efficiently and effectively, including those aimed at promoting decent work.[13]

From an inclusion standpoint, informality affects more women than men in 101 economies, particularly in low- and lower-middle income economies.[14] For instance, the ILO has estimated that, in low-income economies, 92.1 percent of employed women were engaged in the informal sector compared to 87.5 percent of men. Women

[6] G. Ulyssea, "Firms, Informality and Development: Theories and Evidence from Brazil," 14 January 2015, https://economics.yale.edu/sites/default/files/ulysseadecember2014.pdf
[7] International Finance Corporation (IFC), "Women-owned SMEs in Indonesia: A Golden Opportunity for Local Financial Institutions" (IFC, 2016) https://www.ifc.org/wps/wcm/connect/260f2097-e440-4599-91ec-e42d45cf3913/SME+Indonesia+Final_Eng.pdf?MOD=AJPERES&CVID=lj8qhPY
[8] OECD, "Formalisation of Micro Enterprises in ASEAN."
[9] F. Docquier, T. Muller and J. Naval, "Informality and Long-Run Growth," *Scandinavian Journal of Economics* 119, no. 4: 1040–85, http://dx.doi.org/10.1111/sjoe.12185
[10] OECD, "Formalisation of Micro Enterprises in ASEAN."
[11] P. van der Molen, "Informal Economies, State Finances and Surveyors," Survey Review 50, no. 358: 16–25, https://doi.org/10.1080/00396265.2016.1216922
[12] C. Deléchat and L. Medina, *Introduction: What Do We Know About the Informal Economy,* In C. Deléchat and L. Medina, eds, The Global Informal Workforce: Priorities for Inclusive Growth (Washington, DC: International Monetary Fund, 2021), https://www.elibrary.imf.org/fileasset/IEATWEAEX.pdf?cid=va-com-compd-ieatw
[13] van der Molen, "Informal Economies."
[14] ILO, *Women and Men in the Informal Economy*.

are also more likely to perform more vulnerable informal jobs than men, such as domestic and home-based work and other occupations often off-limits to labour inspectors or regulations.[15]

Recognising that addressing informality is important, governments have implemented a range of policies aimed at encouraging formalisation with varying degrees of success. These include disseminating information about the benefits of formalisation and the regulatory processes to become formalised, and implementing programmes to simplify the procedures.[16]

The advent of digitalisation has expanded the policy options available to governments, with the COVID-19 pandemic further contributing to the rapid adoption of digital solutions. For example, the demand for services to be delivered remotely by both the public and private sector has incentivised different stakeholders to digitalise, thereby improving access and reducing transaction costs.

4. Benefits of Digital Solutions

In the context of tackling informality and related issues, digital solutions have been particularly helpful in at least three areas: (1) facilitating the formalisation and delivery of public services; (2) improving access to financial services; and (3) expanding market reach.

4.1. Facilitating formalisation and delivery of public services

One benefit of digitalisation has been the ability to streamline procedures and allow workers and firms to submit online applications. Digitalisation could also make the permitting process less vulnerable to rent-seeking practices, thereby making formalisation less intimidating or discouraging. In Guadalajara, Mexico, the launch of an electronic business licensing and land use system in 2018 led to 74 percent fewer bribery cases.[17]

Also, by having official digital identities, workers and firms are able to access other services, especially if access requires some proof of identity as a requirement. According to the ILO, establishing digital identification systems to provide basic credentials could be particularly helpful in empowering the marginalised.[18]

For example, the Philippines was able to reach at least 6.4 million people in May 2021, of which 806,000 were able to successfully open a bank account using the Philippine Identification System (PhilSys). [19] In Indonesia, the Electronic Kartu Tanda Penduduk (e-KTP), with around 99 percent population enrolment in 2020,[20] was key to bringing financial services closer to the unbanked.

