BEYOND THE CITY LIMITS: PLATFORM LIVELIHOODS IN RURAL INDONESIA

DFS LAB

RISE Research and Consulting

December 2023

DFS Lab and RISE Indonesia

This work forms part of a larger series of studies and pilots carried out by DFS Lab and RISE Indonesia, with the support of the Bill & Melinda Gates Foundation. The larger program aims to understand how Indonesians interact with platforms and how platforms impact livelihoods: what users' experiences are, how platforms change their lives in both positive and negative ways, and the barriers that hinder a more equitable and welfare-enhancing path for the sector. Two studies have already been completed in this research:

- The Contribution of Platform Livelihoods to an Inclusive Digital Economy in Indonesia: Literature review and stakeholder consultations – This report draws on 15 in-depth expert interviews and over 100 papers and reports to explore seven interconnected themes about the platform economy and digital inclusion in Indonesia.

- Pathways through Platform Livelihoods in Indonesia – This study, involving 600 platform participants in urban and peri-urban Java, seeks to gain deeper insights into the factors driving them to participate in platform-based livelihoods, the determinants influencing their decision to stay or leave, and the impact of platform participation on their wellbeing, economic standing, financial inclusion, and mobility.

DFS Lab and RISE Indonesia will continue exploring this topic area to further refine insights for policymakers and the private sector.

The findings and conclusions contained within are those of the authors and do not necessarily reflect the positions or policies of the Bill & Melinda Gates Foundation.

DFS Lab
www.dfslab.net

RISE Indonesia, South Jakarta, Indonesia
www.riseindonesia.org

Acknowledgements

This report was written by Jake Kendall (Managing Director, DFS Lab), Leila Haroon (Research Analyst, DFS Lab), Caroline Mangowal (CEO and Research Director, RISE Indonesia), and Stephen Deng (Partner, DFS Lab).

The authors are thankful for the technical and editorial inputs provided by Jonathan Donner (Senior Research Director, Caribou Digital and Project Advisor to this research) and for the data collection and research support provided by Chernay Johnson and the extended project team at RISE Indonesia: Erlyn Shukmadewi (Program and Operational Director, RISE Indonesia) and Widiya Susanti (Research Manager and Data Officer, RISE Indonesia). We also want to recognize the Platform Livelihoods Project from whom we borrowed the "Working, Trading, Renting and Creating" framework and some of the other learnings and ideas found in this paper.

This research further benefited from the generosity of the expert stakeholders who took time to speak with us about the platform ecosystem in Indonesia.

For questions about this research, please contact Jake Kendall at jake@dfslab.net.

Suggested citation

Stephen Deng, Leila Haroon, Jake Kendall, and Caroline Mangowal; "Beyond the City Limits: Platform Livelihoods in Rural Indonesia" DFS Lab and RISE Indonesia, 2023.

Cover photo: PHOTO CREDIT

This work is licensed under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License. To view a copy of this license, visit http://creativecommons.org/licenses/by-nc-sa/4.0/. Readers are encouraged to reproduce material from this project for their own publications, as long as they are not being sold commercially and cite our work appropriately. We request due acknowledgment and, if possible, a copy of the publication. For online use, we ask readers to check for updates and to link to the original resource on the project website.

Design by: Mindseye Creative | https://www.mecstudio.com/

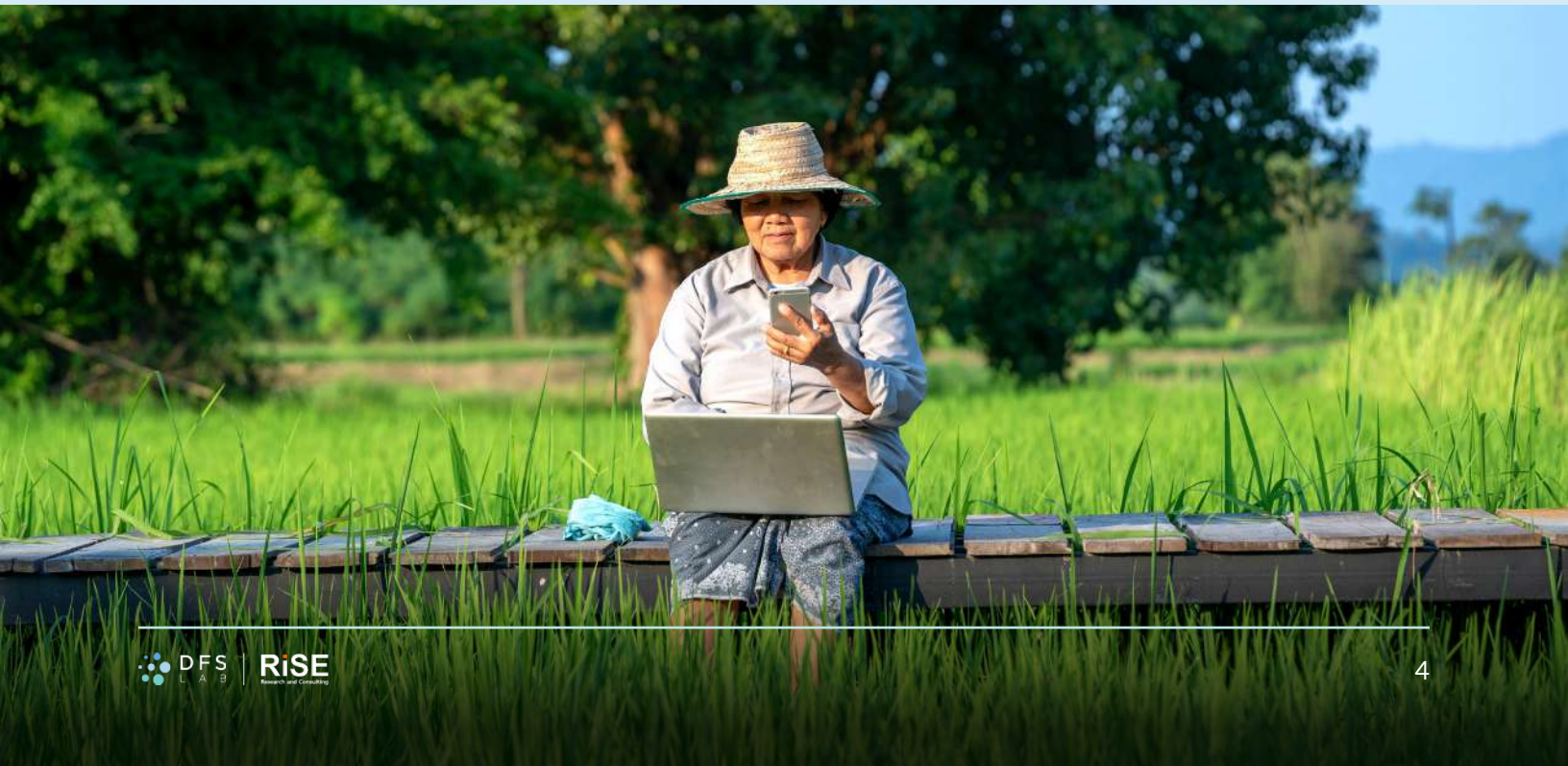
Editing by: Karen Farnell and Antoine Fourié

Table of Contents

Executive Summary

While much has been written and said about the Indonesian platform economy active in and around Jakarta and the other major urban centers, most research ignores rural areas likely under the assumption that there is no platform economy to speak off beyond the city limits. Our research started off as an investigation of why platforms don't work in rural areas but our initial explorations showed that, in fact, there is a nascent but growing rural ecosystem nurtured by the viral growth of the major e-commerce platforms seeping beyond the urban centers as well as the emergence of platforms who are specialized in the agricultural and fisheries sectors based in rural areas. The observation that rural Indonesians are increasingly participating in the digital economy caused us to refocus our work on understanding this emerging rural platform ecosystem. This study seeks to better understand the growth of digital platforms in rural areas of Indonesia, beyond urban centers. The goal is to provide insights that can guide interventions to promote the development of and inclusiveness of rural, platform-based sectors, thereby enhancing social status, economic outcomes and financial inclusion in the rural populations that they increasingly serve.

Our study focuses on four key sectors in the rural Indonesian economy where digital platforms are most prevalent in reaching outside of major city centers: agriculture, fisheries, e-commerce, and social commerce. We explore the dynamics of for-profit platform business models that are showing potential in supporting rural livelihoods across these sectors. We also seek to shed light on the experiences, characteristics, growth potential, utilization, and barriers faced by the platform sellers in towns and rural areas. Additionally, we examine the intersection between platform-based livelihoods and financial inclusion, and the impact that platform engagement can have on the uptake and usage of digital financial services, particularly among rural women. Finally, we discuss promising intervention pathways that policymakers, providers and donors could target to enhance inclusion in Indonesia's rural platform ecosystem, with a focus on improving gender equality.



Our findings are based on 430 quantitative surveys conducted with platform participants in rural Indonesia, complemented by 80 qualitative interviews with platform sellers, value chain participants, and sector experts. The overwhelming consensus among platform participants is that joining the platform economy has brought about significant improvements in various aspects of their lives. These included enhanced social status, better work–life balance, increased physical safety, access to price benchmarking, improved negotiating power, higher income levels, expanded job opportunities, changes in livelihoods or business expansion, and greater financial management capabilities. In fact, the positive assessment of the experience was nearly universal, which is notable since it contrasts with concerns raised by some other researchers regarding potential exploitation, privacy violations, dangerous working conditions, and other potential negative consequences for platform workers.[1]

We found that 93% reporting an income increase after joining digital platforms and 90% experiencing greater income stability. Furthermore, participation in digital platforms correlates positively with enhanced opportunities for adopting digital payments. Across our sample, 71% of respondents own a bank or e-wallet account, compared to the national rural average of 55.7%. Additionally, 34% of respondents who did not have an account before joining a platform have since opened one. Furthermore, platform participation doubles the uptake of loans compared to the period before joining the platforms, and there is a promising upward trend in insurance uptake.

While the benefits of platform-based livelihoods are reported similarly by both men and women, women face specific barriers. For instance, women's participation was at or more than half in social and e-commerce sectors, but there was only a small fraction of women participants in the agriculture sector, and we could find no female respondents in the fisheries sectors. Our female respondents report that e-commerce and social commerce activities are more flexible around their other household responsibilities and find the familiarity of social tools i.e., WhatsApp, Facebook, and Instagram, supports easier adoption. In contrast, major barriers exist for women in agriculture and fisheries sectors, which require owning land or a boat and involve daily routines that typically do not complement the traditional household role rural women in Indonesia still undertake.

Looking beyond sectoral differences in terms of participation, we still find strong indicators that suggest a significant gender gap in terms of size of the business. The men we surveyed reported selling close to twice that of the women in the e-commerce and social commerce sectors, despite women having higher participation rates in these sectors.[2] However, new entrants into platforms are more likely to be women, suggesting it is a gateway to entrepreneurship for females, and we may see a levelling of income levels as female-led enterprises grow. Platforms may also positively influence the uptake of other financial services for women, including loans and insurance, which bodes well for improved financial inclusion and gender equality.

While our study suggests platforms have a positive impact on the rural economy of Indonesia, there is still work to be done to maximize the benefits. Encouraging direct interaction between farmers/fishermen and platforms, rather than relying on intermediaries is crucial for improving income, bargaining power, and market awareness. It means a more formal and digital mode of participation for these sector business owners. However, this transition should be gradual to avoid undermining the important role of these intermediaries, especially for less digitally savvy participants.

1. We wouldn't claim that some of those issues don't exist, only that our study sample didn't seem to have experienced them.
2. Our survey data on income faces several interpretation challenges. Some respondents may have reported take-home pay (or profits), while others reported total sales. From our qualitative interviews and other sources, we observe a general trend indicating that profits and take-home pay are notably higher for men. However, we acknowledge that measuring this gap precisely poses difficulties.

To further boost rural economies, we recommend promoting linked financial services, which leads to greater formalization and improved inclusion, fostering private–public partnerships to reduce barriers to platform participation (such as basic digital skills training and less onerous onboarding requirements), addressing logistics challenges, improving internet and mobile penetration, and diversifying product offerings. These areas merit closer examination and strategic attention from policymakers in Indonesia.

In terms of tangible interventions, our study suggests several opportunities to accelerate platform adoption in our focus sectors. These include supporting the transition from social to more formal e-commerce businesses for women, training farming and fisheries business owners to engage directly with platforms, raising awareness and adoption of platform participation among women in these sectors, and encouraging the shift from cash transactions to digital payments.

We believe that implementing these interventions will dramatically accelerate platform adoption in our focus sectors and will extend the variety of benefits of platform participation to more rural Indonesians.

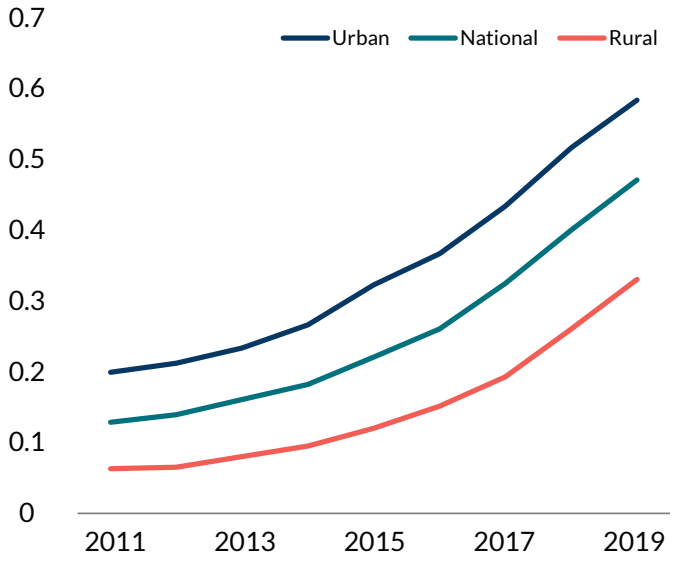
01 Introduction

Indonesia is the fifth-most internet-engaged country in the world, but it has an expansive rural population that is less digitally connected.[3] Rural communities comprise 43% of the total Indonesian population, and the rural–urban gap is wide (see Figure 1) since affordability and quality of mobile connectivity remain a challenge. The digital divide between rural and urban Indonesia is significant, with only 40% of the rural population being internet users, compared to 64% of the urban population.

Although the opportunity set for rural participation in the digital economy and platform ecosystem is massive, the pace of digital transformation is slowed by these and other structural barriers.

3. World Bank (2021). Beyond Unicorns

Figure 1: The share of the adult population with access to the internet has been increasing over the past decade.[4]



Rural Indonesia is characterized by low population density and reduced infrastructure across thousands of islands.

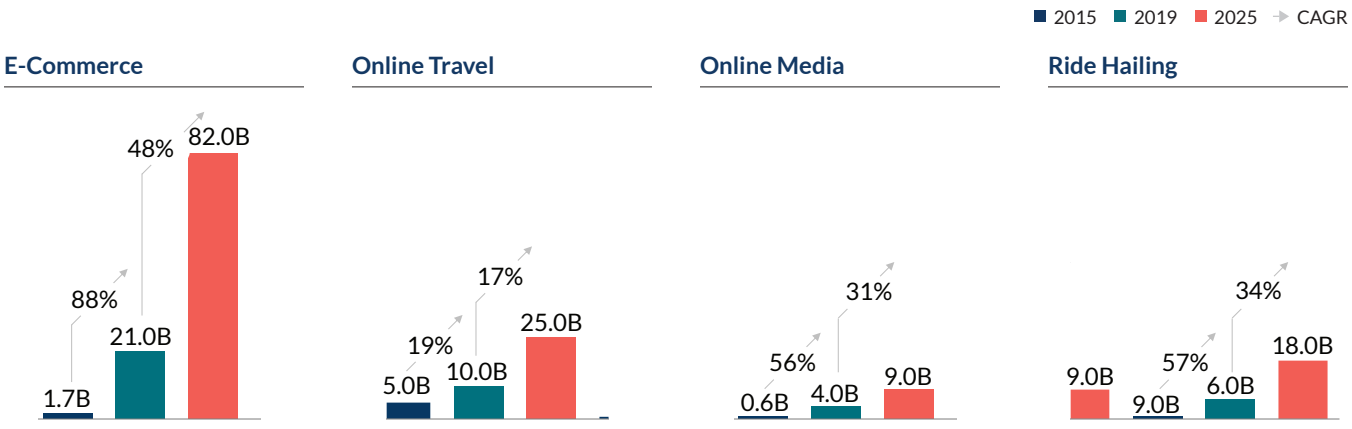
Indonesia is known for being the largest archipelago in the world with over 18,000 islands and islets, of which only 6,000 are inhabited and which comprise both rural and urban Indonesia. While Java and Sumatra islands hold most of the population density, Kalimantan, Sulawesi, Papua & Maluku, and Bali & Nusa Tenggara have the lowest population density in Indonesia (fewer than 20 inhabitants per km^2) and the highest percentage of rural areas. This added dimension creates a context unique to Indonesia.

The opportunity for enabling platform livelihoods in rural population is expanding as the wider digital economy grows.

Driven mainly by the e-commerce sector, Indonesia's digital economy is estimated to have grown from US$41 billion in 2019 to US$77 billion in 2022 and is anticipated to nearly double again by 2025.[5] A technologically sophisticated and young population, coupled with comparatively high mobile penetration rates, has driven active usage of social media and e-commerce platforms to sell and buy goods and services (see Figure 2).[6]

Figure 2: Growth in Indonesia's digital economy is taking off.[7]

Indonesia internet economy (GMV, $B).



4. World Bank (2021). Beyond Unicorns
5. Fulcrum (2022). The State of Indonesia's Digital Economy in 2022
6. Fulcrum (2022). The State of Indonesia's Digital Economy in 2022
7. Google, Temasek & Bain Company (2022). e-Conomy SEA 2019 Report

Economic activity in rural areas is primarily driven by the agriculture, fisheries, and aquaculture sectors.

The country's agricultural sector in 2021 accounted for 13.3% of the gross domestic product (GDP) and was the sector with the biggest source of employment (employing 33% of the labor force), particularly in rural Indonesia. It is estimated that in 2019, the fishing industry in Indonesia generated 7 million jobs and US$27 billion of the country's GDP.

