

# Gender Insights from the Covid-19 Digital Merchant Survey

**Citation:** *World Bank, Gender  
Insights from the Covid-19  
Digital Merchant Survey, 2021*

We acknowledge and thank  
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collaboration in this survey.  
The views expressed in this  
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# E-commerce as a Pathway to Resiliency for Women

After more than one year since the start of the COVID-19 pandemic, many emerging market economies are still deep in the throes of the battle against the virus, despite the arrival of vaccines globally

*Indonesia is no exception*

With the rise of more virulent variants, many experts fear that COVID-19 will not disappear completely

As such, it is more important than ever to prepare Indonesian micro, small, and medium enterprises (MSMEs) to survive and thrive in such a context

In crisis time, many women are being drawn into the labor market because of necessity, including into e-commerce

**Our research examines how *female-owned* businesses on e-marketplace platforms perform and how the government and platforms could help them survive and thrive during the pandemic and beyond**



# What we found

Merchants increasingly used e-commerce as the primary source of income in their household

Female merchants were:

- (a) Younger and more educated
- (b) Clustered into “traditionally feminine” products
- (c) Homemakers and students

They had similar business size compared to male merchants

But, there were heterogeneities among female merchants themselves:

- (i) *New* female merchants outperformed *pre-existing* female merchants
- (ii) Female students and part-time employees were more likely to start e-commerce after the pandemic compared to male merchants
- (iii) Female students were most likely to switch product categories, which was associated to higher sales
- (iv) Female full-time employees were less likely to close business during the pandemic compared to male merchants

Although preferences over business support programs were similar, there were differences in preferences and utilization of government assistance programs:

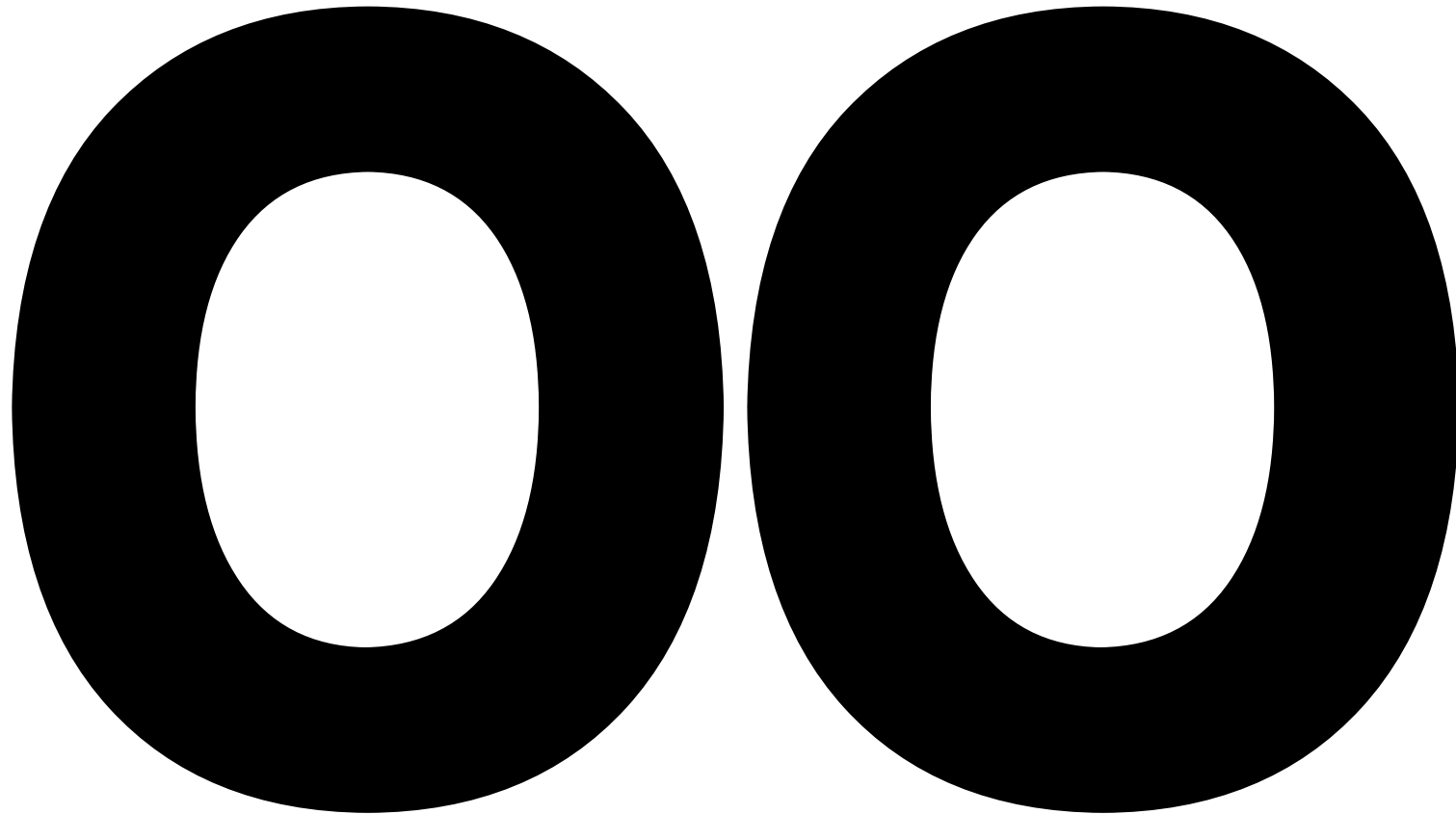
- (A) More female merchants found cash assistance as the most preferred government assistance compared to male merchants
- (B) Female merchants were more likely to use cash assistance for savings compared to male merchants