During the COVID-19 pandemic, digitally empowered solutions such as Indonesia's Siap Tanggap [21] and Malaysia's Kita2Kita [22] helped governments gather real-time data, to customise programme delivery at the community level, and to facilitate aid delivery by using eligibility verification processes connected to digital identities. In a similar vein, unbanked informal workers in Peru benefited from the Bono Independiente scheme, which was made accessible via a text message (SMS) link,[23] and workers without social security protection in Thailand were able to receive cash transfers through Promptpay.[24]

4.2. Improving access to financial services

Digitalisation also improves access to financial services. More specifically, digital onboarding and the use of digital payments infrastructure such as

[15] OECD/ILO, "Tackling Vulnerability in the Informal Economy" (Paris: OECD), https://doi.org/10.1787/939b7bcd-en
[16] G. Ulyssea, "Informality: Causes and Consequences for Development," *Annual Review of Economics* 12 (2020): 525–46, https://doi.org/10.1146/annurev-economics-082119-121914
[17] J. Mellon and F.L. Garcia, "Evaluation of the Guadalajara Visor Urbano Commercial Permitting System's Effect on Corrupt Practices, n.d., https://visorurbano.com/formatos/Visor_Urbano_Impact_Evaluation_Delivery.pdf
[18] S. Kring and V. Leung, "Renewing the Social Contract through E-Formalization in the World of Work" (Geneva: ILO, 2021), https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_826464.pdf. The digital identification systems include a foundational identity (i.e., a core identity often used to access government services), a functional identity (e.g., typically linked to a particular sector) and a transactional identity.
[19] J. Quiros, "70M Target for PhilSys Registration by End 2021 'Attainable'," *Philippine News Agency*, 10 May 2021, https://www.pna.gov.ph/articles/1139708
[20] DBS, "Data Validation amid Pandemic to Support Digital Banking," 27 July 2020, https://www.dbs.com/newsroom/Data_validation_amid_pandemic_to_support_digital_banking
[21] G. Singh, J.S.N. Mamola and D.E. Duarte, "How Digital Data Helped Indonesia Respond to COVID-19," World Bank Blogs, 29 October 2020, https://blogs.worldbank.org/opendata/how-digital-data-helped-indonesia-respond-covid-19
[22] "Selangor Uses Kita2Kita App for Better Aid Distribution Management," *Malay Mail*, 20 May 2020, https://www.malaymail.com/news/malaysia/2020/05/20/selangor-uses-kita2kita-app-for-better-aid-distribution-management/1868056
[23] D. Prady et al., "Beyond the COVID-19 Crisis: A Framework for Sustainable Government-to-Person Mobile Money Transfers" (working paper, International Monetary Fund (IMF), 2020), https://www.imf.org/en/Publications/WP/Issues/2020/09/25/Beyond-the-COVID-19-Crisis-A-Framework-for-Sustainable-Government-To-Person-Mobile-Money-49767
[24] E. Dabla-Norris and C. Rhee, "A 'New Deal' for Informal Workers in Asia," IMFBlog, 30 April 2020, https://blogs.imf.org/2020/04/30/a-new-deal-for-informal-workers-in-asia/

e-money leads to data being generated that could be used for credit reporting.[25]

These data, which include online banking transactions, digital payments, automated utility payments as well as social media usage and mobile data consumption, are particularly important to informal workers and firms since they do not usually have formal credit histories or tax filings that financial institutions can use to evaluate their loan applications.

GCash in the Philippines is an example of how a financial service provider has used such alternative data to evaluate the creditworthiness, indicated by a GScore, of their customers. [26] Customers increase their GScore by regularly using the GCash app to, for example, settle payments, and deposit or transfer funds. Another example is Tala, which operates in several markets including Mexico. Tala uses a scoring model with 250 data points to analyse data from users' Android devices (e.g., type and year of operating system) and behavioural data (e.g., mobile bill payment history, app interactions, and time spent reading terms and conditions).[27]

Besides enabling informal firms and workers to potentially access loans, evidence shows that digital financial services such as e-payment could increase safety, particularly for women as it enables them to do away with carrying cash. [28] Users are also able to access other related tools and services to help them operate their business such as in-app accounting solutions and financial planning.