We focus the scope of this study, therefore, on four major sectors where we see digital platforms starting to make inroads in the rural economy: the two traditional sectors of agriculture and fisheries (a term we use to cover both fish farming or aquaculture, and fishing), and frontier e-commerce and social commerce sectors which are reaching outside of the major cities support sellers in smaller cities, towns, and even rural areas. When we look at the adoption of digital platforms within the agriculture and fisheries sectors, most industry experts would refer to these as e-commerce models but highly specialized ones targeting producers in those two sectors. Our approach, then, is to look at social commerce, plus three different kinds of e-commerce models, two of which are highly specialized, operating within the agriculture and fisheries value chains, while the third is a more generalized e-commerce model where all kinds of (mostly) consumer goods are sold through large digital marketplaces.[8]

Despite the potential for growth, digital platform uptake in rural areas is nascent, is facing barriers, and needs the support of policymakers and the private sector.

While urban areas receive most of the investment and attention, our work shows that digital platforms are also connecting e-commerce sellers, farmers, and fisherfolk in smaller cities, towns, and rural areas to larger markets and subsequently to better economic opportunities. However, efforts to increase digital platform uptake in rural areas have not been without challenges and face greater inherent barriers than urban markets.

Barriers include a lack of phone ownership[9], particularly for women in rural areas[10]; and a lack of infrastructure (both physical and digital), exacerbated by the island nature of Indonesia[11]. Digital literacy (and literacy overall) is also lagging[12], with only limited formalized digital upskilling or education in rural areas[13]. Unsurprisingly, therefore, awareness and utilization of platforms are also low.

Despite these challenging barriers, several platforms are actively targeting specific rural sectors like fisheries and agriculture, and there are ones that filter into rural areas organically like e-commerce and social commerce. Our goal with this research is to better understand this new platform growth that is occurring outside of major metro areas, thereby helping to guide interventions that support the growth of the platform sectors to be more equitable and beneficial for as many Indonesians as possible. In the following chapter, we explore the dynamics of for-profit platform business models that are showing potential in supporting rural livelihoods across the agriculture, fisheries, e-commerce, and social commerce sectors of Indonesia.

8. Henceforth we refer to the general e-commerce sector as 'e-commerce' and to e-commerce and platform models within the fisheries and agriculture value chains as 'fisheries' and 'agriculture', respectively.
9. Statistics Indonesia (2021).
10. SMERU Research Institute, Digital Pathways at University of Oxford, United Nations Economic and Social Commission for Asia and the Pacific (2022). Digital Skills Landscape in Indonesia
11. DFS Lab, RISE Indonesia and Caribou Digital (2022). The contribution of platform livelihoods to an inclusive digital economy in Indonesia: Literature review and stakeholder consultations
12. Tjan et al. (2021). Unlocking the Next Wave of Digital Growth: Beyond Metropolitan Indonesia
13. SMERU Research Institute, Digital Pathways at University of Oxford, United Nations Economic and Social Commission for Asia and the Pacific (2022). Digital Skills Landscape in Indonesia

This report sheds light on:

01 The experiences and characteristics of platform workers and sellers in towns and rural areas of the Indonesian archipelago.

02 The intersection between platform livelihoods and financial inclusion, and the relationship between platform engagement and the uptake and usage of digital financial services.

03 The opportunities and barriers faced by rural women and what, if any, interventions could be prioritized for improved gender equality in Indonesia's platform ecosystem.

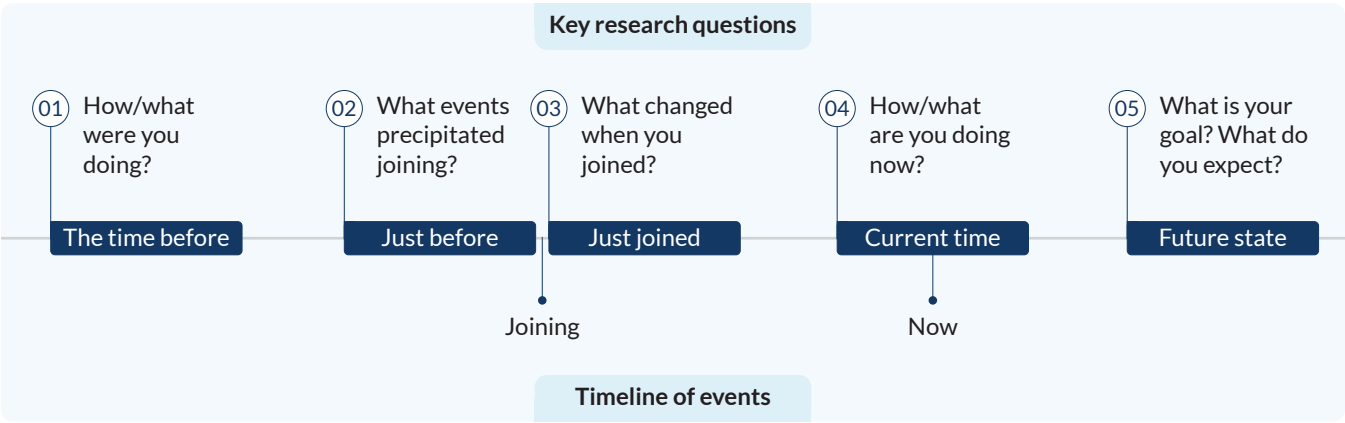
04 The most promising intervention pathways that policymakers, providers, and donors could target to enhance inclusion in the rural areas of the platform ecosystem.

We use mixed methods and our new survey data to examine the experiences of digital sellers in the four platform models most prevalent in the rural economy.

Our study aims to illustrate the role that platforms play in improving social status, economic outcomes, and financial inclusion. A key goal of this research is to understand how people's livelihoods evolve over time and how they relate to factors like financial inclusion status, income, and feelings of safety, empowerment, and social status. The complex set of causal interdependencies between joining a platform, becoming included, formalizing one's business, and changes in perceived or real social standing is quite challenging to untangle. Normally, a randomized control trial (RCT) might be considered the gold standard in this context, but RCTs usually only test a few relationships at a time and often take a long time to conclude. Here we have used a set of questions that ask interviewees how things have changed for them before, during, and after joining the platform, to help draw out the changes as experienced by the platform participants. Figure 3 shows how this works. We ask five sets of questions aimed at understanding (1) what the person was doing before joining the platform, (2) what precipitated joining, (3) what happened as they joined, (4) what their status is now, and (5) what they expect or hope for the future. Tracking experiences and key variables across these five periods, defined relative to the point of joining the platform, helps to highlight the likely role the platform has played in their life.[14] As this study is one of the first of its kind to study rural platform activity, we felt that a more documentary and qualitative approach was warranted. We hope that by illustrating likely impact pathways and shedding light on rural platform sellers experiences we will pave the way for more rigorous studies of impacts and interventions in the future.

14. This approach does not claim to prove impact from joining a platform. Instead, it illustrates where impact is likely to be occurring by documenting user experiences. Further work using random trials (RCTs) and similar methods would be needed to fully prove impact.

Figure 3: Questions asked that track platform influence over key periods.



The results in this paper are mostly based on field survey data from over 400 interviews with platform participants. To complement this survey data, we conducted qualitative interviews to help illustrate with human stories and quotes from platform participants and to explain various market phenomenon we see through conversations with sector experts. Between January and March 2023, our research team spoke to over 400 rural platform participants across four main platform sectors: agriculture, fisheries (including aquaculture), e-commerce, and social commerce. The respondent engagement included in-depth quantitative survey questionnaires and, in some cases, qualitative interviews. Primary quantitative survey data was collected across three Indonesian provinces and eight districts, as follows:

01 **West Java:** West Bandung, Sukabumi, and Purwakarta districts

02 **East Java:** Bangkalan and Malang districts

03 **Lampung:** Lampung Timur, Pringsewu, and Tanggamus districts

We did not attempt to make the data perfectly representative of the national population but did try to get a reasonably representative sample of typical platform participants. Rural study participants were purposively sampled based on the criteria of having previously been or currently engaging on a digital platform. The geographic areas of the study were chosen based on where platforms from our chosen four sectors are operational but also on whether deemed rural. For a more detailed explanation of the methodology and sample frame, see Appendix A of this report.

02

Platform Business Models at Indonesia's Geographic Periphery

In our earlier report, "Pathways Through Platform Livelihoods in Indonesia," we detail the many ways through which platforms facilitate livelihoods and financial services in Indonesia. In this report, we delve more deeply into the role that platforms are playing in Indonesia's rural areas. These regions pose a different set of opportunities and challenges due to factors like connectivity, digital literacy, and low levels of economic development.

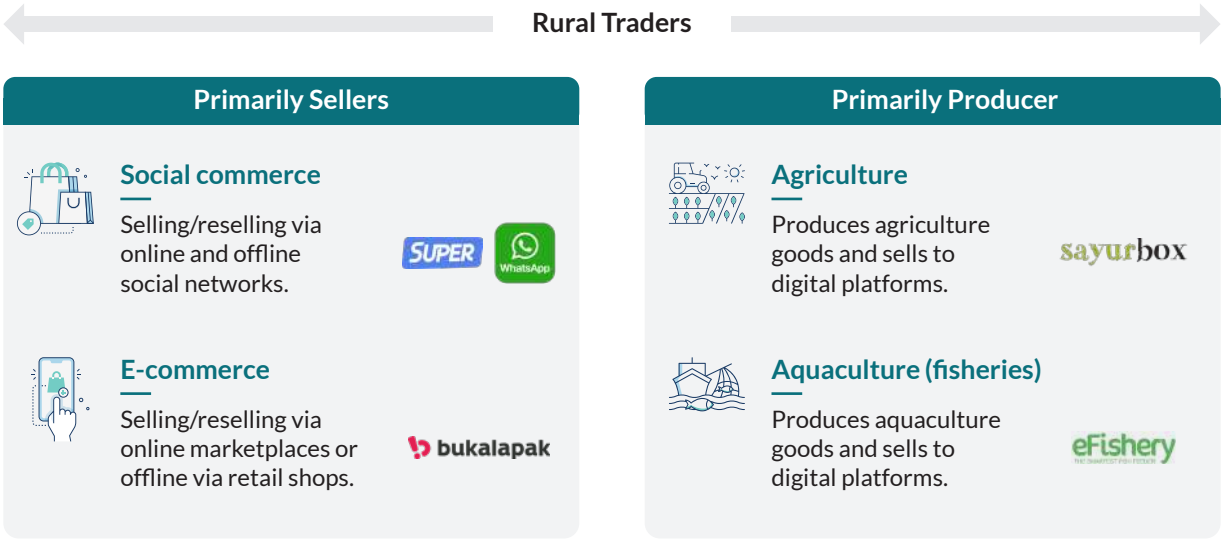
Our earlier work highlighted four major ways people earn a living through these platforms: working, renting, trading, and creating (a framework created as part of the Platform Livelihoods Project under Caribou Digital UK).[15]

This report focuses on the trading category because trading platforms are the only type to have made headway into rural areas. We define platform trading as people or small businesses offering products and services to customers through marketplace platforms and/or over social networks. It is a big and growing pathway to platform livelihoods, potentially adding US$3.7 million jobs in Indonesia and set to increase the country's GDP by US$35 billion.[16]

In the trading category, two distinct groups appear—consumer-focused sellers (and resellers) on social and e-commerce platforms and distributor-focused producers on agriculture and aquaculture platforms.

15. DFS Lab and RISE Indonesia (2023). Pathways through Platform Livelihoods in Indonesia. The working, renting, trading, creating framework was developed by Jonathan Donner at the Platform Livelihoods project by Caribou Digital UK. See Caribou Digital (2021). Platform Livelihoods: Working, Trading, Renting, and Engaging in Digital Marketplaces and Caribou Digital and Qhala (2020). The Quality and Experience of Platform Livelihoods: A Literature Review for Digital Development
16. McKinsey & Co (2016). Unlocking Indonesia's digital opportunity

Figure 4: Rural sellers fit into models that differ by both the platforms they use and the primary target of their selling.



There are consumer focused sellers on ecommerce and social commerce platforms who sell consumer goods and there are producer distributor focused sellers on specialized agriculture and fisheries platforms who sell the output they produce into the fisheries and agricultural value chains.

Seller platforms have multiple models, which we'll shortly explore in detail. Their core objective is to facilitate the movement of goods within and beyond a seller's coverage area—in this context, rural neighborhoods. E-commerce sellers sell or resell using online marketplaces and might be individuals or warung owners/operators. Social commerce sellers sell or resell using their online and offline social networks. Both may be selling locally produced or even self-produced goods or reselling manufactured domestic and global brands.

E-Commerce

The traditional e-commerce that dominated Indonesia's early tech successes was, in the past, mostly focused on urban sellers selling to urban customers. The segment has grown to contribute more than 10% of Indonesia's GDP with over US$30 billion worth of goods being sold annually. Its leading players, such as Tokopedia and Bukalapak, have attracted billions of venture capital funding to the country. However, as the urban market has become saturated, these platforms, along with several new entrants, have extended their reach towards Indonesia's peri-urban and rural areas. Their focus is on digitizing retail shops, commonly known as "warungs," to reach consumers at the geographic periphery. The size of Tier 2 and Tier 3 cities' e-commerce market is forecast to reach US$28 billion in goods sold in 2023 and to grow by 63% per year to US$45 billion by 2025.[17]

This trend has resulted in two major use cases for individuals who join e-commerce platforms: traditional online reselling to buyers across Indonesia using the platform's logistics network, and offline reselling to buyers in a neighborhood, usually through a physical retail shop plugged into platform features like inventory restock and digital payments.

17. Kearney (2021). Unlocking the next wave of digital growth: beyond metropolitan Indonesia

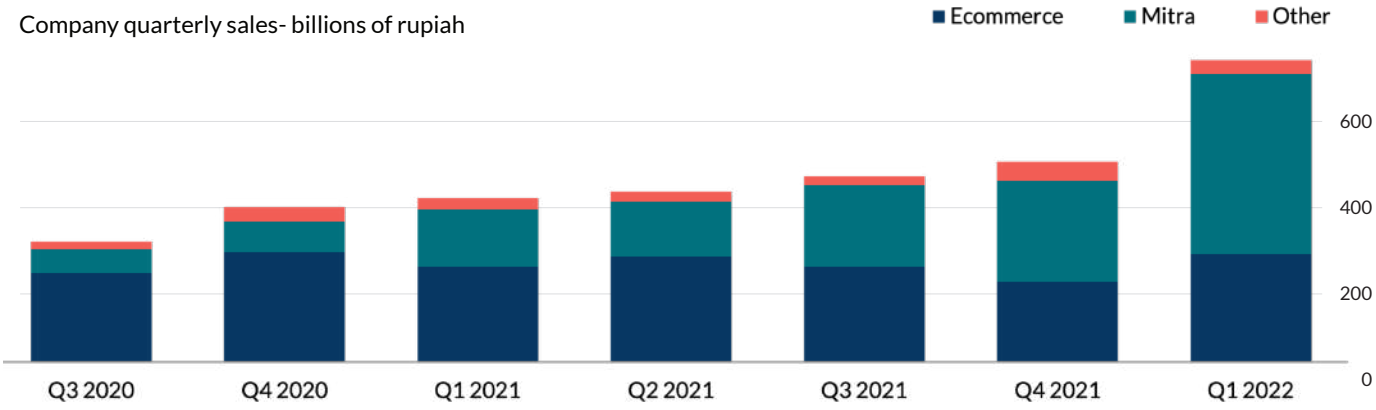
To better illustrate the evolution of the sector, we can look at one of Indonesia's e-commerce pioneers, Bukalapak:

> **"We bring in so much [to small businesses], not just physical products, we bring in so much virtual products, we bring in access to financial products that they probably have no way of accessing."**
>
> **- Mitra Bukalapak CEO Howard Gani[18]**

- **Bukalapak** (founded in 2010 and backed by Microsoft and Ant Group) became Indonesia's first unicorn e-commerce platform, with an IPO valuation of US$6 billion in August 2021. In addition to its e-commerce marketplace model, the platform connects traditional and often family-owned warungs (small stores) to end-customers through its Mitra business. Many of these warungs serve as the backbone for retail trade in outlying and rural areas, where formalized supermarkets and grocery stores are less readily available.

- As of 2022, the platform had more than 16 million warungs being digitized through its marketplace and value-added services. To put the market size of warung trading into perspective, sales through these types of corner shops are estimated at US$180 billion or 70% of Indonesia's grocery market. By the end of 2021, revenues from the platform's Mitra business arm had overtaken that of traditional e-commerce for the first time (see Figure 5). Bukalapak further claims that warungs on its platform increase their revenues through digital transformation.

Figure 5: Mitra sales have outpaced e-commerce revenues on Bukalapak since 2020.



> **"In the earlier stage of the company, to drive traffic, a lot of the focus has been on providing warungs with branded fast-moving consumer goods from the likes of large multinationals, but now the company is seeing contributions from locally produced brands, which allows Bukalapak to charge a higher commission."**
>
> **- Teddy Oetomo, President of Bukalapak—Interview with the Financial Times[19] (June 2022).**

18. NikkeiAsia (2023). Indonesia's Bukalapak sees itself as 'financial inclusion champion'
19. Financial Times online (Accessed 29 Aug 2023). Bukalapak races to bring Indonesian roadside kiosks online

Social Commerce

Although social commerce oftentimes overlaps with e-commerce, it is a distinct phenomenon. Social commerce platforms enable sellers to leverage their existing online and offline social network to market, sell, and distribute goods.

Tapping into online networks is generally done through existing social media platforms, but not always. Offline models enable sellers to market to their neighborhoods. These channels will often also overlap when, for example, someone primarily sells platform-sourced goods to their local neighborhood but uses WhatsApp to market their catalog and to coordinate orders. The Indonesian social commerce market is expected to experience rapid growth of 47.9% per year, from an estimated US$8.6 billion in GMV in 2022 to US$86 billion in 2028, according to Research and Markets (2022)[20].

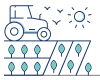
Social commerce can also be broken down into two types of sellers: those who procure their goods from the platform itself for resale (sometimes called an agent-based model) and those who independently source or make their own goods. For example, many social commerce food sellers operate kitchens at home and market their food on social media networks like Facebook or WhatsApp to reach local customers. In both cases, the key feature of social commerce is an ability to use existing social networks to take orders and save on marketing and distribution costs.

Social commerce is also rather noteworthy because 73% of participants are female and—as we'll explore shortly—many are first-time workers. It is also a sector with younger participants, with over 66% of our survey respondents under the age of 40. Unlike e-commerce, which requires sellers to have knowledge of online marketing and logistics and/or operate a physical retail store, social commerce just requires a participant to have a social network to sell to and something to sell. There is still considerable business model fluidity in social commerce, but in Indonesia, there are already examples of success. Evermos, a major e-commerce and social commerce platform operating in Indonesia, had 50,000 active resellers on its platform in 2022[21]. In the agent-based model, a social commerce startup acquires agents (platform users) who then sell their product to the local community on various social networks like WhatsApp and Facebook. Evermos boasts an extensive agent network that reportedly covers 34 provinces. The company highlights that a substantial portion of sales activity occurs beyond Tier 1 cities. Further to this, more than 50% of the active non-Tier-1 city participants on the Evermos platform reportedly have no tertiary education, and more than 60% are women.