# About the survey

1. A 20-minute survey
2. Blasted through Shopee In-Apps
3. Target population: merchants with 30 or more (or 100 or more) transactions since joining the platform to match the previous survey's target population
4. Opened between Dec 21-25, 2020  
Collected response from 15,238 respondents:
5. Analyzed the survey using calibration rake weighting techniques (see Annex) to represent the target population by:
  - Provincial location
  - November 2020 sales on Shopee (proxy for online business size)
  - Highest-selling product category in November 2020

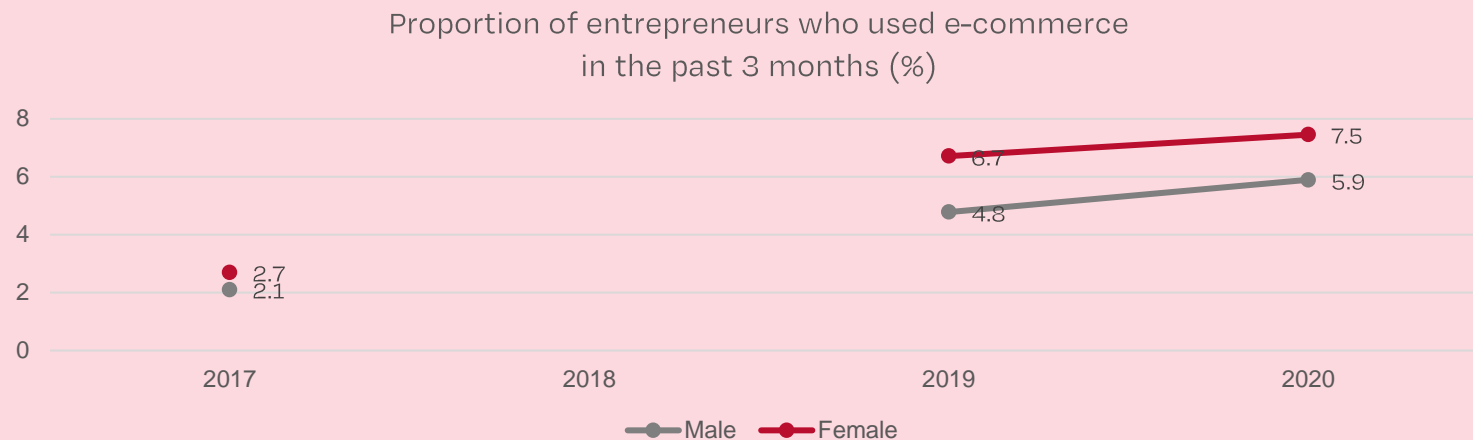


**How big is  
female-owned  
e-commerce  
business in  
Indonesia?**



**Small but incidence among female entrepreneurs almost tripled in the last three years...**

... and higher incidence of female entrepreneurs compared to male entrepreneurs



**7.5%**

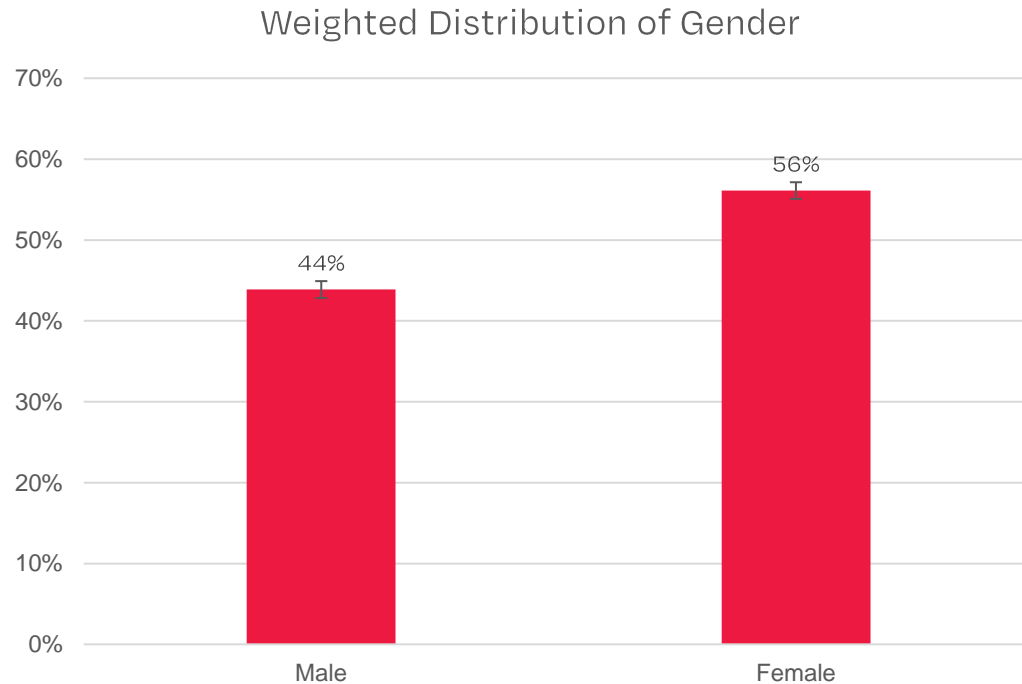
... of Indonesian female entrepreneurs\* (equivalent to 1.25 million) used e-commerce in the last 3 months in 2020

This number increased from only 2.7% in 2017

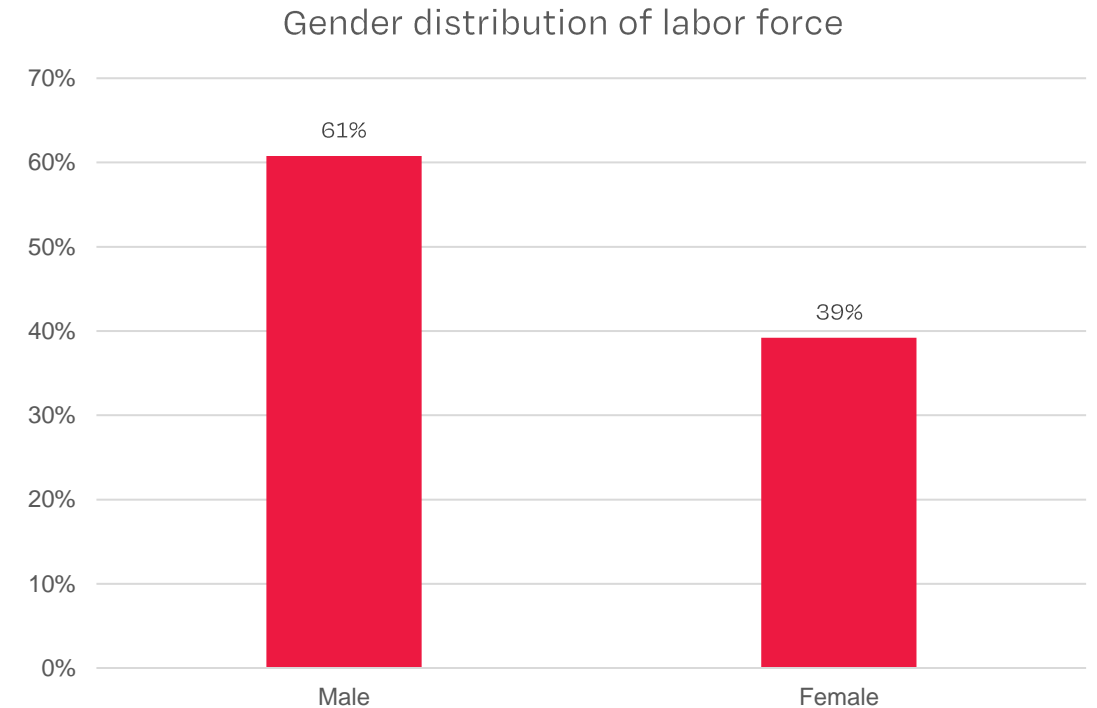
**Who** are  
the female  
merchants?