4.3. Expanding market reach

Digital solutions could help to expand businesses' market reach. Several initiatives by the United Nations Development Programme (UNDP) have helped informal workers and firms leverage this aspect.[29] For example, the UNDP partnered with Jumia, a leading e-commerce company in Uganda, to link around 2,000 informal vendors with their customers online. The UNDP has also helped informal producers and aggregators in Malaysia to sell their products and services through platforms such as WhatsApp Business and Shopee.[30]

Governments too have introduced initiatives aimed at digitally connecting buyers and sellers. For instance, Brunei Darussalam's Community for Brunei helped connect micro- and small-sized businesses, including home-based businesses and single mothers, with their buyers [31] China's innovative concepts of shared labour and shared stores helped link displaced workers and businesses. [32] Indonesia, meanwhile, partnered with Lazada to train SMEs on how to operate, sell and establish an online presence.[33]

The rise in online consumer engagement observed during the COVID-19 pandemic is expected to persist even after the pandemic is over. In the context of APEC, a survey has revealed that over half of respondents in China and more than a third of respondents in economies such as the Philippines; Singapore; and the United States would continue to shop online. [34] Thus, informal workers and firms that digitalise would be better placed to participate in the digital economy. While having an online presence may not lead to

[25] Global Partnership for Financial Inclusion (GPFI), "G20 Policy Guide – Digitisation and Informality: Harnessing Digital Financial Inclusion for Individuals and MSMEs in the Informal Economy" (GPFI, 2018), https://www.oecd.org/g20/G20-Policy-Guide-Digitisation-and-Informality.pdf

[26] R. Mercurio, "GCash Microcredit Doubles to P2 Billion," *The Philippine Star*, 14 August 2020, https://www.philstar.com/business/2020/08/14/2035074/gcash-microcredit-doubles-p2-billion

[27] S. Shetty, "Start-up Uses Mobile Data as a Credit Score for the Global Unbanked," *CNBC*, updated 6 January 2020, https://www.cnbc.com/2020/01/03/start-up-uses-mobile-data-as-a-credit-score-for-the-global-unbanked.html

[28] J. Casey and K. Hughes, "Technology and the Future of Work: Final Report" (Manchester: Women in Informal Employment Globalizing and Organizing (WIEGO), 2016), https://www.wiego.org/sites/default/files/publications/files/Final%20Joint%20Report%20Technology%20and%20the%20Future%20of%20Work.pdf

[29] A.G. Ong, "When Informal Markets Go Digital: Emerging Signals from our Lab Network," UNDP Accelerator Labs, 3 November 2021, https://acceleratorlabs.undp.org/content/acceleratorlabs/en/home/blogs/Informality-informal-economy-sector-markets-digitalization-digital-ecommerce-mobile-money-UNDP-street-vendors-social-entrepreneurship-MSMEs-Africa-Latin-America-Asia.html?fbclid=IwAR2cTqXXrodYlbKETMLLLBVH8oocgEPIRnyeoFDkzNPyKFiGajtLYIO2fOU

[30] To read anecdotes on how three women experienced the challenges and rewards of engaging in Facebook live selling, see: G. Maala, "The Challenges and Rewards of Facebook Live Selling," YugaTech, 21 July 2021, https://www.yugatech.com/feature/an-inside-look-into-facebook-live-selling/

[31] APEC, "Brunei Darussalam and COVID-19: Shifting Towards Digital Transformation" (information sheet, 2020/SMEMM/016, Singapore: APEC, 2020), http://mddb.apec.org/Documents/2020/MM/SMEMM/20_smemm_016.pdf

[32] M.R.Wade and J. Shan, "How Innovation Is Driving China's Solid Economic Growth Even during the Pandemic," IMD, February 2021, https://www.imd.org/research-knowledge/articles/lessons-from-chinese-innovation-during-the-pandemic/

[33] D.F. Rahman, "Govt Teams Up with Lazada for Training Program To Push SMEs Online," *The Jakarta Post*, 15 June 2020, https://www.thejakartapost.com/news/2020/06/15/govt-teams-up-with-lazada-for-training-program-to-push-smes-online.html

[34] R. Avendano and P. Rosenkranz, *Digital Platforms and International Taxation in Asia,* In C. Park, J. Villafuerte and J.T. Yap, "Managing the Development of Digital Marketplaces in Asia" (Manila: Asian Development Bank (ADB), 2021), https://www.adb.org/sites/default/files/publication/761016/managing-development-digital-marketplaces-asia.pdf

formalisation, there are cases where it has encouraged formalisation. An example is the Malaysian business Kek Molek (see Box 1).[35]

Box 1. From long-time hobby to informal business to formal business: Kek Molek's success story

Kek Molek Enterprise is a Malaysian business established informally in 2014 by Ms Nurul Shalkina binti Ahmad Kamal.