Both e-commerce and social commerce present opportunities for entrepreneurial sellers in rural Indonesia. Social commerce has shown promise as an onramp to employment for many, while e-commerce is gradually gaining importance beyond urban centers. In Chapter 3, we will explore the pathways we believe rural participants benefit from.

The producer platforms, on the other hand, have a more uniform model compared to seller platforms. We observed platforms specialized in agriculture or fisheries and found that, while each sector had some degree of specialization, they all had a roughly similar model. Typically, these platforms aim to onboard groups of farmers or fishermen; help them to consistently improve the quality of their goods; and then collect, grade, and transport those goods to be sold further down the supply chain to distributors, retailers, or in some cases, directly to consumers.

20. CISION PR Newswire (2022). Indonesia Social Commerce Market Report 2022: Market to Reach $86.75 Billion by 2028 – Startups are Raising Funding Rounds to Further Scale Operations
21. Kearney (2021).



Agriculture

Agriculture platforms focus on aggregating and sourcing from farmers and most commonly connect them with buyers such as grocery stores and restaurants, and even selling directly to consumers in some cases. Unlike the e-commerce and social commerce examples above, agriculture platform participants are producers at the beginning of the food supply chain rather than resellers or finished-goods makers (e.g., cooks and clothiers). The majority, 84%, of participants in Indonesia's agriculture sector are involved in vegetable production, while 22% are engaged in fruit production. The sector also skews heavily to older people and males, with 89% of our survey respondents being men and nearly half of the participants aged over 40.

While the agriculture sector represents over 10% of Indonesia's national GDP, bringing platforms to farms and farmers remains challenging. It is clear that farmers are less digitally literate than e-commerce or social commerce sellers, and the majority of them prefer to engage with the platform via a local middleman who helps to take orders and often receives the goods as well. While this is a necessary step to reach farmers, it also means that the value of selling to the platform is less direct. We'll discuss this further in Chapter 3.

Agriculture platforms must not only digitize the supply chain but also ensure a consistent supply of high-quality produce is available for purchase. This generally means platforms must also assist farmers with better agronomy practices, choosing the right crops based on demand prediction, and sourcing financing, leading to a sometimes-challenging path to scale:

- TaniHub, founded in 2015[22], was once one of Indonesia's and South-East Asia's most promising agritech platforms. In 2020, the then B2C platform had recorded a gross revenue increase of 639% year on year[23], and by 2021 it had raised a Series B round of US$65.5 million at an estimated post-money valuation of US$218 million[24]. However, the platform, which started by serving the B2C segment, had by February 2022 reportedly closed operations in Bandung and Bali, had laid off staff, and had stopped selling fresh produce directly to customers, with the aim of pivoting toward the B2B value chain segment (serving retailers, supermarkets, and hotels)[25,26,27].

- Sayurbox (another distribution and online shopping platform specializing in organic vegetables straight from the farm) started operating from Bandung Regency located about 150 km southeast of Jakarta. Sayurbox has rapidly gained market share since its launch in 2016 and more so after the collapse of TaniHub's B2C business[28]. At the time of writing, Sayurbox had reached 1 million users[29] in mostly rural Indonesia, with an estimated US$50 million to US$75 million in annual revenues[30]. Our demand-side interviews with small- and large-scale farmers suggest that producers feel they have stronger negotiating power through the platform.

> **"We cut off the line so that farmers do not sell to middlemen, so that farmers get higher prices than if they go to middlemen, but they must deliver directly to the hub. We believe it caters to farmers' welfare and also lets the customers get the best price."**
>
> **- Interview with Sourcing Officer at Sayurbox Hub in Singosari (Malang Regency, East Java)**

22. Crunchbase (Accessed 29 Aug 2023). TaniHub
23. Katadata (2022). Startup TaniHub Tutup Dua Gudang dan PHK Karyawan
24. TechInAsia (2021). Indonesian agritech startup TaniHub secures $65.5m in MDI-led round
25. TechInAsia (2022). Indonesian agritech startup closes 2 warehouses, lays off employees
26. The Ken (2022). TaniHub vs Sayurbox: The fork in Indonesia's diverging e-grocery market
27. Disclosure: DFS Lab was an early investor in TaniHub.
28. The Ken (2022). TaniHub vs Sayurbox: The fork in Indonesia's diverging e-grocery market
29. Leila to validate source of data.
30. Similarweb (Accessed 29 Aug 2023). sayurbox.com

Fisheries

Fisheries platforms aim to aggregate and source from Indonesia's fisheries sector, which includes both fishermen and fish farms (aquaculture). In addition to fish, Indonesia's fisheries sector includes shrimp, crab, and octopus, among other products. The sector represents a significant portion of Indonesia's exports and is a source of livelihoods for millions who live in the country's more remote islands. Like agriculture, the sector participants skew older and male, so much so that all of our survey respondents in the sector were men with more than half over the age of 40. It also is a sector where most of the platform engagement is indirect, with collectors often being the main point of contact for fisheries.[31]

While platforms also try to automate processes and provide credit to smooth the supply chain, it is clear that it has been difficult to digitize the most remote fisheries:

- Aruna, which claims to be the largest integrated fisheries e-commerce platform in Indonesia, was operating across 177 locations (in 31 provinces), engaging more than 40,000 fishermen across 23-plus different commodity value chains (including squid and lobster)[32] by the end of 2022. It was originally launched in 2006 and uses a localized hub network approach for optimizing aggregation of fishing commodity supply through collective partnerships with producers, as well as fulfilment to end-customers. The platform reports that it allowed for commodities on the platform to be traded across more than 30 countries[33].

- eFishery is another platform with an approach that is differentiated from the traditional marketplace model. Initially, eFishery introduced the smart feeder (automatic feeding machine), which is designed to make it easier for farmers to feed their fish by allowing them to set the feeding time automatically. It later expanded its verticals to a marketplace—eFresh—connecting fish farmers to suppliers of feed inputs, as well as end-customers. A key differentiator for eFishery is its focus on reducing financial constraints for fish farmers via capital loans and a fish feed loan scheme, funded by financial service provider partners. eFishery claims it has more than 70,000 cultivators across 280 cities using its platform, of which 15,000 have reportedly accessed financial services through the platform.

31. While we didn't find any fisheries sellers who were women, we did see that women worked in the sector, usually as employees but not as owners.
32. RISE Source?
33. www.aruna.id

Figure 6: Landscape of major digital platforms operating across the agriculture, fisheries, e-commerce, and social commerce sectors.

Agriculture	Fisheries	E-Commerce	Social Commerce
sayurbox Total funding: $139.2M Reported users: 1M Funding stage: Series C Year founded: 2016	eFishery Total funding: $250.9M Reported users: 100K Funding stage: Series D Year founded: 2013	Shopee Total funding: $8.6B Reported users: 15M monthly Funding stage: IPO Year founded: 2015	SUPER Total funding: $106M Reported users: 35M monthly Funding stage: Series C Year founded: 2018
TaniHub Total funding: $94.5M Year founded: 2015 Funding stage: Series B	aruna Total funding: $100M Year founded: 2016 Funding stage: Series A	Lazada Total funding: $6.2B Year founded: 2012 Funding stage: Series G	evermos Total funding: $77M Year founded: 2018 Funding stage: Series C
AgriAku Total funding: $46M Year founded: 2021 Funding stage: Series A	JALA Total funding: $12M Year founded: 2015 Funding stage: Series A	tokopedia Total funding: $2.8B Year founded: 2009 Funding stage: Series H	DAGANGAN Total funding: $18.1M Year founded: 2019 Funding stage: Series B
EdenFarm Total funding: $34.2M Year founded: 2017 Funding stage: Series B	DELOS Total funding: $8M Year founded: 2021 Funding stage: Seed	bukalapak Total funding: $925M Year founded: 2010 Funding stage: Post IPO debt	Rate Total funding: $4.5M Year founded: 2016 Funding stage: Series A
ERATANI Total funding: $5.4M Year founded: 2021 Funding stage: Seed	FishLog Total funding: $3.5M Year founded: 2020 Funding stage: Seed	blibli Total funding: N/A Year founded: 2011 Funding stage: IPO	tokobox Total funding: $100K Year founded: 2019 Funding stage: Pre-Seed

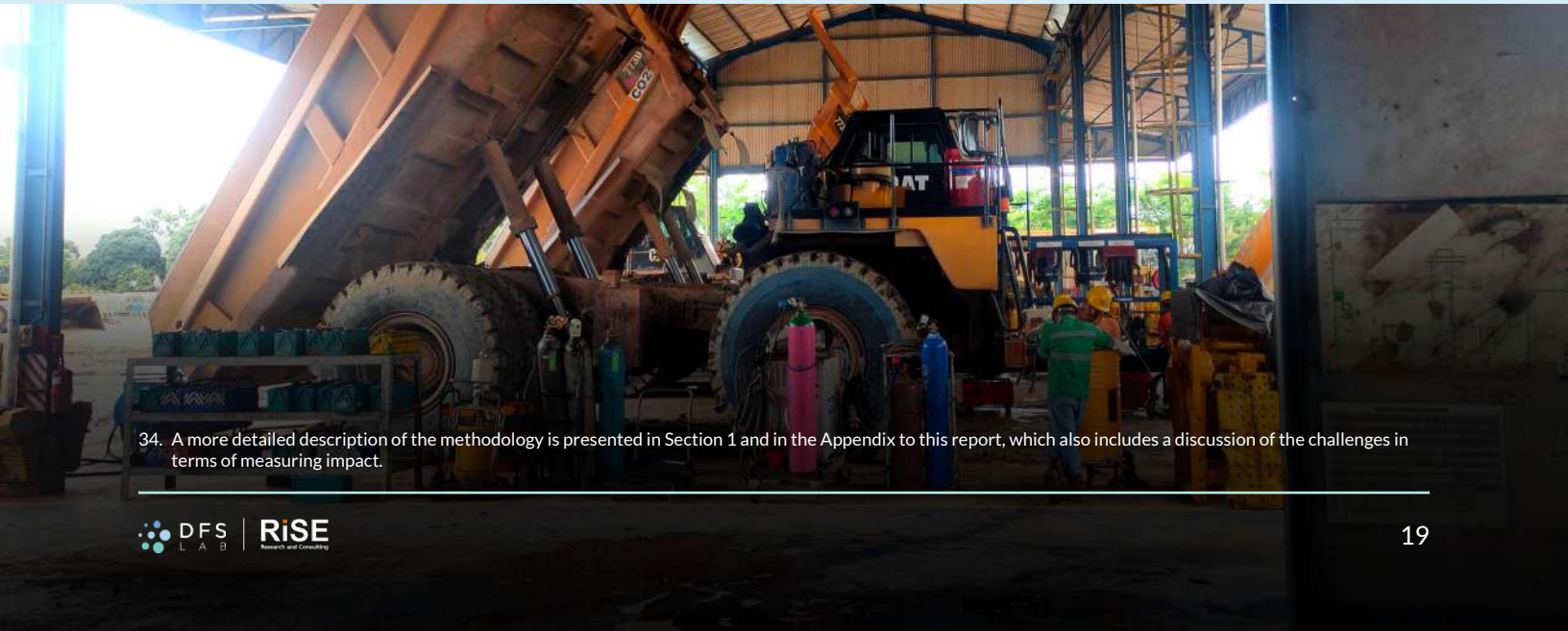
Source: Crunchbase, Sayurbox reported users, eFisheries reported users, Shopee reported users, Super reported users.
Lazada's last series was series G in but raised a couple of corporate rounds afterwards.
Shopee's parent company, Sea Limited, has raised 8.6B for the e-commerce giant up to date.

03 **Livelihoods:** What are the Prospects for Platform Livelihoods in Rural Areas?

Participation in the digital economy among rural Indonesians is growing quickly and may be more widespread than commonly acknowledged. In this chapter, we delve deeper into the experiences of platform workers and sellers in rural areas across the study's four focal sectors: agriculture, fisheries, e-commerce, and social commerce.

Much of our data collection methodology and analysis focuses on trying to understand the ways in which platform participants experience the impact on various aspects of their life, through having asked study participants about the characteristics of their livelihoods, before, when, and (in some cases) after they joined digital platforms[34].

The results were surprising with most platform participants we spoke to indicating that joining the platform had improved their situations in multiple ways, including improved social status, work–life balance, physical safety, price discovery, negotiating power, increased income and prices, and an improved ability to save and manage finances. This nearly universal positive assessment of platform livelihoods was also nearly always equal between men and women, indicating that the result was highly positive, at least on the blunt indicator of whether or not participants felt their situation had improved. We examine these results further in the following section, and we explore other gender differences in Chapter 5.

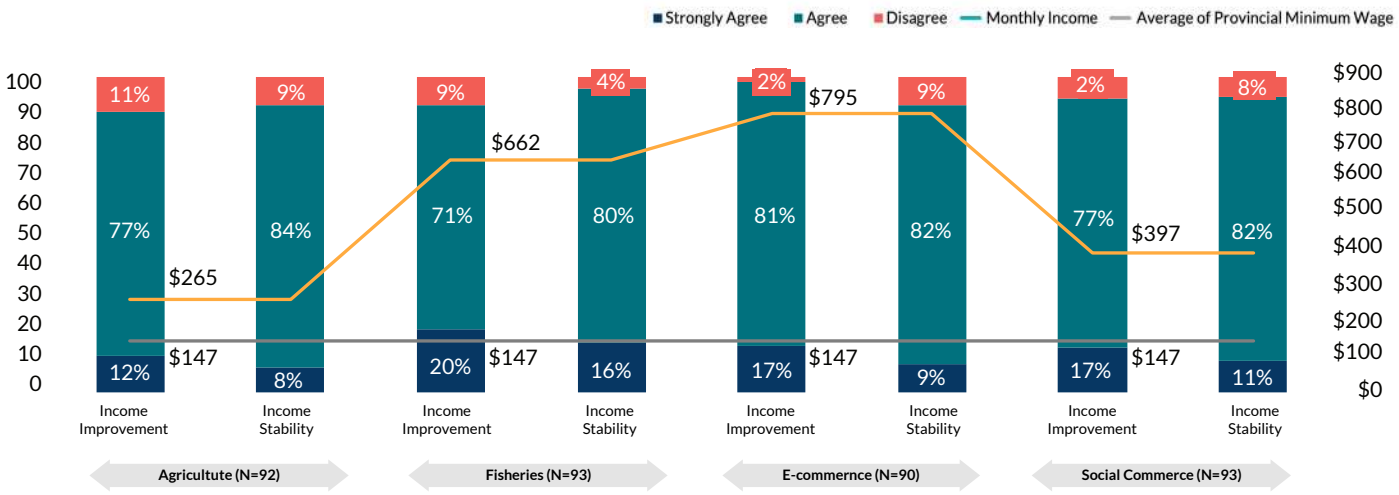


34. A more detailed description of the methodology is presented in Section 1 and in the Appendix to this report, which also includes a discussion of the challenges in terms of measuring impact.

Platform livelihoods are often the primary source of income and respondents reported they enable a higher and more stable income.

Figure 7: Digital platforms are providing an opportunity for rural people to earn an income above the provincial minimum wage.

N=368. Respondents were asked whether they agreed with the statements: "My income (from all sources) is more stable since joining the platform, [and] My income (from all sources) has increased since joining the platform [35]."



Digital platforms serve as the primary source of income for most respondents across all four sectors, contributing significantly to their total household earnings and financial stability.

Figure 6 shows that in all categories, people report earning more per month than the minimum wage in their province, and most of them report higher earnings and greater income stability since they joined the platform. For 81% of the respondents, income derived from platform-based livelihoods constitutes at least half of their total household income. However, it is worth noting that 30% of platform participants still rely on non-platform-based livelihoods as their primary source of income.

> **"I worked as a shopkeeper for my family [a few years ago], handling offline sales and transactions. In between running errands, I tried to learn to sell on e-commerce (Shopee) by selling only 'safety pins' for headscarves, which only cost between IDR 5,000 and 20,000. Feeling that my sales were consistent and that getting better income than just running the shop, I finally decided in 2022 to step down and focus on selling through e-commerce."**
>
> **Dea, headscarves and brooches e-commerce seller on Shopee**

35. Average of provincial minimum wage in 2023 of three provinces: East Java, West Java, and Lampung

Respondents overwhelmingly reported that their incomes improved after joining a platform. Approximately 93% of all respondents reported an increase in their overall income after joining one of the digital platforms. Those whose primary income was derived from a digital platform (as opposed to those whose primary source was offline income) were twice as likely to strongly agree that their livelihoods had improved.

> **"The volume of sales is higher through online media compared to offline sales, as online orders can reach Jakarta and other areas far from Ujung Genteng."**
>
> **- Reni, social commerce seller selling homemade fish balls in Ujung Genteng**

Respondents overwhelmingly reported incomes are more stable since they joined a digital platform. More than 90% of respondents across all sectors reported experiencing more stable income since they joined a digital platform. Even in the fisheries sector, where respondents did not always see an increase in sales price, 96% of respondents reported greater stability in income. Similarly, 92% of farmers reported stability in income after joining a digital platform. This finding is especially relevant considering the volatility of prices and income in the agriculture sector and the importance of income predictability for the resilience and financial solvency of lower-income agricultural households.

The income generated by e-commerce is much higher than income from social commerce. The gross monthly income in e-commerce is roughly three times greater than the gross monthly income in social commerce.[36] There are multiple possible reasons for this. First, individuals involved in social commerce often sell cheaper, lower-margin goods—primarily food—to nearby buyers, whereas those involved in e-commerce sell non-perishable goods to larger markets, including outside their provinces. Key reasons are: the difference in types of goods as well as the ability of formal e-commerce marketplaces to reach buyers in a much wider geography by incorporating digital payments, logistics, and features to enhance trust. Some of this difference also comes from sophisticated entrepreneurs with larger pre-existing businesses selling more often on formal e-commerce platforms. Often, e-commerce businesses were full-time businesses involving multiple household members and paid staff while social commerce was more often a side gig or the domain of just one member of the household (often the wife). Box 1 shares the story of Ai Mimin who started social selling using platforms like Facebook and WhatsApp and who is looking to graduate to more formal e-commerce marketplace platforms like GrabFood and GoFood.