**01**

## Digital merchants were almost even gender split, leaning towards females (56%)



## This is in contrast with 61-39 % split of males-females in the labor force

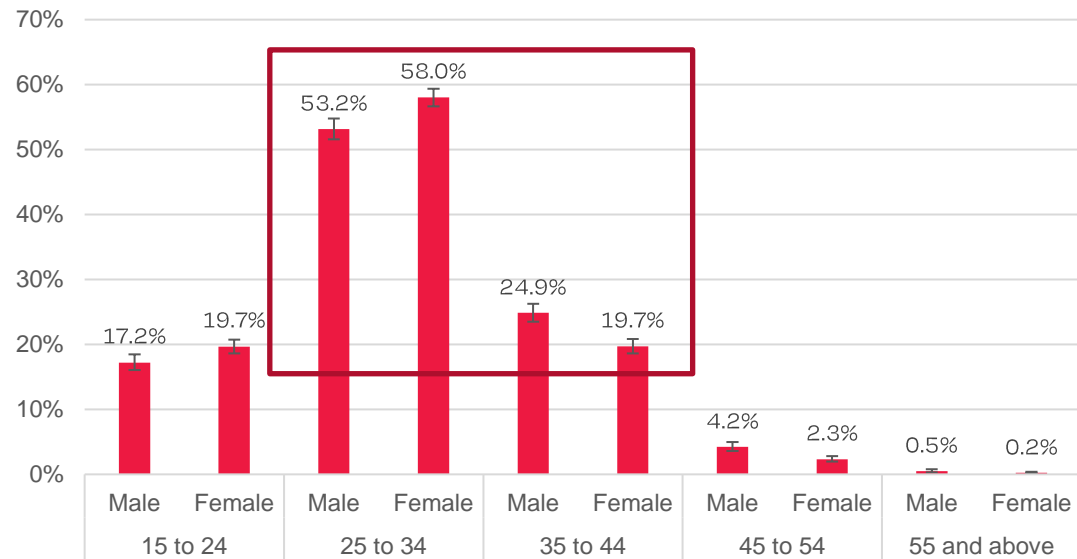


Source: Sakernas, August 2020



# Female merchants are younger...

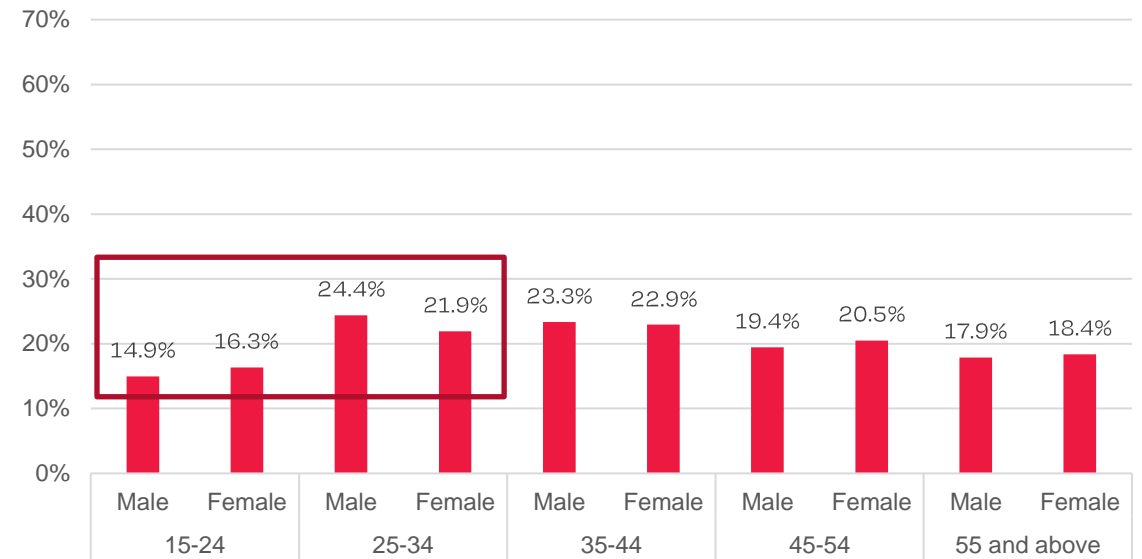
Distribution of merchants by age:  
Female vs. Male



Female merchants are more likely to be of non-school and child-bearing age, where over half of them are aged between 25 to 34 years old.