It started off as a hobby, with Ms Nurul Shalkina baking cakes using ingredients and processes in line with Islamic best practices and distributing them to family and friends. Her cakes quickly became popular in an area where there is a lack of Muslim bakers.

As Kek Molek became more successful, she began exploring the possibilities of reaching a wider market, first through Instagram, and eventually through WhatsApp and Facebook.

With an online presence, Kek Molek began partnering with GoGet Malaysia, a task-based platform offering services such as food delivery, to fulfil their growing online orders.

Eventually, Kek Molek's success inspired Ms Nurul Shalkina to formally register the business in 2017.

5. Challenges in Using Digital Tools To Address Informality

Digitalisation could help tackle informality and related issues. However, it is not devoid of challenges. These include issues related to the digital divide and infrastructure; cybersecurity, data privacy and exposure to digital fraud; and competition, data portability and platform dominance.

5.1. Digital divide and infrastructure

To benefit from digitalisation, informal workers and firms have to first overcome the material access divide, particularly barriers that limit access to devices such as mobile phones and computers, as well as the cost of the internet subscription itself.

In APEC, the internet remains out of reach for more than a quarter of the population (approximately 770 million people) in 2020.[36] Many economies have also not met the affordability target of below 2 percent of monthly gross national income (GNI) per capita for cost of entry-level broadband services set by the United Nations Broadband Commission for Sustainable Development. Among APEC economies, nine economies have not met the target with regard to the fixed broadband basket and two economies the data-only mobile broadband basket in 2021.[37] Further, an International Telecommunication Union (ITU) policy brief has noted that COVID-19 has reversed the trend of declining prices seen in previous years.[38]

In addition to the material access divide, informal workers and firms would need to overcome other forms of digital divides such as skills access, usage access and motivational access, which are interrelated and feed on one another.[39] Skills access refers to having the operational skills (e.g., ability to use applications), informational skills (e.g., ability to navigate and process information) and strategic skills (e.g., ability to leverage technology in different ways). Usage access refers to how demographic characteristics and the quality of individuals' digital infrastructure shape their digital engagement. Motivational access refers to a series of factors (including digital illiteracy) which collectively may discourage or intimidate users from participating in the digital economy and, in some instances, make them vulnerable to online misinformation such as fake news and content with exaggerated claims.

5.2. Cybersecurity, data privacy and exposure to digital fraud

The adoption and use of digital tools are almost always associated with issues pertaining to cybersecurity, data privacy and digital fraud as they are two sides of the same coin. With the significant increase in digitalisation, these issues have become more prominent.

In its 2018 report, McAfee found that cybercrime cost the global economy close to USD 600 billion on average. Within a short span of just two years, its new estimate suggested a more than 50 percent

[35] Association of Southeast Asian Nations (ASEAN), *Future of ASEAN: 50 Success Stories of Digitalisation of ASEAN MSMEs* (Jakarta: ASEAN, 2018).
[36] APEC Policy Support Unit (PSU) calculations using data from the International Telecommunication Union (ITU) and StatsAPEC.
[37] ITU, "ITU ICT Price Baskets, 2008-2021" https://www.itu.int/en/ITU-D/Statistics/Documents/publications/prices2021/ITU_ICTPriceBaskets_2008-2021.xlsx
[38] ITU, "The Affordability of ICT Services 2021" (policy brief, ITU, 2022), https://www.itu.int/en/ITU-D/Statistics/Documents/publications/prices2021/ITU_A4AI_Price_Brief_2021.pdf
[39] F.M. Quimba, M.A. Rosellon and S., Jr. Calizo, *Digital Divide and the Platform Economy: Looking for the Connection from the Asian Experience,* In C. Park, J. Villafuerte and J.T. Yap, "Managing the Development of Digital Marketplaces in Asia" (Manila: Asian Development Bank (ADB), 2021), https://www.adb.org/sites/default/files/publication/761016/managing-development-digital-marketplaces-asia.pdf

increase to about USD1 trillion.[40] RAND has estimated the global cost of cybercrime to range from USD 275 billion to USD 10 trillion depending on the models used and whether direct/indirect impacts are considered.[41]