36. We were not able to accurately collect data on net income which would equate to take-home pay after costs of goods sold or costs of production for home-produced goods factored in. That said, our conversations and other data points indicated that a similar relationship between e-commerce and social seller take-home pay existed (with e-commerce being higher).

BOX 1

Case study: Ai Mimin has been selling online via social media platforms since high school

Ai Mimin is a 25-year-old entrepreneur with a family. In 2015, when she was still in high school, she started reselling cosmetics via Instagram and Shopee on social media because she saw her friend doing it.

"It's been a long journey. I once stopped selling for a while then I started again. I started selling women's everyday products like makeup and clothes since high school."

Ai Mimin didn't continue selling after she graduated high school because of her other work. After getting married in 2017, she started selling seblak, meatballs, cheesy banana fritters, and sandals through Facebook initially. Many buyers asked for her WhatsApp number, and now Ai Mimin sells more through WhatsApp than Facebook, because she already has many contacts. In 2022, she opened a physical stall to sell groceries.

"Digital platforms are very helpful in business development, especially in marketing. Good marketing will produce many and consistent buyers."

Ai Mimin has been operating a stall only for the past year and previously sold only through social media. Currently, her income is generated 70% online and 30% offline, and her average reported income from offline food sales is between IDR 120,000 (US$8) and IDR 150,000 (US$10) a day while her income from online orders a day is much higher, between IDR 280,000 (US$19) and IDR 350,000 (US$23).

Her business development plans include using GrabFood and GoFood to increase sales, to open a bank agent business, and to potentially join a cooperative. In the future, Ai Mimin also wants to collaborate with BRI Bank and apply to become a BRILink agent to boost income and to make it easier for others to transact.

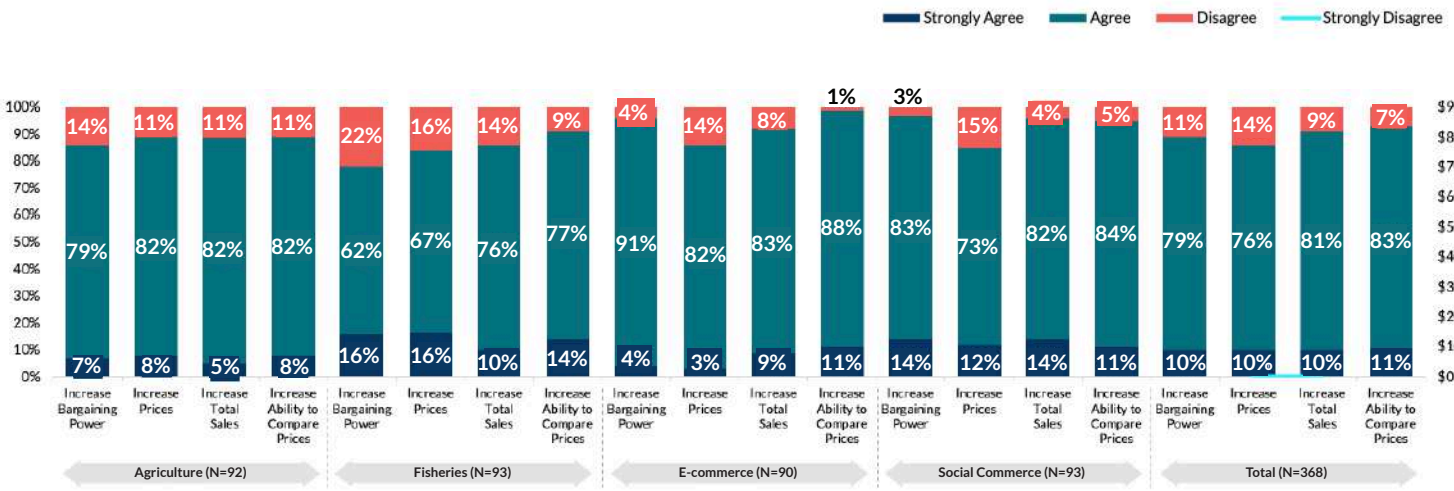
In each surveyed sector, the majority of respondents reported increased bargaining power, prices, total sales, and ability to compare prices. The fisheries sector practice of acting through intermediaries may mute this benefit but only slightly.

More than 80% of the respondents in e-commerce, social commerce, and agriculture either agree or strongly agree that participation on the platforms has led to an increase in sales volume as well as an increase in sales price—both contributing to increased income. Even in the fishery sector, 73% of respondents reported an increase. This is despite often dealing through intermediaries and thus not being directly connected to the platform directly, which may limit the benefits.

> **"The purchase price in digital applications is higher than in nearby traditional markets."**
>
> **- Muhammad, farmer**

Figure 8: Platform participation leads to increased bargaining power, prices, total sales, and ability to compare prices.

N=368. Respondents were asked to indicate which of these statements are true for them: "I have better negotiating power with buyers (including direct consumers, intermediaries, and others) because of joining the platform, My sales prices have increased because of joining the platform, My sales volumes have increased because of joining the platform, and I am better able to find out what other merchants charge for the goods I sell because of joining the platform."



The study findings indicate that platforms have facilitated easier benchmarking of prices for sellers. In all sectors except fishery, more than 90% of the respondents agree with this statement, which highlights the positive impact of platforms on price comparisons and market information. Most notable is e-commerce, where 99% of respondents think that the platforms have led to easier price benchmarking.

> **"One of the benefits of partnering with eFishery is farmers receive feed price updates, feed discounts or promos and fish price information via instant message or SMS. The 3-month loan payment period goes accordingly with the farming period of carps or tilapia."**
>
> **- Hendar, fish farmer on eFishery platform**

In the fisheries sector, the agreement rate is slightly lower, with 71% of respondents agreeing that platforms have enabled easier benchmarking and 17% of respondents in disagreement that platforms have provided them with information on competitors' prices.

The study found similar results on an increase in bargaining power with buyers. All the sectors report having increased bargaining power, with fishing (at 78%) being the lowest percentage of respondents reporting an increase in bargaining power.

Many fishermen and fish farmers sell their products on the platform through collectors, who play a pivotal role in determining pricing. As a result, fishermen still rely on the decisions made by collectors, which can limit their individual bargaining power. A similar dynamic plays out in the agricultural platforms, although fewer farmers work through intermediaries on those platforms.

E-commerce and social commerce are seen to assist individuals who aim to transition from their existing jobs or livelihood activities. These platforms seem to create new livelihood opportunities for rural people who have never worked before.

One in ten respondents (in the social commerce and e-commerce sectors) reported never having worked prior to engaging in platform-based livelihoods. This suggests that these digital platforms have provided an on-ramp to making a living for individuals who were previously unemployed or had limited work experience.

Figure 9: Digital platforms provide employment opportunities for the unemployed or those without prior work experience.

Before your platform livelihood, what was your working status?

Profile of new entrants in E-commerce and Social commerce

2.1X	More likely to be women
1.6X	More likely to be of lower education level (Junior high school)
$265	New entrants in E-commerce (Self-reported sales per month)
$132	New entrants in Social commerce (Self-reported sales per month)

Many workers have transitioned from the formal and informal work sectors to e-commerce and social commerce platforms. Qualitative interview data further suggests that e-commerce and social commerce platform sellers typically fall into two typical scenarios: those who previously had formal employment and have now shifted to entrepreneurial activities on digital platforms, and those with existing informal sector businesses who are joining platforms to grow or enhance their businesses.

> **"Before selling fish, I initially relied solely on my salary as factory worker but needed to make more money when I got married so I started selling fish on Facebook and WhatsApp."**
>
> **– Rifan, social commerce seller of ornamental fish**

Survey respondents who engage in agriculture and fisheries platforms primarily report they are transitioning existing farms or fisheries operations onto platforms to enhance their sales rather than transitioning to a whole new livelihood.

Digital platforms are enabling young rural women and the lesser educated to enter the job market for the first time.

Demographic data on first-time platform entrants suggests that younger women and individuals with lower levels of education have a high potential to access the job market via a digital platform.[37]

- **Gender:** New entrants into e-commerce and social commerce platforms were 2.5 times more likely to be women than men. Platforms seem to be an on-ramp to entrepreneurship for women.
- **Education:** New entrants into platform-based jobs are 1.6X more likely to have lower education levels (less than a high school education) and most are younger. This suggests that platform livelihoods could be a viable pathway for younger people with lower levels of education.

> **"At present, farmers feel more helped by the application. But the main challenge is the use of technology by farmers whose age is older. Digital education is needed for farmers."**
>
> **– Jamilatuzzahro, eFishery**

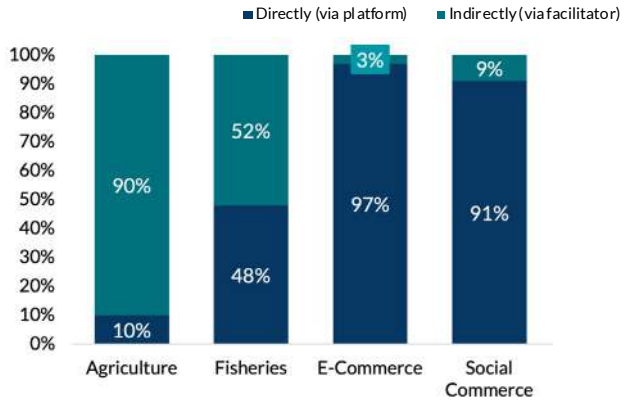
37. New entrants are more likely to be young as well (defined here as being 24 years or younger) but this should not be surprising given new job market entrants are almost always younger than current market participants.

In almost all sectors, most participants sell both on and off digital platforms; agriculture and fisheries have more participants who are exclusively on-platform sellers. We find a majority (78%) of the respondents sell via a combination of online platforms and offline channels. Few respondents sell their products or services exclusively on a digital platform, except in the agriculture and fisheries sectors where traditionally it is common for producers to sell exclusively to one buyer (whether online or offline).[38]

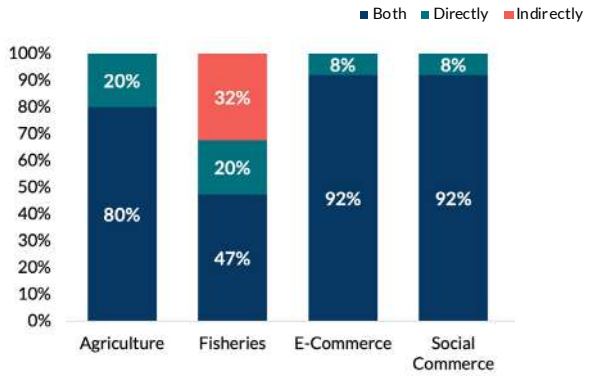
Figure 10: Majority of the respondents cited selling mostly through a combination of offline and online channels.

N=368. Respondents were asked "How do you engage on the platform? Do you also sell offline?"

Platform engagement method



Mode of selling on platforms



Direct engagement with the platform is common in e-commerce and social selling but rare in agriculture and fisheries where there are more often facilitators of different kinds, even though those who engage directly earn significantly more.

Especially in the agriculture and fisheries sectors, we see some models where marketplace participants have the option to engage directly as actors on the platform, or indirectly, where an intermediary either acts for them or helps them manage their platform activity.

E-commerce and social sellers show the highest level of direct engagement, with 97% of e-commerce and 91% of social commerce sellers engaging directly with the platforms. In rare cases where these sellers engage indirectly, they sometimes have employees or relatives (perhaps ones who are more digitally savvy) who help them with their online activity.

The pattern is reversed for individuals engaged in agriculture and fisheries where 90% and 52% respectively engage with the platforms indirectly. This indirect engagement is primarily facilitated through intermediaries, such as collectors who take orders, process payments, and generally facilitate onboarding and access. In the case of fish farmers, some engage with the platform through platform staff who handle the registration and input of their transactions onto the platform system.

However, in the agriculture and fisheries sectors, individuals who directly engage with the platform are three times more likely to report an increased income after joining the platform, compared to those who interact indirectly with the platform. This finding highlights the inefficiencies present in these supply chains, which suggests the possibility that dealing directly with the platform or reducing intermediaries can lead to improved income opportunities.

38. 20% of farmers and 20% of fisheries respondents reported selling exclusively through the platform.

BOX 2

Case study: Rizky-farmer, and the transformative impact of joining a platform in enhancing a work–life balance

Rizky, along with a few other farmers, operates a farm spanning three hectares, where they cultivate romaine lettuce. Prior to joining Sayurbox and Centrigo, Rizky faced challenges in managing his time effectively, as farming operations demanded constant attention, and this limited his ability to take time off from work.

Through their partnership with Sayurbox, Rizky and his fellow farmers were able to establish a reliable market for their produce. Sayurbox, a digital platform connecting farmers with customers, provided Rizky with a consistent avenue to sell their romaine lettuce, purchasing around 250–300 kg of produce per day.

Furthermore, Sayurbox collaborated with Centrigo, a company specializing in farmers assistance programs, to offer support to farmers like Rizky. By working with Centrigo, Rizky received guidance on farming scheduling and land rotation, which enabled him to better manage his time while maintaining a steady supply of produce to meet the market demands. With more effective planning and market certainty, Rizky and his 10 farm workers were able to allocate specific time for themselves, spend quality time with their families, and even take occasional vacations.

He expressed his satisfaction with the platform, stating, **“Certainty of market and planned farming allows me to have peace of mind in farming. I could also take time off from work.”**

Multihoming behaviors are driven by the dynamics of each sector.[39] E-commerce seems to be the one where multihoming is associated with big differences in income earned.

Among the four segments, respondents in social commerce have the highest practice of multihoming (the practice of utilizing multiple platforms simultaneously), with 76% of respondents stating that they engage with more than one platform. Social sellers often sell simultaneously and seamlessly across all the main social platforms, and indeed WhatsApp and Facebook were the most reported apps for this group.[40]

In the e-commerce segment, 36% of respondents reported using multiple platforms. Shopee stands out as the primary platform for most, followed by Tokopedia.

For e-commerce, multi homing is associated with significantly higher income per hour (~US$15/hour for more than one platform versus ~US$8/hour for one platform), which could be driven by better access to market in terms of the opportunity to make "non-local sales", i.e., sales that are located further away. At the same time, it might just be that more efficient and larger-scale sellers naturally gravitate toward selling over multiple platforms (i.e., joining multiple platforms might not improve earning power at all).

The study found that in fisheries and agriculture, the practice of multihoming is nearly non-existent because of a limited population of local buyers connected to platforms, often only one in a given area.[41]

39. Multihoming is the practice of using multiple platforms simultaneously for the same or similar activity, e.g., selling over Facebook, WhatsApp, and Instagram at the same time.
40. 64% of respondents reported using WhatsApp as their primary platform, while 60% reported Facebook as their secondary platform.
41. Most fishery respondents stick to using a single platform, and only 5% of farmers reported engaging with more than one platform.

BOX 3

Case study: Mudi, shrimp paste producer and seller; perseverance pays off

Mudi is a 28-year-old man who is determined to promote shrimp paste (terasi) as a superior product from East Lampung. His business, known as Terasi H. Sanusi, was started by his father in 1987. Mudi's father, H. Sanusi, came up with the idea of making the shrimp paste ("Terasi Lampung") when his catch was abundant and the price was low.

In 2018, the Terasi H. Sanusi business experienced a decline, due to the emergence of new terasi businesses and the deteriorating health of Mudi's father. This situation prompted Mudi, the only son with higher education, to return to his hometown and continue his family's business.

"I'm confident that my study in Bandar Lampung and work experience at a motorcycle dealership for a year would help me sustain my family's business and expand my marketing area."

Initially, sales were limited to shops around East Lampung, Bandar Lampung and Metro; but, in 2021, Mudi started selling on Shopee.

"Initially, I received an online training invitation from one of my customers. Hosted by Bank BRI for 7 days, this training is about marketing on Shopee."

The training covered creating a seller account, packaging, branding, and marketing. This knowledge helped Mudi to improve the business's reach. "So far, Terasi Lampung's sales have reached Papua, several resellers and regular customers in several cities such as Bandar Lampung and nearby areas, Greater Jakarta area, Aceh, Bangka Belitung and a restaurant in Palembang."

Mudi still sells at an offline store to reach consumers in Lampung and visitors to the city. "Generally, they buy Terasi Lampung to resell or as souvenirs." Products sold in both online and offline stores include dry and wet shrimp paste products as well as other dried goods such as crackers and coffee. The largest percentage of sales has so far come from the offline store (80%), followed by online sales (20%). The percentage of offline sales is higher, as buyers with Shopee accounts switch to order via WhatsApp or in person. He has now also opened a TikTok seller account.

To make his business more efficient, Mudi manages his time as efficiently as possible. He has also hired an employee to do administration and to help with marketing. With perseverance and consistency, Terasi Lampung sales have increased from 20 kg to 60 kg a day.

04 The Intersection of Payment Digitization, Financial Inclusion, and Platform Livelihoods

Rural economies around the globe are almost uniformly and entirely cash based. However, the continued growth of digital commerce platforms—a few of whom are just starting to achieve some uptake in rural areas—give rural residents more opportunities to pay and get paid in digital form and in some cases provide a gateway to adopting financial services or becoming digital merchants via the platforms themselves.

E-commerce and social sellers have nearly universal bank or e-money account adoption, while agriculture and fisheries are a bit lower due to the structure of those industries and platforms.

Many platforms incentivize bank or e-wallet account ownership in order for participants to transact, so it is unsurprising that platform participants have higher account ownership rates of 71% in our total sample compared to the national survey[42] inclusion rate of 56% among the rural population.