# ...while in the labor force, male group appears slightly younger

Distribution of labor force by age group:  
Female vs. Male

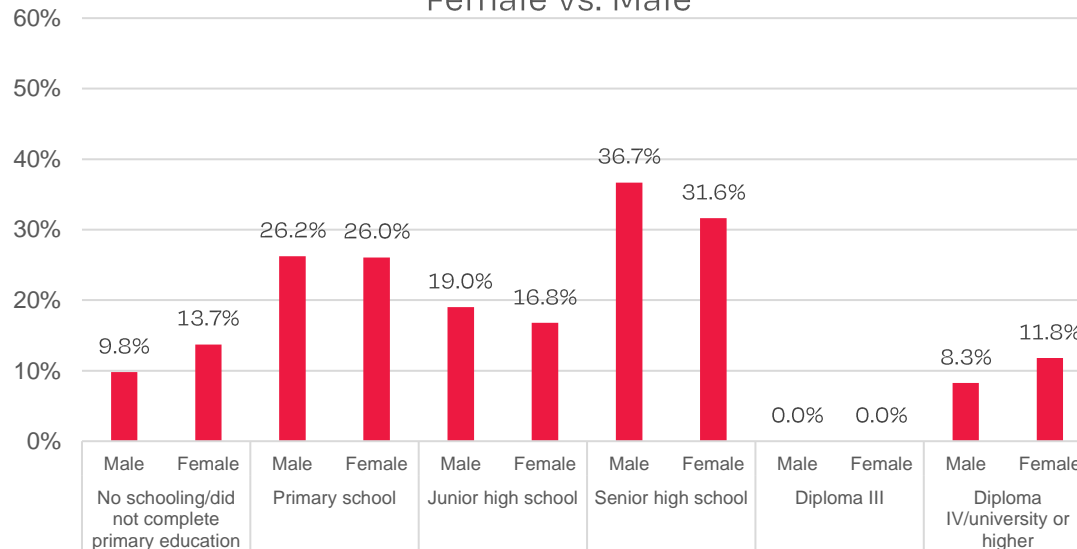


Source: Sakernas, August 2020

# Merchants on the platform are more educated than the general workforce....

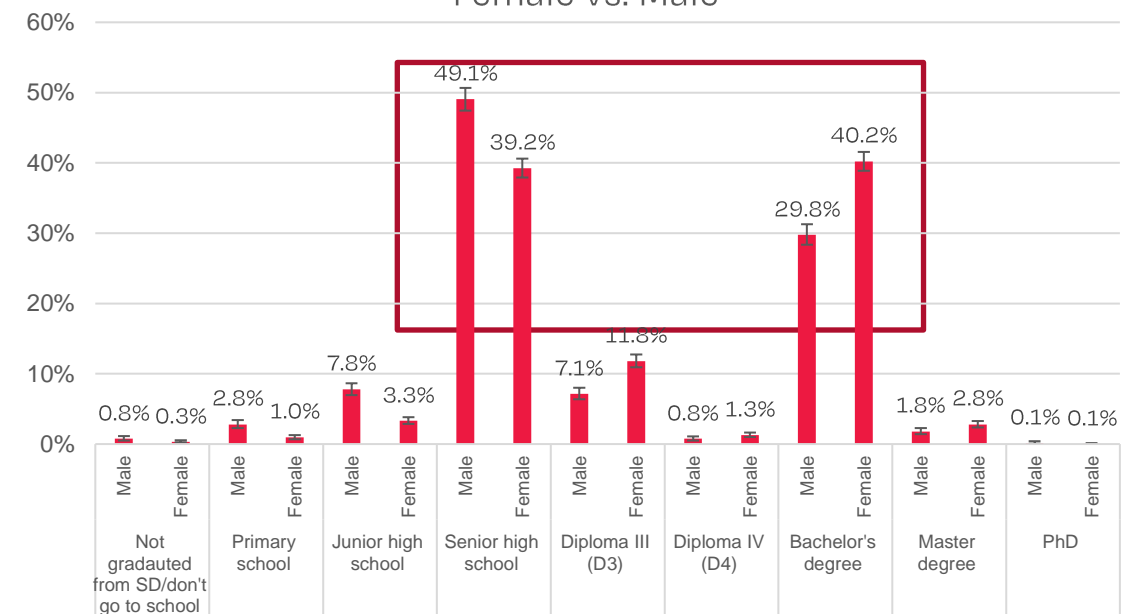
# ...and female merchants are more educated than male merchants on the platform