APEC economies have not been spared. In the Philippines, for instance, its largest bank experienced a sophisticated digital fraud operation where cybercriminals were able to bypass the security feature and divert one-time password (OTP) texts meant for the bank customers to their phones instead.[42] In Singapore, cybercrimes accounted for about 43 percent of all crimes in 2020, which has been attributed to the rise in e-commerce amid the COVID-19 pandemic.[43]

Informal workers and firms, especially those with less digital experience and exposure, are particularly vulnerable to digital fraud and cybercrimes such as online phishing. Informality could aggravate this vulnerability as informal firms may not report cybercrimes even if they are affected by such activities. Certainly, perceptions about the dangers of using digital tools, coupled with digital illiteracy, could discourage informal workers and firms from engaging in digitalisation altogether.

5.3. Competition, data portability and platform dominance

As discussed, the ability to generate useful alternative data to evaluate creditworthiness, and support decision-making processes, is one benefit of digitalisation. Such data is most useful when they are portable across different parties. Indeed, data portability is key to blunting platform dominance and enhancing competition in the digital era. However, this may not always be the case, thus preventing users from leveraging and benefiting from their data. Furthermore, platform providers could exploit the absence of data portability requirements to their advantage. They could, for example, charge relatively steep fees for certain services, knowing full well that users would not be able to share their data with other parties.

Algorithms employed by platform providers may also disadvantage users in one way or another. For instance, when used to assess loan applications, machine learning that associates certain consumer behaviour to specific genders, in effect, bypasses laws promoting fair lending.[44] In 2019, Apple Card was alleged to have engaged in discrimination against women, wherein married women had considerably lower credit limits compared to their spouse, despite having shared assets and, at times, an even higher credit score than their husband.[45]

6. Digitalisation vs. Formalisation

Digitalisation provides the tools to tackle informality and the related issues that come with it, thereby providing the pathways for those who wish to transition to the formal sector. Where the absence of collateral or bank accounts made it challenging for informal workers and firms to access loans, for example, digital solutions have made it possible to generate alternative data for assessing loan applications.

However, there is no direct positive causal relationship between digitalisation and formalisation. On the contrary, by enabling access to services previously available only to the formal sector, digitalisation may have reduced the motivation to formalise and, in some cases, could have encouraged those in the formal sector to move into the informal sector. This is because while digitalisation helps reduce the cost of gathering information and transactions, it does not necessarily change the incentive structure toward more disclosure. An example would be what is referred to as 'ghost work'.[46] These task-based and contract-driven work are normally invisible to regulators (i.e., free from taxes and other business obligations) since the work can be arranged and accomplished completely online and directly

[40] Z.M. Smith and E. Lostri, "The Hidden Costs of Cybercrime" (San Jose, CA: McAfee, 2020), https://www.mcafee.com/enterprise/en-us/assets/reports/rp-hidden-costs-of-cybercrime.pdf

[41] P. Dreyer et al., "Estimating the Global Cost of Cyber Risk: Methodology and Examples" (Santa Monica, CA: RAND Corporation, 2018), https://www.rand.org/content/dam/rand/pubs/research_reports/RR2200/RR2299/RAND_RR2299.pdf

[42] R. Noriega, "How Hackers Got Access to OTP for BDO Accounts," *GMA News*, 21 January 2022, https://www.gmanetwork.com/news/topstories/nation/819043/how-hackers-got-access-to-otp-for-bdo-accounts/story/

[43] "C. CP, "Cybercrime Made Up 43% of Overall Crime in 2020; More Online Threats Linked to COVID-19," *CNA*, 8 July 2021, https://www.channelnewsasia.com/singapore/cybercrime-hacking-phishing-online-crimes-covid-19-1984866

[44] A. Klein, "Reducing Bias in AI-based Financial Services," Brookings, 10 July 2020, https://www.brookings.edu/research/reducing-bias-in-ai-based-financial-services/