There are big sectoral differences in how platform participants are paid and engage with the platform that result in different patterns of account uptake. Farmers and fishermen often have the option to work with collectors to transact platforms, and they often have the option to have orders taken by intermediaries and be paid in cash at platform-affiliated collection hubs in local areas. This type of disintermediation relieves the pressure to have their own accounts because they're able to use a collector's account or transact directly in cash at the platform hubs. In e-commerce and social commerce, sellers more often handle transactions directly and need to have an account to be able to receive money from afar, which partially explains the much lower levels of account ownership in the agriculture sector (66%) and the fisheries sector (73%) compared to the e-commerce sector (98%) and the social commerce sector (89%) (Figure 10).[43]

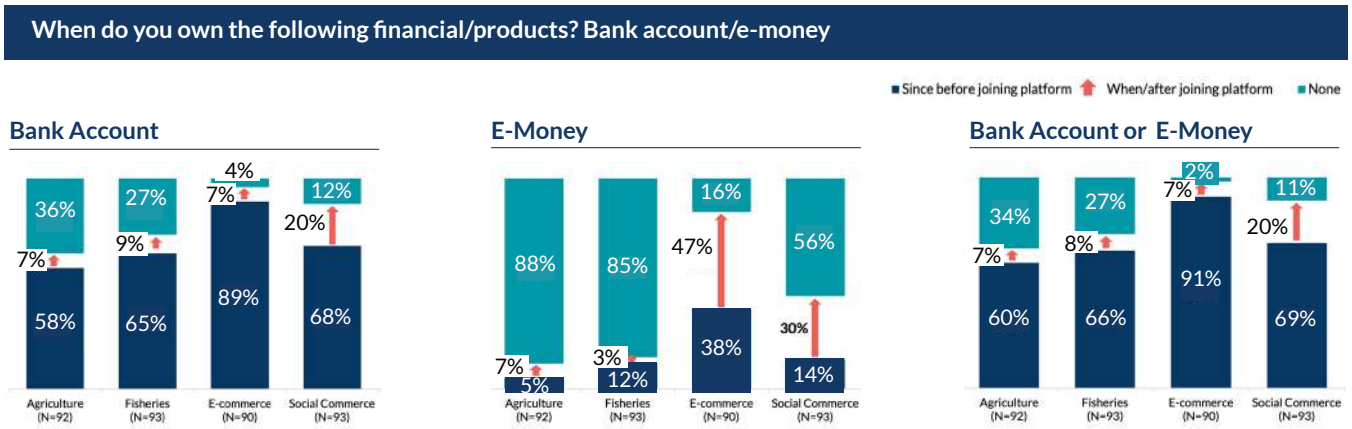
they all had a roughly similar model. Typically, these platforms aim to onboard groups of farmers or fishermen, help them to consistently improve the quality of their goods, and then collect, grade, and transport those goods to be sold further down the supply chain to distributors, retailers, or in some cases, directly to consumers.

Joining a platform does seem to prompt people to adopt digital payment accounts and other payments channels; most of the new adopters are in social commerce.

The data in Figure 10 shows that for the 29% across all sectors who did not have any financial accounts (bank or e-wallet) prior to joining, more than a third (34% of those without accounts) then opened an account during the joining process or afterwards—most coming from the social commerce sector where 20% of participants adopted some form of account after joining. Given that it is likely these represent people who were unable or hesitant to open accounts in the past, we do see this as a sign that many were prompted to open their accounts because they joined (that said, it is difficult to fully rule out that some of them opened their accounts after joining but for reasons that had nothing to do with joining a platform).

Figure 11: More than 70% of respondents had a bank account or an e-money wallet before joining the platform. Some users adopted financial services when joining or after joining, mostly social commerce sellers.

N=368 Respondents were asked, "When did you start using the following financial services/products? Bank account/e-money"?



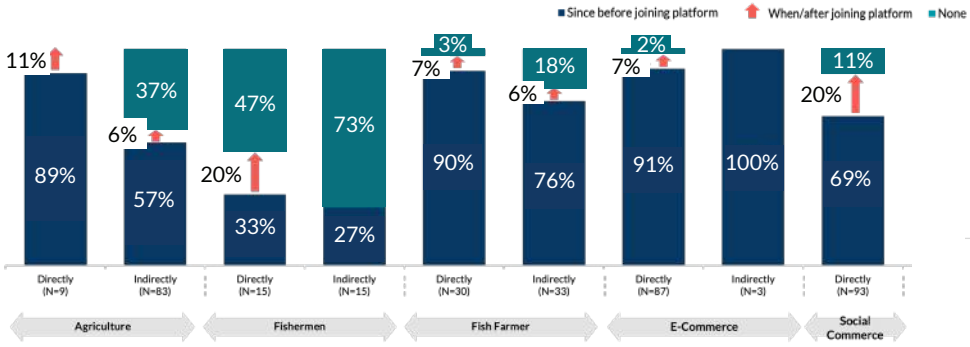
42. Secretariat of Financial Inclusion National Board (2020). Indonesia Financial Inclusion Insights.
43. Numbers refer to owning any account, bank, or e-money.

The picture is slightly different when looking just at e-wallets, as both e-commerce and social sellers adopted new e-wallets after joining even though most already had bank accounts, so total inclusion doesn't increase (although they may be better served via multiple accounts). Conversations with sellers tell us these wallets were often adopted for convenience as the platforms incentivize their use.

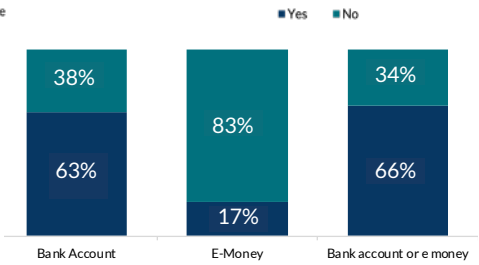
Figure 12: Respondents engaging directly with the platforms often had higher rates of pre-platform bank account ownership as compared to those engaging indirectly.

N= 368. Respondents were asked, "When did you start using the following financial services/products? Savings account/e-money? How do you engage with the platform?"

Adoption rates by sellers who engaged directly with the platform vs those who engaged indirectly.



Non platform savings account and e money ownership



*Directly: registered on the platform app.
Indirectly: Agriculture and Fisheries: sell to collector who supplies or engages on a digital platform or get support from another party/person.
Indirectly: E-commerce: get support from another party or relative.

When people adopt digital accounts, they increasingly get paid through QIRS, although cash is still dominant.

Despite the adoption of digital payment options by most of the respondents in all sectors (with 94% of e-commerce and 75% of social commerce sellers reporting they make digital payment options available to buyers), the reality is that cash is still dominant and approximately 70% of all respondents reported using cash as the primary mode of payment. E-commerce sellers may be less dependent on cash transactions than other sectors, but cash-on-delivery (COD) remains prevalent; and overall, almost half of the respondents still have COD as their most common method of payment (although with e-commerce COD, the buyer would pay the platform delivery service in cash and the platform would then usually pay the seller in digital form).

The data also show upticks in the usage of other digital payment channels after joining the platform, including receiving payments with QRIS, withdrawing at bank agents, and doing money transfers. These were not huge changes (ranging from a 13% uptick in QRIS to a 21% uptick in transfers), although in many cases the usage doubled or tripled from relatively low pre-platform usage rates.[44] The need to withdraw from bank agents is cited by respondents as driven by receiving payment in digital form from the platform so may indicate an overall increase in digital receipts.

44. For example, only 6% reported QRIS usage before joining the platform, while 19% did after joining the platform. We caution against attributing causality to this jump given the QRIS system is relatively new, so much of the growth has come in recent years (hence, after most of our study participants would have already joined their respective platforms).

> **"Our office staff would visit a nearby agent to withdraw cash to pay the fishermen after delivery of produce at the hub."**
>
> – Aruna field staff

> **"The ongoing cash transaction culture, where the buyer (collector) immediately pays in cash when buying commodity from farmers makes the shift to non-cash transactions not significantly palpable."**
>
> – Praswistiadi Syarief Syamsuri, PemPem

BOX 4

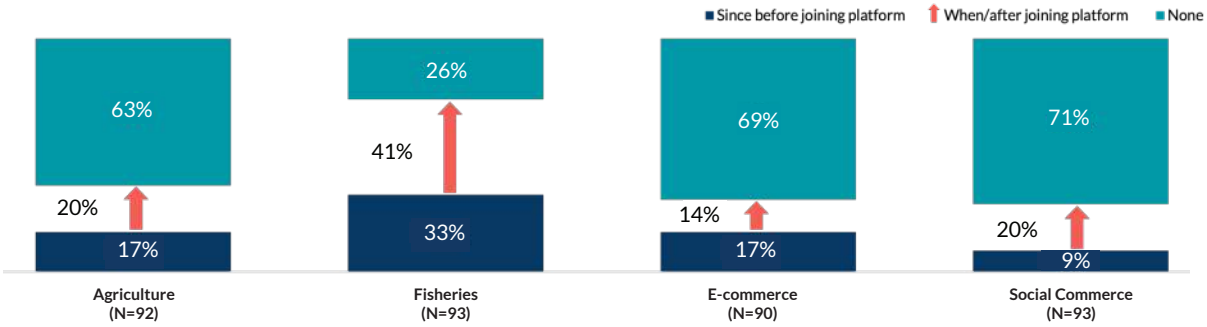
Case study: Yayuk, Tupperware seller, embraces payment and shipping features

Yayuk (37) resides in a remote area in East Java where she runs a Tupperware business. Initially, she was a social seller using Facebook to market the products. Sometimes she would advertise on Facebook but then switch to WhatsApp to finalize sales and coordinate logistics with the buyer.

Shipping and logistics were a significant challenge due to the remote geography; so she eventually joined the Shopee marketplace, which has integrated payments, identity, and shipping. She still coordinates 70 resellers across the country, largely through WhatsApp, but then she usually switches to the Shopee marketplace to complete payment and to arrange shipping with customers. The accessibility of Shopee Pay enables her resellers to make easy payments, even for buyers who don't have a bank account or are not Shopee members. The convenience of the marketplace's courier service also proves to be advantageous and more cost-effective compared to traditional courier options. Buyers can pay in cash to the courier and Shopee pays Yayuk with a digital transfer, thus allowing her to transact at a distance with customers who don't have an account. Yayuk's business generates a monthly sales revenue of almost USD5,000, allowing her to build a house and make a significant contribution to the family income, supporting her husband who earns a modest income as a farmer.

Figure 13: Platform participants' access to loans before and during/after joining the platform.

N=368. Respondents were asked, "When did you start using the following financial services/products? Formal loan"



Despite large increases in borrowing after joining the platform, very little of the borrowing is from digital lenders.

Platform participation leads to an increase of over two-fold in loan uptake for all respondents compared to their pre-platform borrowing. This was most pronounced in the aquaculture sector, where lending was already intensive but then jumped from 31% to 74% of platform participants taking loans after joining, partially because the aquaculture platform (eFishery) had an integrated lending partner who offered loans that fit the duration and cash needs of the fisheries season. Some of the e-commerce sellers also took loans through their respective platforms, but most of the uptake in loans was from traditional sources like microfinance institutions and banks, not from platform-based loans.

In fact, only one in four borrowers had loans from online sources. While it is possible that joining the platform made borrowing from traditional sources easier by generating platform data, it seems more likely that joining the platform increased the demand for loans themselves as businesses grew, since most traditional lenders do not utilize platform data directly in decision-making. The jump in credit usage was also somewhat surprising since many of the qualitative interviews revealed sellers were cautious not to take on debt. However, our data shows that more than 80% of respondents reported higher and more stable incomes after joining the platforms, which may have helped to overcome this reticence.

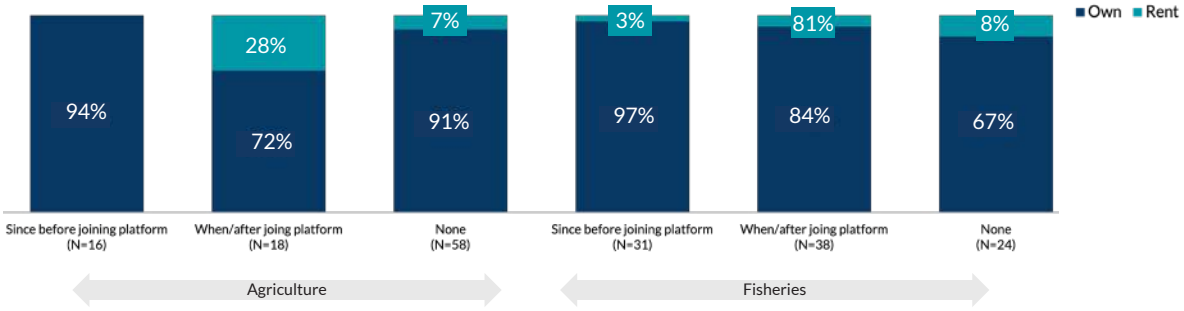
Being formal seems to be a major gate to getting credit, although big increases in borrowing by informal fisheries businesses who joined the platform show it might not have to be.

Formality (whether a business is registered) seems to play a role in borrowing, starting with the fact that 1.4 times as many formal businesses as informal businesses had loans before joining the platform. After joining, formal e-commerce and social commerce businesses saw a large increase in borrowing (23% and 33% increases, respectively), while informal businesses in those sectors jumped by smaller percentages (10% and 17% increases, respectively). That said, given the low initial levels of borrowing by informal businesses, we see this as good progress. In fisheries, 42% more informal borrowers got credit after joining the platform despite being informal (there were not enough formal businesses to make a valid comparison, because most businesses in the sector are informal), which meant a full 71% of informal fishers had credit (Figure 14).[45] When looking at businesses with higher or lower revenues, higher-revenue businesses had greater levels of pre-platform borrowing and saw increases in borrowing that were higher than businesses with less revenue. For those who rent their main livelihood asset rather than owning it, joining the platform increased the likelihood of accessing a loan threefold.

45. There were not enough formal businesses in fisheries (only eight) to make a valid comparison across sectors, although all eight of them had loans.

Figure 14: For those who rent (rather than own) their main livelihood asset, joining the platform increased the likelihood of accessing a loan threefold.

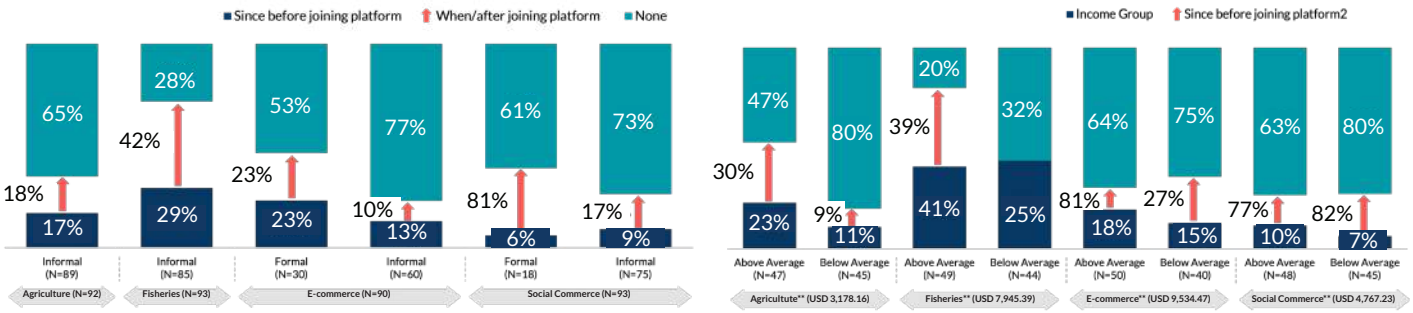
N= 368. Respondents were asked, "Have you ever had a loan? Do you own or rent your land? What is the ownership status of the boat, the pond, etc.?"



Long-term engagement leads to more borrowing, with or without platform training.

The longer a participant stays on the platforms the more likely they are to take up loans. Critically, we found that getting support (training) from the platform didn't increase borrowing compared with those who do not get support, indicating training programs did not successfully encourage large numbers of platform earners to borrow. In combination, these observations lead us to conclude that assisting participants in growing their platform-based businesses over the long term could lead to greater borrowing capacity than relying solely on credit training programs.

Figure 15: Long-term platform participation contributes to long-term uptake of loans.

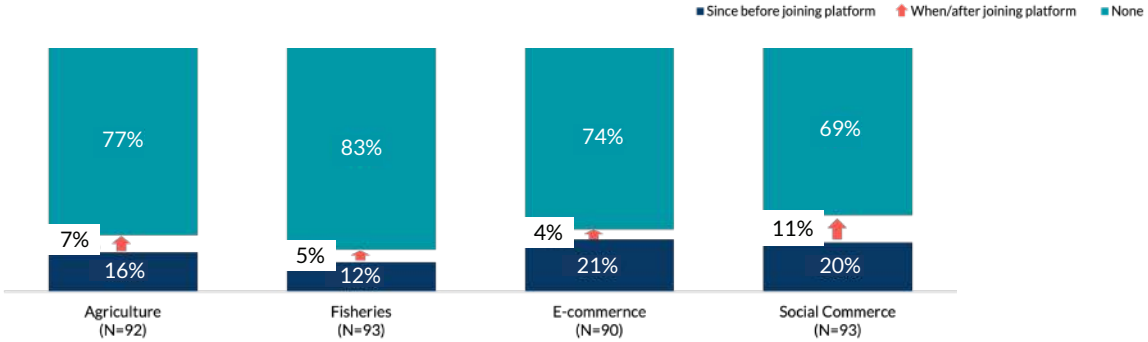


Insurance uptake increased modestly after joining a platform (though percentage increases were significant given very low levels of pre platform uptake).

In Indonesia, subsidized government health insurance (as part of the country's BPJS social security program) has two types: a completely subsidized one that serves the poor and a partially subsidized one for those who are better off. We asked respondents whether they have any type of paid insurance (whether or not part of the BPJS program). We found that health insurance through BPJS was by far the biggest category but that some respondents also had life, vehicle, and home insurance. In our sample, only one in four platform participants use (pay voluntarily) insurance (see Figure 16).

Figure 16: Insurance uptake before and when/after joining a platform is taken up by only about one in four, a relatively similar rate across sectors.

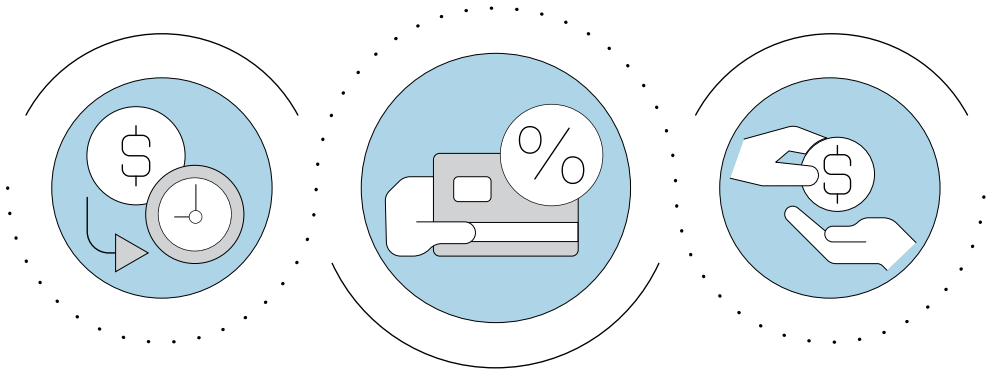
N= 368. Respondents were asked, "When did you start using the following financial services/products: Insurance?"