Distribution of labor force by education level:  
Female vs. Male



Source: Sakernas, August 2020

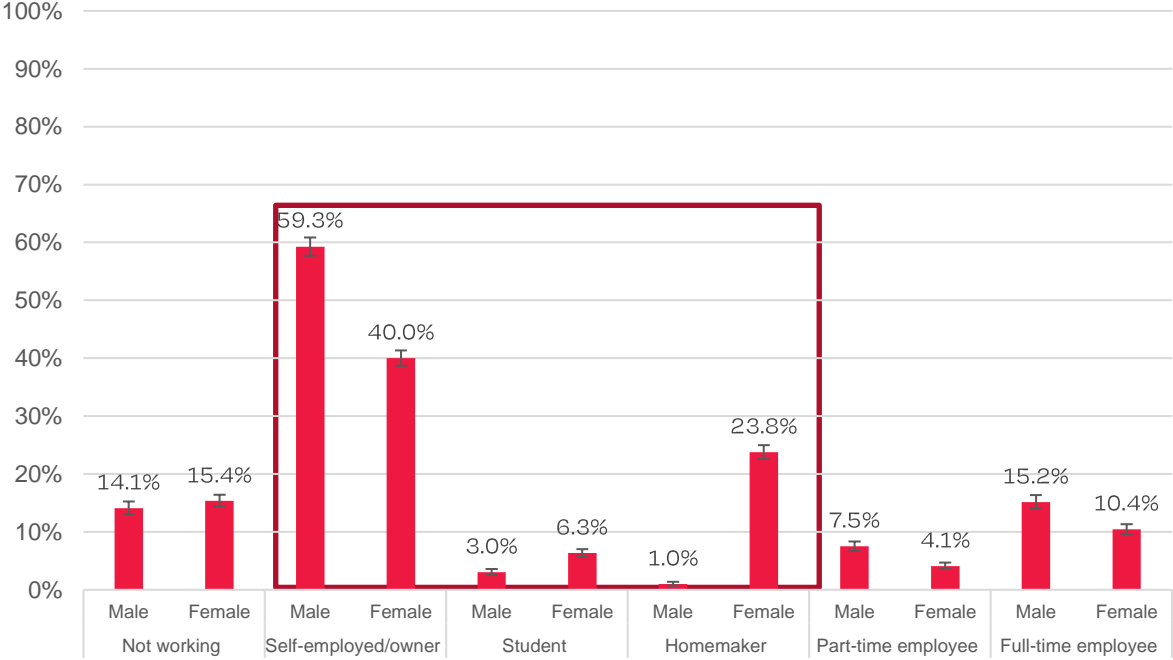
Distribution of merchants by education level:  
Female vs. Male



Majority of female merchants have upper-secondary or college education.

# A quarter of female merchants were homemakers

Distribution of merchants by employment status:  
Female vs. Male



There was also a higher percentage of *students* among female merchants compared to male merchants.