[45] C. Duffy, "Apple Co-Founder Steve Wozniak Says Apple Card Discriminated against His Wife,' *CNN*, 11 November 2019, https://edition.cnn.com/2019/11/10/business/goldman-sachs-apple-card-discrimination/index.html. In 2021, regulators concluded that Apple did not violate existing rules on fair lending but noted that it was because of the inadequacy of existing laws. Apple updated its credit policy to prevent discrimination in their algorithm. See: L. O'Sullivan, "How the Law Got It Wrong with Apple Card," TechCrunch, 14 August 2021, https://techcrunch.com/2021/08/14/how-the-law-got-it-wrong-with-apple-card/

[46] R. Orol, "The 'Ghost Workers' Underpinning the World's Artificial Intelligence Systems," CIGI, 9 December 2019, https://www.cigionline.org/articles/ghost-workers-underpinning-worlds-artificial-intelligence-systems/

negotiated between parties, in some cases, with complete anonymity.

7. Addressing Informality through Digitalisation

The use of digitalisation to address informality is not a straightforward endeavour, particularly since informal workers and firms are highly diverse. It requires policymakers to consider a set of interventions that would not only encourage the informal sector to use and adopt digital solutions but also, through these efforts, motivate them to formalise. Policymakers would also need to contextualise these interventions with respect to their economy's intrinsic characteristics.[47] Some complementary approaches that policymakers could consider are discussed below.

7.1. Promote digitalisation of the public sector

Burdensome requirements and the need to physically transact with multiple government agencies are some of the key factors discouraging informal workers and firms from formalising. The adoption of digital solutions could go a long way in streamlining and simplifying these procedures.

For instance, establishing electronic tax filing systems and allowing online business registration could encourage informal firms and workers to formalise, both by reducing transaction costs and the perceived costs of becoming formal.

Depending on the digital solutions (e.g., digital identification), policymakers could start/improve data collection on the informal sector and use them to deliver more targeted interventions. Furthermore, governments could use digital platforms to promote the benefits of formalisation.

7.2. Overcome different forms of digital divide

Affordable access to hardware such as mobile phones and computers as well as to the internet is prerequisite to taking advantage of digital solutions. Grants, subsidies and other incentives to increase such access could be tied to formalisation requirements. Existing social programmes to informal workers and firms to support such purchases are another way to overcome this barrier.

Policymakers may also wish to work with telecommunications providers to explore ways to lower the cost of data and internet subscriptions. It is also important to enhance digital skills among those in the informal sector because, without the relevant skills, they may not be motivated to use digital solutions/devices, let alone use them to their benefit. In this regard, policymakers could look into introducing programmes aimed at equipping people with the relevant basic and medium-level digital skills. In fact, access to such skills (and others learnt virtually) could potentially lead to jobs in the formal sector, hence providing another avenue to formalisation.

7.3. Increase trust in digital solutions

The adoption of digital solutions brings with it issues pertaining to cybersecurity, data privacy, digital fraud and online misinformation, to name a few. Where the negative impact is significant, affected workers and firms as well as consumers themselves may decide to stop using digital solutions altogether.

It is therefore critical for policymakers to explore measures to increase trust in such solutions and, more broadly, the digital ecosystem. These may include raising awareness of risks associated with digital solutions, providing targeted training to new users, addressing issues related to algorithm-based decision-making processes, and enacting laws/regulations related to cybersecurity and cybercrime.

7.4. Address competition concerns

Competition policies play an important role in the success of digitalisation efforts, especially in reaching the wider population, including those in the informal sector. For example, competition in the telecommunications sector could contribute to lower cost of data and internet subscription. Promoting competition in areas such as those pertaining to data (e.g., data sharing and portability) could be beneficial from the perspective of providers and users alike. Data access could facilitate the entry of new market entrants while data portability would make it possible for users to select the providers that best suit their needs. A 2019 APEC report looked at how competition policies could be used to better regulate online platforms in the region.[48]

7.5. Create a supportive regulatory environment to promote innovation

The generation and utilisation of alternative data are but one benefit of digitalisation. Governments,