Participants who run formal businesses are 1.5 times more likely to have insurance compared to participants who run informal businesses. Agriculture and fisheries platform participants who have better income are more likely to take up insurance. Income size does not seem to influence insurance uptake among e-commerce participants.

Overall, account, credit, and insurance uptake go up after joining the platform and the gender gap narrows. This growth seems mostly to be driven by greater demand for financial services, rather than easier access.

Platform participation seems to play a role in increasing financial inclusion uptake among previously unbanked individuals. For new entrants to the platform, one in five had no prior banking or e-money account but started using financial services for the first time after joining the platform (although with big differences across sectors). Joining a platform also seems to create a jump in uptake of both credit and insurance. However, we should be careful not to assume this is purely driven by the platforms' ability to streamline distribution, thereby reducing access barriers. Joining a platform may also create a greater demand for credit and insurance as businesses grow, and some of the adoption could be purely incidental, occurring after joining without any connection to the platform work. We suggest that more research is needed to gain a more comprehensive understanding of the causal relationships between platform participation and financial services uptake. However, the trends we see in Indonesia are encouraging, and when paired with the fact that platforms are expanding across the country beyond urban centers, we are hopeful that we will see continued increases in financial inclusion following this trend.



05

Gender: What are the Challenges and Advantages for Rural Women in Indonesia's Platform Economy?

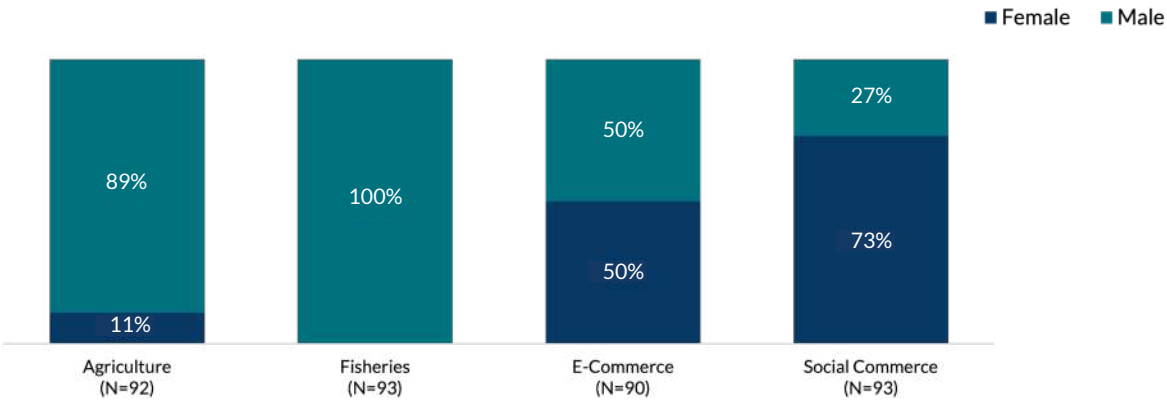
Women's participation in the digital economy in rural Indonesia features competing narratives, depending on the sector you focus on. In some sectors, women experience the same positive impacts of platform participation as men, while in other sectors, persistent gender-related challenges and barriers remain, which helps to paint the picture of a stubborn gender divide.

Women participate actively in e-commerce and social commerce but are almost completely excluded from agriculture and fisheries.

Female participation was the highest in the e-commerce and particularly social commerce sectors, compared to a small fraction reporting any income from agriculture, and we found no women working as producers in the fisheries sectors[46]. As women transition into the digital economy, many of them report that e-commerce and social commerce activities are more adaptable to their traditional household roles and their ability to leverage familiar social tools, i.e., WhatsApp, Facebook, and Instagram. Conversely, women continue to have a more supporting role in agriculture and fisheries sectors, with women reporting being hired for jobs like fixing nets, selling fish offline, feeding the fish, and weeding, but were rarely in charge of the business. Unlike e-commerce and social commerce, there are major barriers to entry to these sectors, like owning land or a boat, which platform membership would not reduce.[47]

Figure 17: While men are disproportionately represented in agriculture and fisheries, women were drawn more often to e-commerce and social commerce.

Gender ratio of each sector. Female=123 and Male=245. N=368. Respondents were asked, "If you work more than one type of digital work, which one is most important to you?"



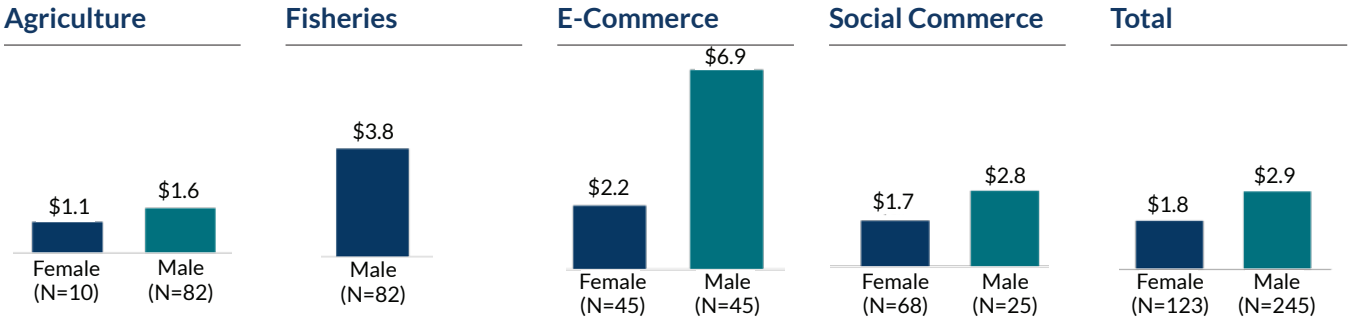
Men and women participants report largely similar experiences joining digital platforms and report similar benefits.

We asked platform entrants whether joining the platform had improved their situations in the following ways: improved social status, work–life balance, physical safety, ability to gauge what others charge, negotiating power, increased income, higher sales prices, greater sales volumes, and improved financial management skills. In almost every case, >80% of respondents reported these indicators improved either significantly or slightly. This nearly universal positive assessment of platform livelihoods was also nearly equal between men and women, which indicates that at least on the blunt indicator of whether they felt things had improved they experienced these benefits similarly.[48]

46. Hence, in the fisheries sector data, there are zero women respondents.
47. Food and Agriculture Organization of the United Nations (2019). Country gender assessment of agriculture and the rural sector in Indonesia
48. In just a few cases, asking about whether spending increased for health, education, or housing, there were responses in the range of 50% to 70% positive (but still largely positive).

In previous research conducted in urban Indonesia, we found that the hourly earnings of women appear to be 50% less than those of their male counterparts for platform sellers.[49] We find similar results here, where men reported generating close to two times more revenue than women in the e-commerce and social commerce sectors, despite women having higher participation rates in these sectors.[50] In e-commerce, men report earning an hourly income of 3.5 times more than women.[51] Women also earn less in the agriculture sector.[52] We believe the reason for men earning more than women in e-commerce is that many more men reported that their e-commerce businesses are larger-scale family businesses, serving as the main source of family income. In running their business, men often receive assistance from family members, such as their spouses or children. Women more often run the business alone, while caring for children and while the husband is working at other livelihood activities or in a formal job.

Figure 18: Self-reported median sales per hour worked in USD.



In general, the digital account uptake and cash usage were similar between men and women.

As discussed in Chapter 4, roughly a third of people who previously had no digital account across all sectors, opened an account after joining a platform. Most of this jump comes from e-money adoption within the e-commerce and social commerce sectors, where getting paid in these formats is highly encouraged by the platform (in the case of e-commerce) or just more convenient in social commerce. It also seems that the increased use of digital accounts led to more usage of local agents (for withdrawals) and QIRS codes for receiving payment. These gains seem to have benefited women and men fairly equally and neither closed nor exacerbated the gender gap.

49. DFS Lab and RISE Indonesia (2023). Pathways through Platform Livelihoods in Indonesia
50. A study on women e-commerce entrepreneurs in Indonesia revealed that women are less likely than men (32% vs. 48%) to earn an income above IDR10 million (roughly USD642 or above) per month, and women e-commerce entrepreneurs earn 22% less than men with similar characteristics. Women's World Banking (2023). Building Digital Finance Solutions for Women E-Commerce Entrepreneurs: A demand-side exploration in Indonesia
51. Men also reported more help from family members and employees, which would have increased the total hours worked, although we did not account for these extra family member hours in the calculation of hourly revenue. So, the reported values should be seen as per hour worked by the head of the business where hours worked by others in the business might vary.
52. We found no women running businesses in the fisheries sector, so there is no data on their earnings in that sector.

BOX 5

Case study: Siti, convenience store owner, takes advantage of the uptake of digital financial services by offering those services

Siti Fathonah, a 38-year-old woman, began her relationship with BRI in 2017 with a loan for her convenience store business. In 2017, BRI offered her the services of a BRI Link agent. Currently, Siti has two BRI Link agents, three EDC machines, and one BRI MO digital application. Siti's services include cash withdrawals and deposits, regular contributions for the neighborhood, and instalment payments, with varying fees charged per transaction. The percentage of customers involved in the platform is still small and not regular. The most frequent type of transaction is cash withdrawals from the surrounding community for daily needs, with nominal values ranging from IDR200,000 to IDR1m.

Siti's BRI Link is currently in the "Jawara" (champion) grade, with 2,000 transactions made per month, impacting the amount of fees earned from the bank and admin fees received from each transaction.

The additional income is IDR10m. The main challenge as a BRI Link agent is capital, as more people get to know of these bank agents, more transactions are made, and more funds are needed to facilitate those transactions by the BRI agents. Additionally, the bank's limitation to providing cash makes it difficult to anticipate urgent cash needs. Siti believes that using digital applications for the community provides convenience for transactions and more choices. She has created an account opening on BRI's digital platform, BRI Mo, and has an insurance feature from BRI. However, it is not yet necessary for rural communities and is difficult to explain the product to the community.

In conclusion, BRI's digital platform's success and potential for growth in rural communities remain challenges for Siti and the community.

The uptake of loan and insurance among rural women in Indonesia still differs significantly from that of their urban counterparts.

Rural women in Indonesia are starting to take advantage of embedded finance options provided by platforms as part of their offerings. When survey respondents were asked whether they use any digital financial services that the digital platforms offer, 35% of the women responded that they take up the loans offered by the platforms: whether in working capital credit, cash, vehicle and equipment loans, or house loans. Cash loans were preferred more than asset loans, and the case was the same with men.

Formal loan uptake was more likely to take place once women joined the digital platforms. In our in-depth interviews with respondents, we found that women were aware of various loan facilities for business expansion. However, they often opted out of taking loans due to their reluctance to take on debt, especially from private lending institutions. While we observed a large gender gap in insurance before joining the platform, with women being 66% less likely to have insurance, women's uptake of insurance jumped considerably after joining relative to men's uptake, which helped to close the gap proportionately (women were 37% less likely to have insurance). This bodes well for viewing platform participation as a pathway for more equitable financial inclusion, though the overall effect was small. We can't say for sure whether this is due to easier access via platforms or whether increased income or other factors create more demand for insurance from women, but the result is more women with insurance coverage.

Many women and men reported similar barriers, although many women indicate challenges such as balancing their business and other home care responsibilities and formalizing their businesses.

When we queried platform participants on a series of potential business or usage barriers (e.g., ability to source stock, difficulty with platform onboarding steps, or availability of finance), we found no discernible difference between barriers faced by men and barriers faced by women. Yet, our qualitative interviews revealed more nuance below the surface, where some women often had a harder time formalizing their businesses in the cases where platforms required it, and most of them reported challenges balancing their responsibilities to take care of children or the household while also managing their platform business. The story of Augusta in Box 6 illustrates these barriers.

BOX 6

Case study: Augusta, e-grocer, faces the challenges of e-commerce entrepreneurship

Augusta, a 28-year-old housewife from Cikidang Village in West Java's Lembang, runs a home-based business, selling assorted dry snacks such as fried meatballs (bakso goreng or basreng), dried spring rolls, candied coconut, and candied young papaya. On top of offline marketing, she has also tried marketing her products on Shopee and recently started marketing on Tokopedia and TikTok Shop. She signed up on each platform as a seller without any hassles, as she had experienced using the platforms as a shopper. However, she noted different requirements for creating a business account on each platform, with some platforms' rigid onboarding processes being more challenging for entrepreneurs like her. Shopee and Tokopedia don't require any certification or legal documents from sellers, while TikTok requires BPOM's P-IRT certification for home-industry-produced foods and a detailed product description for selling. P-IRT certification indicates a product has been tested and approved for marketing within a designated area.

While Shopee encourages its sellers to use its live streaming feature to sell, Augusta found that she couldn't manage selling on Livestream since she had to prioritize household responsibilities like looking after their toddler while her husband was working. With more household responsibilities, Augusta also finds managing some of her business operations challenging.

BOX 7

Case study: Gender-focused private and government partnership interventions in Indonesia

The Provincial Government of West Java launched a flagship women's Champion program called the Women's School to Achieve Dreams and Aspirations, or Sekoper Cinta. The Sekoper Cinta program is determined to create a growth mindset for women to grow and be empowered (be better housewives or even good businesswomen). Since its launch in December 2018, Sekoper Cinta has had 2,700 graduates, with every female Sekoper Cinta alumnus required to recruit three cadres. The priority for Sekoper Cinta is women in areas where the human development index is still low. The implementation of Sekoper Cinta is conducted in villages determined by each district/city in West Java. Participants from each village consisted of 100 housewives who were over 18 years old. The duration of learning is carried out in 12 meetings or within three months.

In 2022, the Sekoper Cinta program partnered with e-commerce giant Tokopedia and the Unilever Indonesia Foundation to hold a Digital Advanced Women's Class entitled *MSMEs Women Empowered and Forward Digital: Inspiration for Women Dare to Bring Change*[53]. Hundreds of local MSMEs attended the webinar from West Java and surrounding areas. This program also presented the One Global Women Empowerment (OGWE) platform initiative. This focuses on expanding access to information, business assistance in the digital era, and technical entrepreneurship training as preparations to face any obstacles that women MSMEs will face ahead.

53. Marketech (2022). Tokopedia and Unilever Indonesia joined hands for MSME women empowerment in West Java

06

Conclusion: Platforms are Growing in Rural Areas and Provide an Opportunity to Help Bring Employment and Income to Rural Indonesians

Indonesia's digital platforms are moving beyond urban centers and are increasingly looking at ways to serve rural sellers and producers. In our report, we took a deeper look at four sectors that are quickly evolving in rural areas: e-commerce, social commerce, agriculture, and aquaculture. While we mostly drew insights that were specific to each sector, a few overall observations about platforms in rural Indonesia stood out.

Overall, platform participants report many benefits: from higher income to improved social status and safety.

Sellers and producers are very positive about their platform experiences. The vast majority report higher incomes, greater income stability, improved price transparency, and enhanced bargaining power. Pinpointing the effects of these increases in more detail and by sector will require further research, but platforms have made a positive difference in how livelihoods are earned in rural Indonesia.

Even though our data paints a very positive picture of platform participation overall, we believe there's more work to be done to ensure that benefits continue to accrue to Indonesia's rural platform traders.

The data documents increased financial services uptake after joining platforms, however, the increases seem to come largely from more demand rather than easier access begging the question as to whether this should be called an increase in inclusion or not.

Generally, platform participants adopt more bank accounts, digital payments, and credit, and they take up insurance after they join platforms. While some of this new financial sophistication and inclusion is likely driven by the fact that platforms incorporate financial services and thus lower barriers (streamlined supply), much is due to the fact that platforms have unlocked further business growth for participants; and, with that, the demand for financial services has increased. Whether we call this financial inclusion or not depends on our perspective. The term financial inclusion implies exclusion for those who don't have it. If uptake is driven by reduced barriers, then it's easy to make the case people are more included/less excluded. If uptake is driven by demand or increased need, it's harder to argue that people were excluded before and seems more likely they just didn't see the value of financial services until they had a livelihood opportunity that motivated them to adopt. What is clear is that joining platforms does seem to drive uptake so if we see uptake as good regardless of why it increased, then these trends paint a positive picture.

The digitization, financial services, formalization flywheel – hints of evidence for a virtuous circle.

Our data show a positive relationship between platform participation and further financial service uptake among our respondents.

We also heard from some participants that joining the platform and becoming more digital led them to register a business that was previously informal. In some cases, this seemed to lead to more financial services uptake, greater platform integration, and business growth, though the evidence for these linkages don't necessarily show in our quantitative data and only come in tantalizing hints from our qualitative interviews. Regardless of whether a financial service is treated as a tool required to join a platform or whether it is treated as a tool that may unlock further growth after a business has seen initial success on a platform, the underwriting and diligence steps required to access an account, credit, or insurance naturally push businesses toward formalization and on the flip side, one can see how business growth and formalization could lead naturally to more financial services uptake.

We believe (although with only tentative evidence) that there is a positive feedback cycle between platform membership, business growth, formalization, and financial services uptake that all positively feedback into each other. If this hypothesis is validated by further research, we think it should help inform policy and commercial interventions where treating these different outcomes in a wholistic way would be warranted.

Figure 19: Our conversations with platform participants hinted at a virtuous circle where joining platforms led to digitization and business growth, which lead to services adoption and formalization, which lead to more growth.

Participation with the help of intermediaries is often the norm, but participants would benefit from more direct participation.

The ability to interact directly with platforms rather than via local intermediaries (as often seen in farming and fisheries) can seemingly help to unlock further benefits—from stronger bargaining power to higher income and better market awareness (all reported more often by those who interact directly). For e-commerce and social commerce sellers, revenue growth relies on a seller's ability to grow their store sales. Our research raises the possibility that moving from offline selling to more formalized e-commerce has the potential to significantly increase revenues and reach.

At the same time, it is clear that indirect access to platforms via intermediaries remains critical for certain sectors, as evidenced by the 52% of fishermen and 90% of farmers who access platforms in this way. Intermediaries are probably necessary as pathways for onboarding and learning by less digitally capable participants but should be phased out in the long run.

The e-commerce and social commerce sectors present an opportunity for rural women to start and grow their businesses.

Platforms provide increased market access, with limited barriers to entry in the form of discrimination or capital requirements. In particular, e-commerce and social commerce platforms provide an opportunity to start and grow a business while balancing household responsibilities. Thus, women (who typically take on the traditional housemaker and childcare role in rural Indonesia) can more flexibly participate in platform livelihoods than in many other types of livelihoods. For many women, this opportunity could be life-changing.