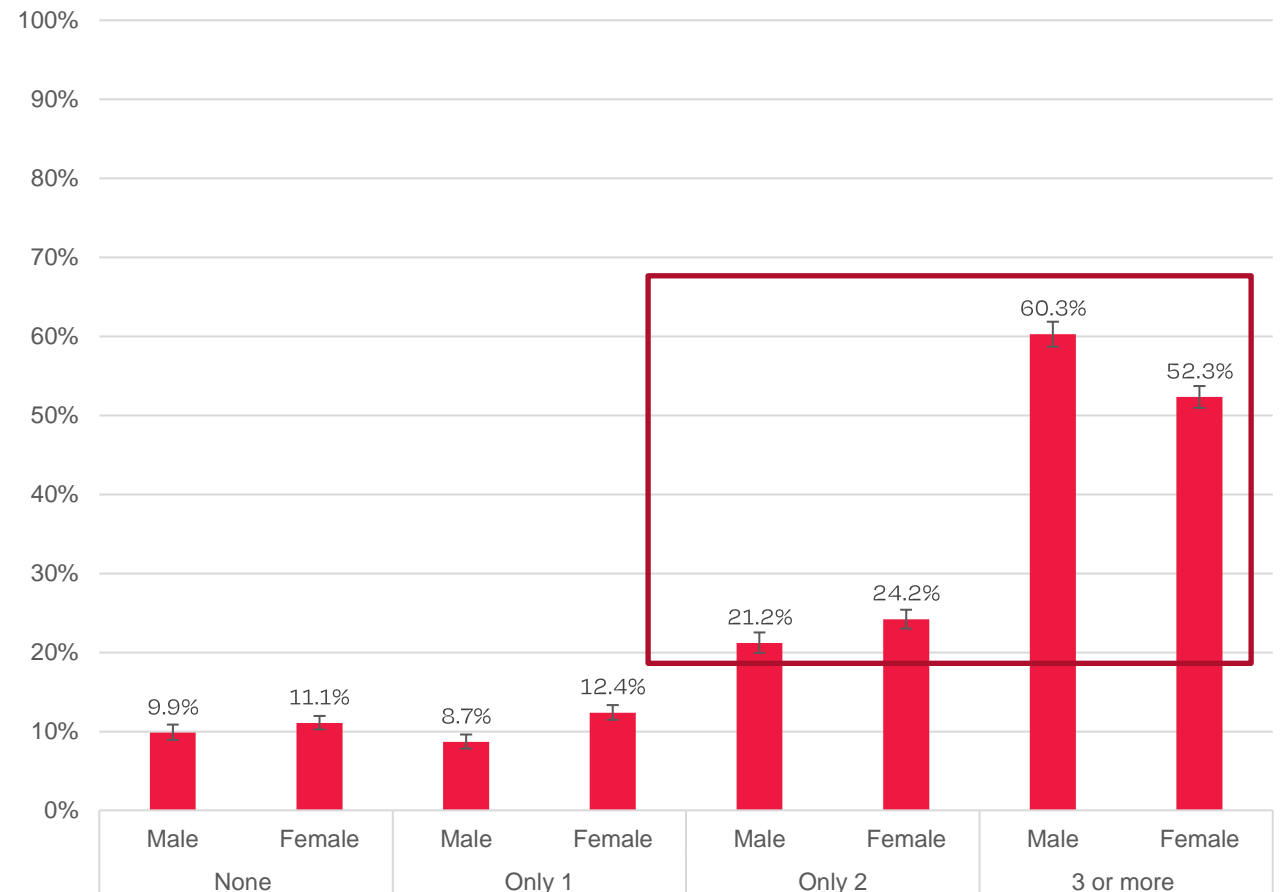
**Using the national socio-economic survey, 38% of female e-commerce entrepreneurs\* were homemakers\*\***

\*Female, age 15 or above, use e-commerce for selling goods and services in the past 3 months, work in retail sector, and self-employed or employer with temporary/permanent workers. \*\*Spend the most amount of time doing domestic work

Source: Susenas, March 2020

# Female merchants had fewer dependents compared to male merchants

Distribution of merchants by number of dependents:  
Female vs. Male



# 60% of female merchants used e-commerce as a source of supplementary income in their households

While 61% of male merchants were both the breadwinners of their households *and* using e-commerce as primary income, only 35% of female merchants were.

Male only					Female only					
		Main breadwinner					Main breadwinner			
		No	Yes	Total			No	Yes	Total	
Using e-commerce as a primary source of income	No		5%	21%	26%	Using e-commerce as a primary source of income	No	19%	7%	26%
	Yes		13%	<b>61%</b>	74%		Yes	<b>40%</b>	<b>35%</b>	74%
Total			18%	82%	100%	Total		<b>59%</b>	42%	100%

40% of female merchants were supplementing household earnings (not the main breadwinner) by using e-commerce as a primary source of income

Using the national socio-economic survey, only 9.2% of female e-commerce entrepreneurs were household heads (a proxy of breadwinner) in 2020. (Source: Susenas, March 2020)

# Between 2019 and 2020, e-commerce has increasingly become a primary source of household income for both male and female merchants

Among female merchants surveyed in both 2019 and 2020\*, the share of female merchants who were main breadwinners *and* used e-commerce as their primary source of income (i.e. e-commerce was the main source of household income)....

.... has increased from 21 percent to 30 percent.