[47] P. Roy and M.H. Khan, "Digitizing Taxation and Premature Formalization in Developing Countries," *Development and Change* 52, no. 4 (2021): 855–77, https://doi.org/10.1111/dech.12662

[48] APEC, "Competition Policy for Regulating Online Platforms in the APEC Region: Mexico" (Singapore: APEC, 2019), https://www.apec.org/docs/default-source/Publications/2019/8/Competition-Policy-for-Regulating-Online-Platforms-in-the-APEC-Region/219_EC_CPLG_Competition-Policy-for-Regulating-Online-Platforms-in-the-APEC-Region.pdf

businesses and academics continue to innovate new ways to benefit from digitalisation. It is critical that policymakers foster a regulatory environment that is supportive of innovation, including those aimed at tackling informality. These include introducing regulatory sandboxes to allow interested parties to try out new ideas, facilitating the use of artificial intelligence (AI) to help with decision-making processes, and implementing open banking regulations that would require financial technology institutions to share their data via application programming interfaces (APIs).[49] Such innovations could potentially reduce the cost of credit and loans to informal firms.

7.6. Promote public–private partnerships

Rapid digitalisation has made it possible for every transaction to be recorded and every click to be registered somewhere. The amount of information collected in the digital age has been unprecedented. However, where necessary, relevant information may not have been shared with governments for valid objectives such as public service delivery and tax collection.

Specifically, in the context of enhancing formalisation through digitalisation, policymakers would need to look into how public–private partnerships can promote instead of impede formalisation. These can include engaging with academics and think tanks to enhance understanding of the linkage/relationships between digitalisation and informality.

7.7. Leverage regional cooperation

Both informality and digitalisation are complex issues that are multifaceted in nature. Harnessing digitalisation in addressing informality and related challenges requires economies to cooperate with and learn from one another.

The APEC Internet and Digital Economy Roadmap has highlighted potential areas of cooperation among fora and economies, including in enhancing universal broadband access, enhancing the inclusiveness of the internet and digital economy, and promoting innovation and adoption of enabling technologies and services.[50]

The APEC Roadmap on Digital Financial Inclusion provides a menu of options that economies could draw upon and sequence to advance digital financial inclusion domestically and in the region.[51]

The La Serena Roadmap for Women and Inclusive Growth aims to provide concrete direction and catalyse policy actions to drive greater inclusive economic development and participation of women in the Asia-Pacific region.[52]

These and other initiatives demonstrate that APEC is well-placed to contribute to discussions on these important issues.

Andre Wirjo and Sylwyn Calizo Jr. are Analyst and Researcher, respectively, at the APEC Policy Support Unit; **Rodrigo Balbontín** is Program Manager of Technology Programs at The Asia Foundation.

The authors would like to thank Emmanuel San Andres for providing valuable comments.

The APEC Policy Support Unit (PSU) is the policy research and analysis arm for APEC. It supports APEC members and fora in improving the quality of their deliberations and decisions and promoting policies that support the achievement of APEC's goals by providing objective and high quality research, analytical capacity and policy support capability.
Address: 35 Heng Mui Keng Terrace, Singapore 119616
Website: www.apec.org/About-Us/Policy-Support-Unit
E-mail: psugroup@apec.org

APEC#222-SE-01.3

[49] Isabel, "The State of Open Banking Regulation in Mexico (in Spanish)," Belvo, 13 August 2021, https://belvo.com/es/blog/estado-regulacion-open-banking-mexico/
[50] APEC, "APEC Internet and Digital Economy Roadmap" (2017/CSOM/006, Singapore: APEC, 2017), http://mddb.apec.org/Documents/2017/SOM/CSOM/17_csom_006.pdf
[51] APEC, "2020 APEC Finance Ministers' Meeting: Annex – 2020 Deliverables," 2020, https://www.apec.org/Meeting-Papers/Sectoral-Ministerial-Meetings/Finance/2020_finance/AnnexA
[52] APEC, "The La Serena Roadmap for Women and Inclusive Growth (2019 –2030)," 2019, https://www.apec.org/Meeting-Papers/Annual-Ministerial-Meetings/2019/2019_AMM/Annex-A