A critical area for future research will be to understand whether there are platform models that can help women get into higher-income-earning sectors and product lines. The transition from lower-earning social commerce to higher-earning e-commerce (where larger markets are available by utilizing these platforms' built-in discovery, nationwide logistics, and other infrastructure) is one area we see promise. Agriculture and fisheries sectors generate more income but would likely require deeper policy interventions, as entrants in those sectors would require access to land, equipment, boats, fishing rights, and other assets that have traditionally not been easy for women to acquire. Although it is achievable with well-crafted policy, a shift in mindset for gendered roles within the household would also be required.

Reducing barriers for women on e-commerce platforms, particularly those with informal businesses and limited digital skills, can be achieved by simplifying the onboarding process. There is a role here for private–public partnerships to support onboarding for women and MSMEs (see Chapter 5 Box 7 on Sekoper Cinta). Most importantly, by applying a gender-lens approach to these interventions, policymakers, platforms, and digital financial service providers all have a role to play in promoting women's uptake in the platforms and sectors they might not typically participate in or find accessible.

Critical barriers to platform expansion must continue to be addressed.

Fundamental enabling factors need to exist for platform expansion itself to continue. Four key enabling factors came up consistently in our conversations with platform staff and sector experts:

Logistics: Challenges in smoothly transporting goods was a common theme. The logistics challenge is compounded by Indonesia's archipelagic nature, where agricultural and fisheries products, for instance, must be transported by both land and sea and where delays in transport can dramatically increase the risk of spoilage.

Production potential and business activity: Key challenges in many rural areas were limited agriculture and aquaculture productivity and biases toward crops of lower market value. For example, the farm platforms highlighted local farmer capacity and variety as a key decision parameter. Agricultural policy to boost and diversify productivity would help this.

Mobile, electricity, and internet penetration: Although mobile phone coverage is fairly widespread even in rural areas, this was cited as a potential consideration in areas where it was weak or spotty. Related concerns were electrification and adoption of mobile phones.

Digital competency: Platform staff cited this as a challenge in some areas, but some experts also noted that platform representatives sometimes blame limited interest by potential adopters on users' lack of digital competency rather than the possibility that the product is not compelling. That said, overall literacy rates do remain relatively low and likely hamper uptake, especially among the older generation, which typically make up large numbers in the farming and fisheries sectors.

Governments and donors should ensure that rural platform participants, especially women who are entering the workforce, have a higher chance of establishing stable businesses.

We see the following near-term opportunities for intervention:

- Provide additional assistance to help more traders, especially women, transition from social commerce to more formalized e-commerce where incomes and reach can grow.
- Provide additional assistance to help fishermen and farmers interact directly with distribution platforms where they gain increased pricing leverage (vs. traditional middlemen) while balancing the need for in-person support for digitally novice participants.
- Provide additional assistance to help more women farmers and fisherman increase their platform engagement and enjoy the income benefits.
- Help platforms and platform participants move from cash-based payments and COD models to ones where payments are accepted digitally.

While we are encouraged by the results of this first set of research, we believe there are a couple of areas that warrant further in-depth research:

- We need to better understand agriculture and aquaculture sectors and their interaction with platforms. While we know that much of their interaction is intermediated through collectors, there is opportunity to further understand a realistic pathway to formalization, especially for women.
- We need to better understand the factors that contribute to the positive relationship between joining platforms and the uptake of financial services. Although we observe higher uptake among platform participants, the exact incentives and timing of this uptake remain unclear.
- We need to further explore the pathway and interactions between business growth, demand for financial services, and formalization. This report signals that these three aspects reinforce one another and can lead to more robust livelihoods, but more research is needed to understand how.

Appendix A: Methodology

This study examines inclusion in rural areas in Indonesia from various perspectives, including user experience, business strategies, and policy, to find viable prospects for extending the rural segment's inclusion in the platform ecosystem.

Rationale behind the multi-method research approach

The primary focus of this study is the results from a quantitative survey interviewing over 400 platform participants in the sectors of social commerce, e-commerce, agriculture and fisheries. To help contextualize and make sense of this data, we also conducted qualitative interviews with platform livelihood participants to understand their experiences and with sector experts and supply-side participants to understand sector trends and the platforms' commercial models.

Sector expert interviews

The supply-side research stream's primary goal is to help us understand the data we collected in the survey of platform livelihood participants and to validate recommendations for donors and policymakers. To achieve this, we conducted 14 in-depth stakeholder interviews including sector experts and platform employees who work on driving uptake in the rural areas.

Demand-side data collection

In this line of research, we surveyed rural platform participants to document their demographics, the contribution of platform livelihoods to their financial inclusion and socioeconomic status, as well as the pain points associated with this source of livelihood. The demand-side data collection included approximately quantitative surveys, 70 qualitative in-depth interviews and observational research across supply chain actors.

Questionnaire structure

Figure 3 in Chapter 1 shows the structure of the questionnaire from a temporal perspective. We ask five sets of questions aimed at understanding (1) what the person was doing before joining the platform, (2) what precipitated their joining, (3) what happened as they joined, (4) what their

status is now, and (5) what they expect or hope for the future. Tracking experiences and key variables across these five periods defined relative to the point of joining the platform, helps highlight the likely role the platform has played in their life.

Research location selection

The data was collected between January 17 and March 11, 2023. Focusing on the four sectors of social commerce, e-commerce, agriculture, and fisheries. The study was conducted in three provinces – West Java and East Java (Java Island), Lampung, and Sumatra (outside Java) – in eight specific districts within the selected provinces: West Bandung, Sukabumi Purwakarta, Bangkalan, Malang, Lampung, Timur, Pringsewu, and Tanggamus.

We chose these locations because there were active agriculture and fisheries platforms in those districts. E-commerce and social commerce platform participants are distributed widely across Indonesia and are present in most districts, so their presence was not a factor in the selection of districts.

Sector definitions for quantitative interview sample

To further develop our sample, we used the following definitions of sectors to refine our sample criteria:

- Respondents engaged in agriculture and fishing include those who have sold their products on digital platforms such as TaniHub, Sayurbox, Aruna, and E-fishery for at least six months or have increased their sales on these platforms by at least 200%, either directly or indirectly (via collectors).
- Respondents in e-commerce and social commerce are individuals who have sold goods or have rendered services on a digital platform for at least the previous six months.

Importantly, we ensured that in their line of work, every respondent is either the owner or key decision maker, not someone who works for someone else who does digital platform work. Below is a detailed breakdown of the qualitative sampling.

Sample selection for quantitative interviews

We selected the sample for the quantitative study using the convenience method through snowballing. The quantitative sample size was 368 samples, where 90 to 93 were from each of the four platform segments. We also interviewed 64 members of the local population who didn't work on platforms bringing the total to 432 (though we didn't include data from the non-platform workers in any of the final analysis for this paper).

The following table shows the composition of the quantitative interview sample of platform participants:

	Platform				
	Agriculture	Fisheries	E-commerce	Social commerce	Total
Number of respondents	92	93	90	93	**368**
Female	11%	0%	50%	73%	**33%**
Male	89%	100%	50%	27%	**67%**
18 -to- 25 -year - olds	8%	5%	17%	13%	**11%**
26 -to- 35 -year - olds	22%	23%	46%	46%	**34%**
36 -to- 50 - year - olds	53%	51%	36%	32%	**43%**
51 - plus-year - olds	17%	22%	2%	9%	**13%**
No schooling/dropped out	3%	5%	0%	0%	**2%**
Elementary school graduates	32%	31%	4%	6%	**18%**
Junior school graduates	27%	19%	8%	16%	**18%**
High school graduates	34%	33%	60%	56%	**46%**
Academic and university graduates (S1, S2, S3)	4%	11%	28%	22%	**16%**

Sample selection for qualitative interviews

For the qualitative sample, we expanded the sample beyond platform participations to also include a broader set of participants in the value chain, as well as 14 sector experts. These other interviewees are summarized in the table below and included farmers and fishermen, farmer groups (20 to 30 farmers), farmer and fishermen's unions and cooperatives, platform field offices, and collectors in the agriculture and fisheries sector sample. E-commerce and social commerce sectors included sellers and resellers, warehouses, distribution, and courier services. Other stakeholders in the sample were village-owned enterprises (BUMDes), village leaders, local banks and agents, and digital enablement centers. The below table shows the composition of the expert interview and qualitative interview sample.

Images from RISE during their fieldwork

Sector		IDI and ethnography			Total
		West Java	East Java	Lampung	IDI and ethnography
1. Agriculture	Farmers	4	3		7
	Farming groups (20–30 farmers per village)	1	0	1	2
	Farming unions/farmer cooperatives/off-takers	1	2	3	6
	Platform field office	1	1		2
2. Fisheries	Fishermen	3	2	3	8
	Fishermen groups/unions or platform agents/collectors	4	4	3	11
3. E-commerce	Sellers/resellers	3	3	3	9
	Warehouse/distribution/ fulfilment centers	1	0	1	2
4. Social commerce	Sellers/resellers	3	4	3	10
	Warehouse/distribution/ fulfilment centers	1	1	1	3
5. Non-platform		2	1	3	6
6. Other stakeholders	BUMDes village leaders	1	2	1	4
	Local government/ community leader	2	0	1	4
	Local banks and/or agents	1	1	1	3
	"Digital enablement centers"	1	1		2
	Supply chain	1	0	1	2
	Total	**30**	**25**	**25**	**80**

Appendix B: Details of Expert Interviews

We extend our gratitude to the interviewees quoted in this report for their contribution of time and valuable insights. All interviews were conducted between September 15 and November 10, 2022.

1. Andi Ikhwan, Agri – Fin Mobile Consultant, Mercy Corps
2. Praswistiadi Syarief Sayamsuri, Director of Government Affairs, PemPem
3. Alexander Raymond Assa, Regional Customer Success Manager, GoTo Financial
4. Riza Rizky Pratama, Relationship Manager, iGrow
5. Sholahuddin Nurazmy, Chief Executive Officer, Pasardesa
6. Jamilatuz Zahro, Research and Analytics Manager, eFishery
7. David Gunawan, Chief Executive Officer, EdenFarm
8. Sonny Ferra Firdaus, Assistant Vice President of Sales & Mitra Engagement, AgriAku
9. Dr. Nugroho Setijo Nagoro, Director of Economic Institutional Development and Investment, Ministry of Villages, Development of Disadvantaged Regions, and Transmigration
10. Iwan MD, Supplier for Sayurbox Lembang – West Java
11. Pujiono, Supplier for Sayurbox Malang – East Java
12. Yanuar Angga, Sales Manager, Shox Rumahan
13. Erdiriyo, Assistant Deputy for Sharia Financial Inclusive Finance, Coordinating Ministry for Economic Affairs
14. Pamitra Wineka, Former Chief Executive Officer, TaniHub

AGRICULTURE

SECTOR DEEP-DIVE

Macroeconomic Indicators

10.8%
is the sector's contribution to the national GDP of Indonesia.

40.7M*
is the sector's contribution to the Indonesian labor force.

$92.5M
is the total funding flow to Indonesia's most funded agritech startups in 2022.

33.2%
is the percentage of agricultural land available in Indonesia as a percentage of land area as of 2020.

114.1
is the food production index** in Indonesia as of 2021.

*Agriculture, Forestry, and Fishing.

** This refers to food crops that are considered edible and that contain nutrients. Coffee and tea are excluded because, although edible, they have no nutritive value.

Source: The World Bank Data bank; Labour Force Situation in Indonesia February 2023 - BPS Statistics Indonesia; Quarterly Gross Domestic Product of Indonesia 2017 - 2021 - BPS Statistics Indonesia; Tech in Asia.

Development Indicators

92% Smartphone ownership

FEMALE - 60%
MALE - 67%
Account ownership

20% Feature phone ownership

88% Asset ownership

90% Phone usage capability

38% Mobile banking usage

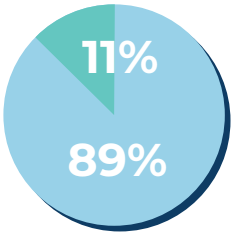
DATA PACKAGE (84%) WIFI (30%) Internet access

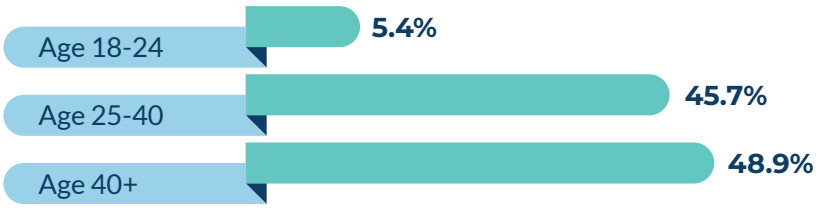
55% Bank transfer usage

51% Digital payments

95% Cash payments

Demography of participants





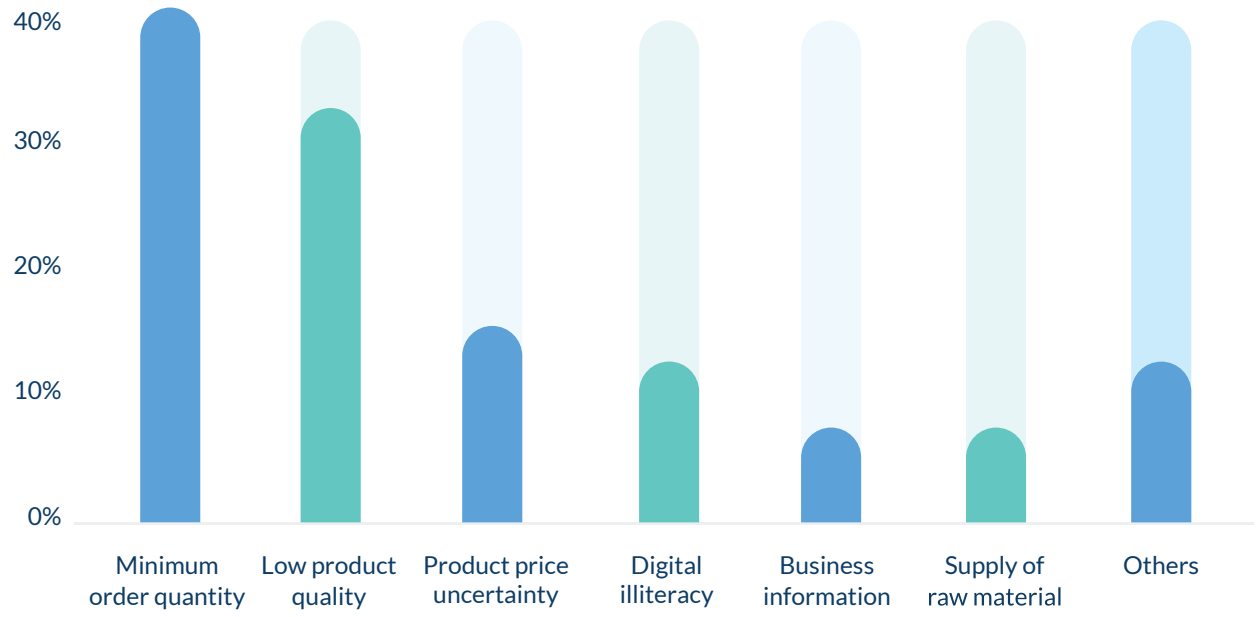
Below high school - **62%** | High school graduate and above - **38%**

Sector Overview

Agriculture accounts for close to 10% of the national GDP and is highly dominant in rural Indonesia, yet bringing platforms to farms and farmers remains a big challenge. Agricultural platforms have been focused on aggregating and sourcing from farmers and most commonly connecting them with buyers, such as grocery stores and restaurants, and even selling directly to consumers in some cases. Participants in these kinds of platforms are producers at the beginning of the food supply chain rather than resellers or finished-goods makers (e.g., cooks and clothiers). Often, because farmers are less digitally literate than those engaging in the e-commerce or social commerce sectors, the majority of them prefer to engage with the platform via a local middleman who helps to take orders and often receives the goods as well.

Bejana.id TaniHub Segari sayurbox FreshBox

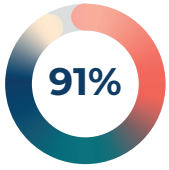
Challenges faced in the agricultural digital economy



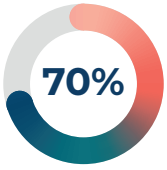
> "Once when sending tomatoes to a sorter, 30% of the produce was not accepted because it didn't fit the grade criteria. Different sorters in the market have different grades."

Resilience in the agricultural digital economy

Agree that their income (from all sources) has increased since joining the platform.



Agree that their income (from all sources) has stabilized since joining the platform.



Agree that their ability to save improved since joining the platform.

Agree that sales prices has increased since joining the platform.

Agree that their sales volumes has increased since joining the platform.

Say that they see themselves engaging in agricultural digital platforms in the next coming 5 years.

FISHERIES

SECTOR DEEP-DIVE

Macroeconomic Indicators

2.8%
is the sector's Contribution to the national GDP of Indonesia.

5.2M
is the sector's contribution to the Indonesian labor force as of 2019.

$314.5M
is the total funding flow to Indonesia's most funded aquaculture startup in 2022.

50%
is the percentage that the fishing industry accounted for in the total exports in Indonesia in 2017.

$1.3B
is the provisional calculation of the the potential value of the Indonesian marine economy in 2021.

Source: Blue Economy Development Framework for Indonesia's Economic Transformation; Quarterly Gross Domestic Product of Indonesia 2017 - 2021 - BPS Statistics Indonesia.

Development Indicators

95% Smartphone ownership

MALE 73% Account ownership

38% Feature phone ownership

85% Asset ownership

84% Phone usage capability

28% Mobile banking usage

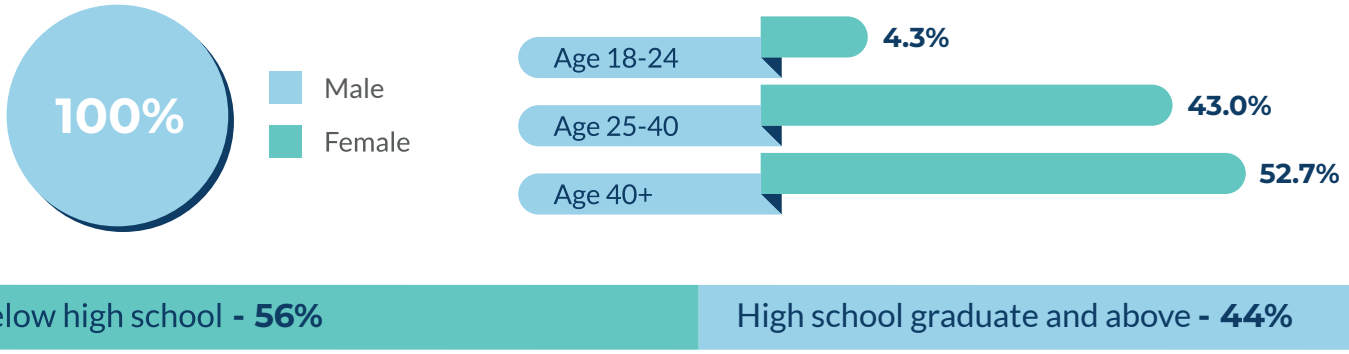
DATA PACKAGE (94%) WIFI (18%) Internet access

71% Bank transfer usage

51% Digital payments

92% Cash payments

Demography of participants



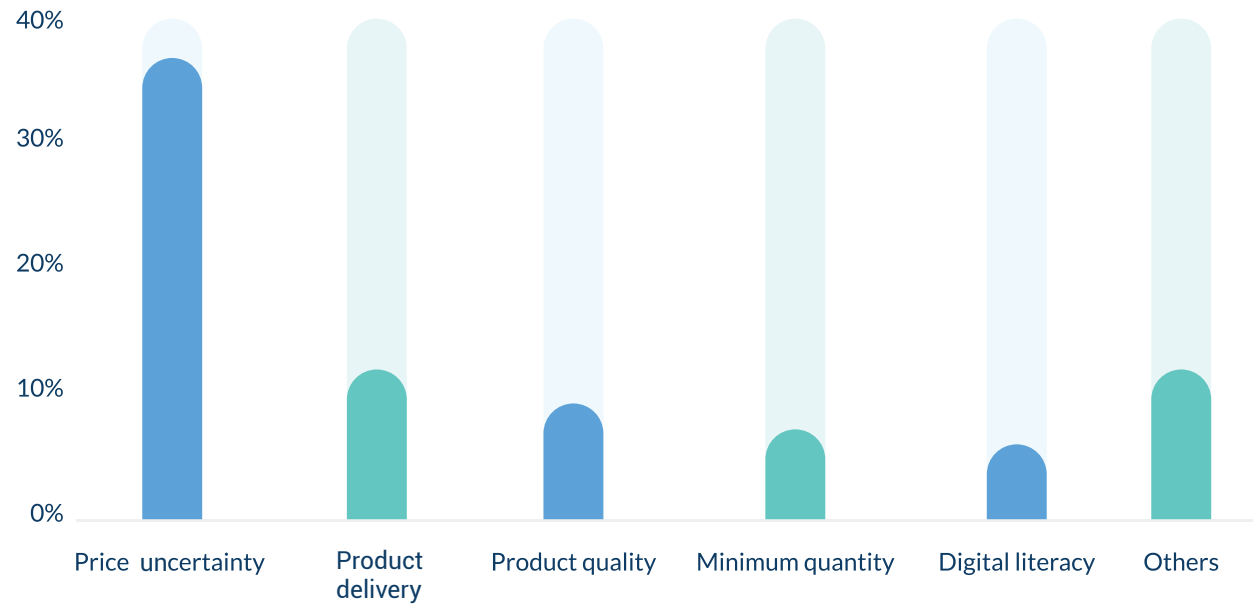
Below high school - **56%** | High school graduate and above - **44%**

Sector Overview

Indonesia's fisheries sector includes fish, shrimp, crab, and octopus. Fisheries platforms aim to aggregate and source from Indonesia's fisheries sector, which includes both fishermen and fish farms (aquaculture). This sector contributes significantly to the country's exports and is a source of livelihood for many Indonesians living on the remote islands of the country. In this sector, often because fishermen are less digitally literate than those in e-commerce sectors, platform engagement is indirect, through collectors and middlemen assigned by the platforms.

aruna eFishery

Challenges faced in the fisheries digital economy



> "There are no collectors who work with e-fisheries in my location so I sell my fish produce directly to collectors and not the platform."

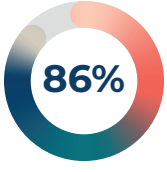
Resilience in the fisheries digital economy

Agree that their income (from all sources) has increased since joining the platform.

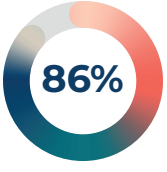
Agree that their income (from all sources) has stabilized since joining the platform.

Agree that their ability to save improved since joining the platform.

Agree that sales prices has increased since joining the platform.



Agree that their sales volumes has increased since joining the platform.



Say that they see themselves engaging in fisheries digital platforms in the next coming 5 years

E-COMMERCE

SECTOR DEEP-DIVE

Macroeconomic Indicators

10.7%
is the sector's contribution to the national GDP of Indonesia.

26.2M**
is the sector's contribution to the Indonesian labor force.

tokopedia

$2.4B
is the total funding flow to Indonesia's top funded unicorn in 2022.

bukalapak

1.9B
is the total funding flow to Indonesian second most funded unicorn in 2022.

30B
is the gross market value (GMV) of the Indonesian e-commerce sector in 2020.

*Wholesale and Retail Trade.
**Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles.
Source: Labour Force Situation in Indonesia February 2023 - BPS Statistics Indonesia; International Trade Administration (ITA).

Development Indicators

100% Smartphone ownership

FEMALE - 100%
MALE - 96%
Account ownership

13% Feature phone ownership

77% Asset ownership

100% Phone usage capability

87% Mobile banking usage

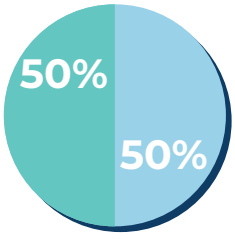
DATA PACKAGE (84%) WIFI (30%)
Internet access

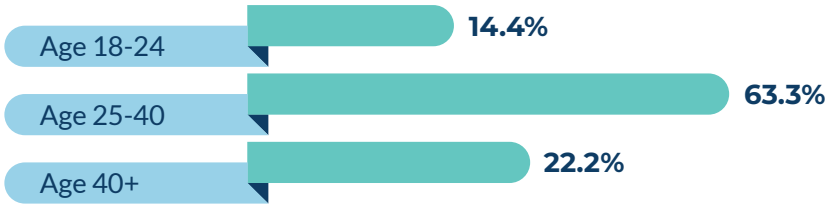
97% Bank transfer usage

94% Digital payments

89% Cash payments

Demography of participants





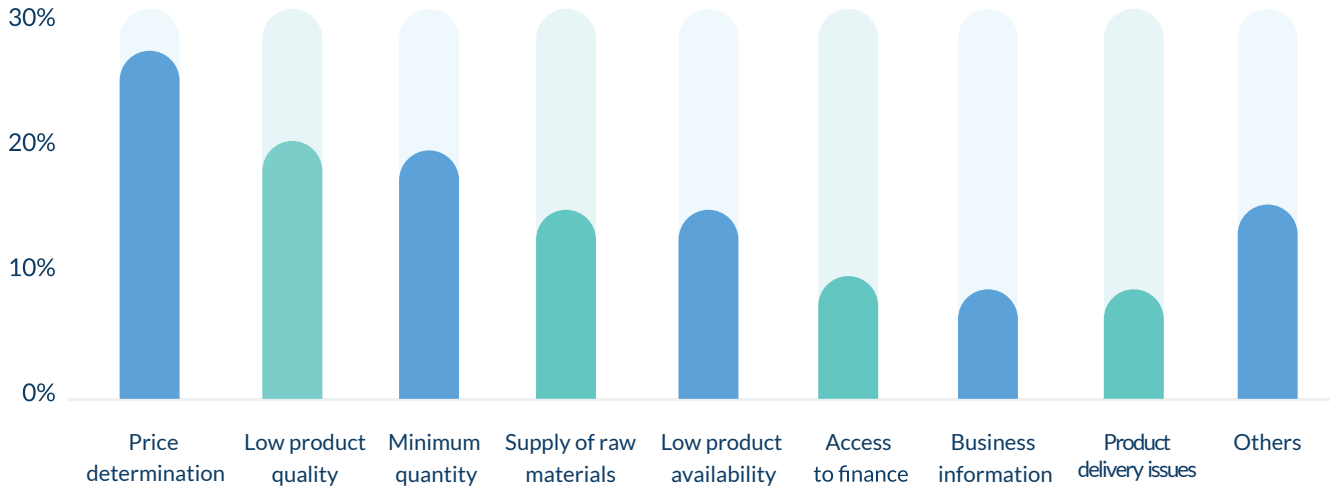
Below high school - **12%** | High school graduate and above - **88%**

Sector Overview

The e-commerce sector in Indonesia has grown, with over US$30 billion worth of goods being sold annually. Although mostly saturated in the urban areas of Indonesia, large players in the field and other smaller ones are beginning to extend their reach towards Indonesia's peri-urban and rural areas, focusing on digitizing retail shops, commonly known as "warungs," allowing them to sell online and reach consumers at the rural periphery. The warung owners and operators often sell or resell their goods using online marketplaces, which also provide the sellers with some form of training on how to register, market, and sell on the platforms.

Shopee tokopedia bukalapak Lazada

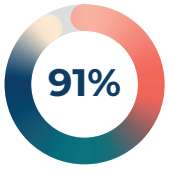
Challenges faced in the e-commerce digital economy



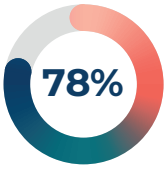
> "Since there are many competitors, if you don't live-stream to sell on the platforms you won't get many customers. When I used to sell live, I would make sales of up to 3 million rupiah"

Resilience in the e-commerce digital economy

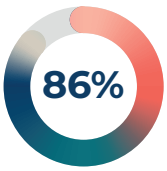
Agree that their income (from all sources) has increased since joining the platform.



Agree that their income (from all sources) has stabilized since joining the platform.



Agree that their ability to save improved since joining the platform.



Agree that sales prices has increased since joining the platform.

Agree that their sales volumes has increased since joining the platform.

Say that they see themselves engaging in e-commerce digital platforms in the next coming 5 years.

SOCIAL COMMERCE

SECTOR DEEP-DIVE

Macroeconomic Indicators

10.7%*
is the sector's contribution to the national GDP of Indonesia.

26.2M**
is the sector's contribution to the Indonesian labor force.

$106M
is the total funding flow to Indonesia's top funded social commerce startup in 2022.

$8,225.2M
is the gross market value (GMV) of the Indonesian social commerce sector in 2023.

40%
of online sales in Indonesia as of 2017 were done through social commerce platforms such as Facebook, WhatsApp.

*Wholesale and Retail Trade.
**Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles.
Source: Labour Force Situation in Indonesia February 2023 - BPS Statistics Indonesia; PRNewswire.

Development Indicators

99% Smartphone ownership

FEMALE - 90%
MALE - 88%
Account ownership

25% Feature phone ownership

83% Asset ownership

99% Phone usage capability

60% Mobile banking usage

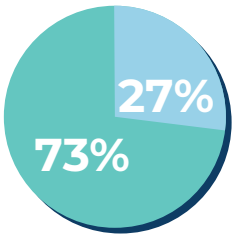
DATA PACKAGE (91%) WIFI (34%) Internet access

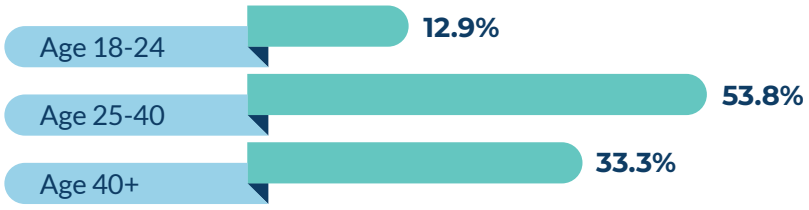
82% Bank transfer usage

75% Digital payments

100% Cash payments

Demography of participants





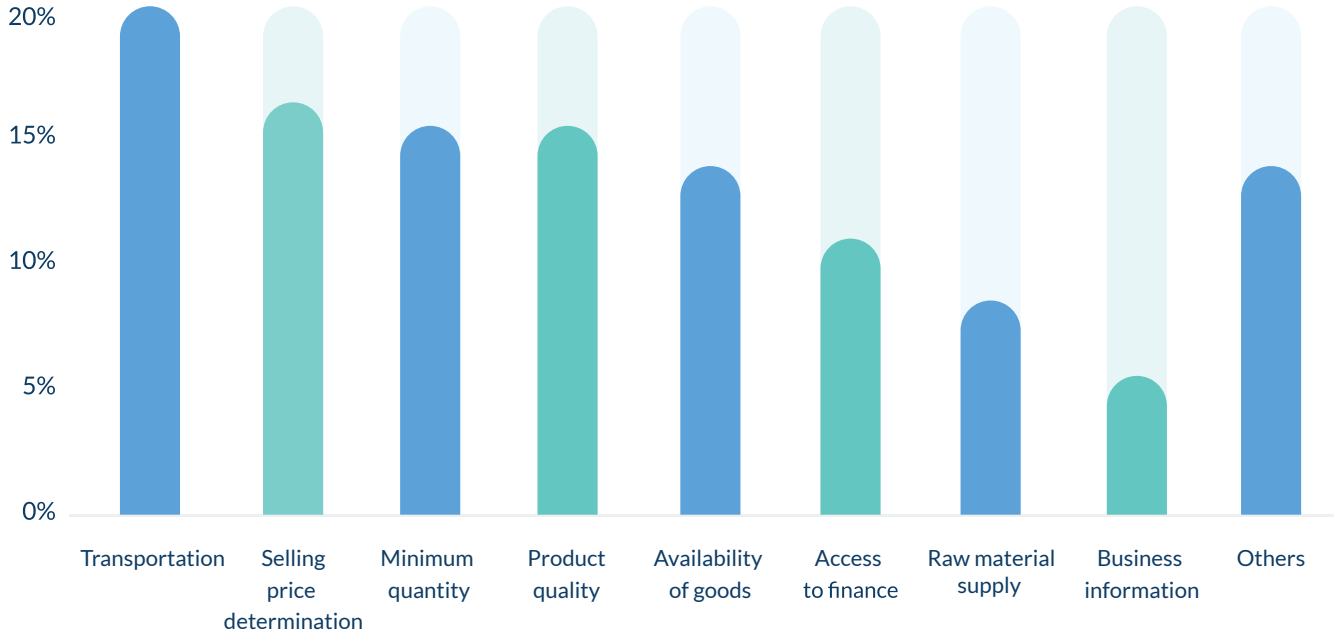
Below high school - **23%**

High school graduate and above - **77%**

Sector Overview

The social commerce sector in Indonesia boasts an expected growth rate of 47% per year. Social commerce platforms enable sellers to leverage their existing online and offline social networks to market, sell, and distribute goods. Tapping into online networks is generally done through existing social media platforms, but not always. Offline models enable sellers to market in their neighborhoods. Given that these social networks aren't made for commerce, they create challenges on how to pay, deliver, and ship the goods. There are new tools that help social sellers with these tasks. There are also hybrid models where people market through social platforms but complete transactions through e-commerce platforms.

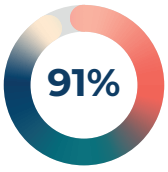
Challenges faced in the social commerce digital economy



> "I compete with sellers from other areas such as Sidoarjo and Lamongan, besides that I also battle prices with sellers from Surabaya."

Resilience in the social commerce digital economy

Agree that their income (from all sources) has increased since joining the platform.



Agree that their income (from all sources) has stabilized since joining the platform.

Agree that their ability to save improved since joining the platform.

Agree that sales prices has increased since joining the platform.

Agree that their sales volumes has increased since joining the platform.

Say that they see themselves engaging in social commerce digital platforms in the next coming 5 years.

Bibliography

1. Caribou Digital (2021). Platform Livelihoods: Working, Trading, Renting, and Engaging in Digital Marketplaces
2. Caribou Digital and Qhala (2020). The Quality and Experience of Platform Livelihoods: A Literature Review for Digital Development
3. CISION PR Newswire (2022). Indonesia Social Commerce Market Report 2022: Market to Reach $86.75 Billion by 2028 – Startups are Raising Funding Rounds to Further Scale Operations
4. Crunchbase (Accessed 29 Aug 2023). TaniHub
5. DFS Lab, RISE Indonesia and Caribou Digital (2022). The contribution of platform livelihoods to an inclusive digital economy in Indonesia: Literature review and stakeholder consultations
6. DFS Lab and RISE Indonesia (2023). Pathways through Platform Livelihoods in Indonesia
7. Financial Times online (Accessed 29 Aug 2023). Bukalapak races to bring Indonesian roadside kiosks online
8. Food and Agriculture Organization of the United Nations (2019). Country gender assessment of agriculture and the rural sector in Indonesia
9. Fulcrum (2022). The State of Indonesia's Digital Economy in 2022
10. Google, Temasek & Bain Company (2022). e-Conomy SEA 2019 Report
11. Katadata (2022). Startup TaniHub Tutup Dua Gudang dan PHK Karyawan
12. Kearney (2021). Unlocking the next wave of digital growth: beyond metropolitan Indonesia
13. Marketech (2022). Tokopedia and Unilever Indonesia joined hands for MSME women empowerment in West Java
14. McKinsey & Co (2016). Unlocking Indonesia's digital opportunity
15. NikkeiAsia (2023). Indonesia's Bukalapak sees itself as 'financial inclusion champion'
16. Secretariat of Financial Inclusion National Board (2020). Indonesia Financial Inclusion Insights
17. Similarweb (Accessed 29 Aug 2023). sayurbox.com
18. SMERU Research Institute, Digital Pathways at University of Oxford, United Nations Economic and Social Commission for Asia and the Pacific (2022). Digital Skills Landscape in Indonesia
19. Statistics Indonesia (2021).
20. TechInAsia (2021). Indonesian agritech startup TaniHub secures $65.5m in MDI-led round
21. TechInAsia (2022). Indonesian agritech startup closes 2 warehouses, lays off employees
22. The Ken (2022). TaniHub vs Sayurbox: The fork in Indonesia's diverging e-grocery market
23. Tjan et al. (2021). Unlocking the Next Wave of Digital Growth: Beyond Metropolitan Indonesia
24. Wang Huiwen (translated by Tao Huang), co-founder of Meituan Dianping (2021). The A/B sides of the Internet
25. Women's World Banking (2023). Building Digital Finance Solutions for Women E-Commerce Entrepreneurs. A demand side exploration in Indonesia
26. World Bank (2021). Beyond Unicorns Harnessing Digital Technologies for Inclusion in Indonesia

DFS LAB

RiSE Research and Consulting

@DFS Lab

@TheDFSLab

www.dfslab.net