Female, 2019 N = 876		Main breadwinner		
		No	Yes	Total
Using e-commerce as a primary source of income	No	33%	9%	41%
	Yes	38%	<b>21%</b>	<b>59%</b>
	Total	70%	<b>30%</b>	100%

Female, 2020 N = 876		Main breadwinner		
		No	Yes	Total
Using e-commerce as a primary source of income	No	20%	7%	28%
	Yes	43%	<b>30%</b>	<b>72%</b>
	Total	63%	<b>37%</b>	100%

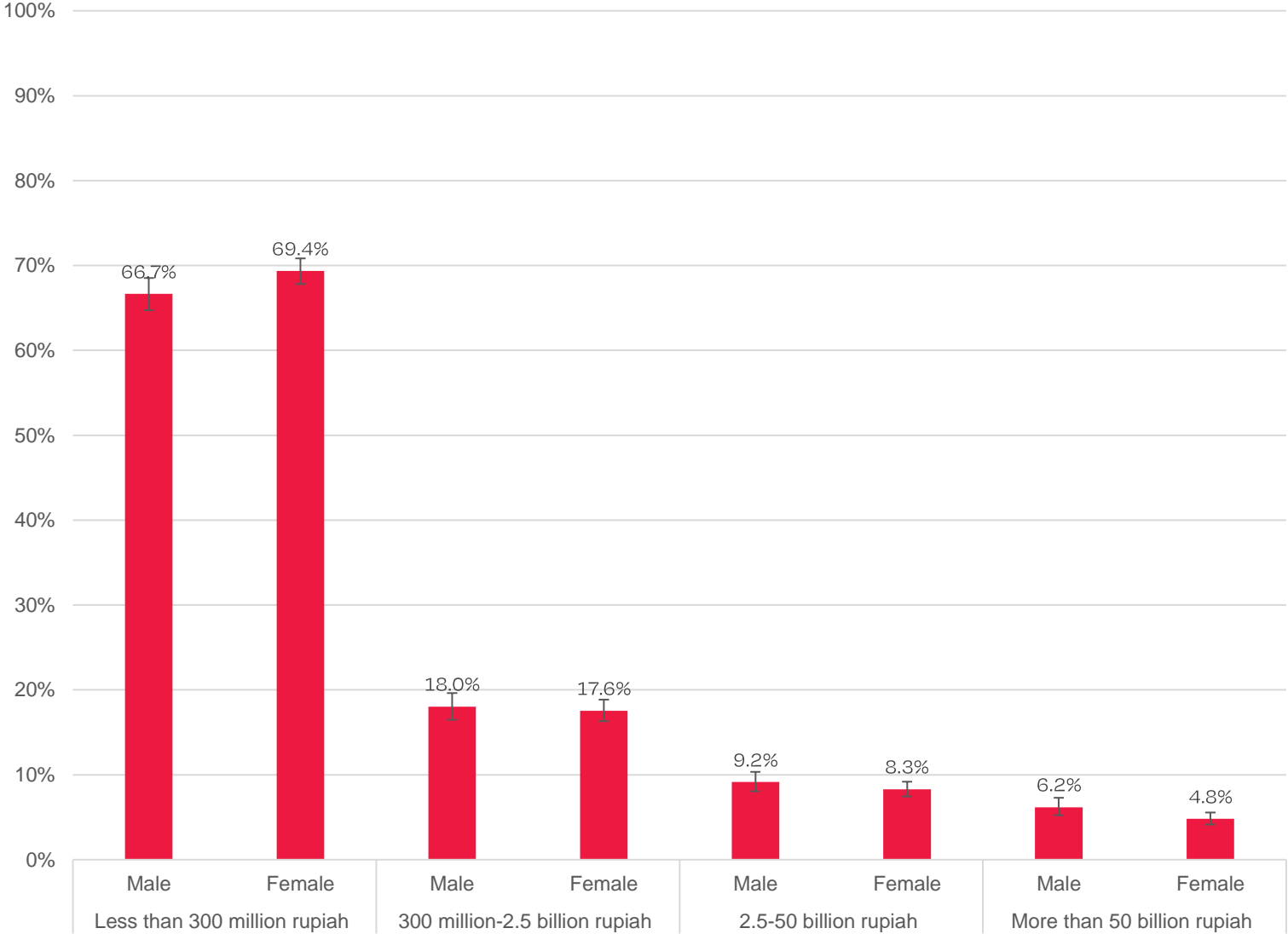
\*Note: We combined this survey with a survey conducted by Shopee in 2019. There were 876 female merchants who were in both surveys.

**What** is their  
business  
profile?

Q2

# Female merchants have businesses that are similar in size to those of male merchants

Distribution of merchants by business size\*:  
Female vs. Male

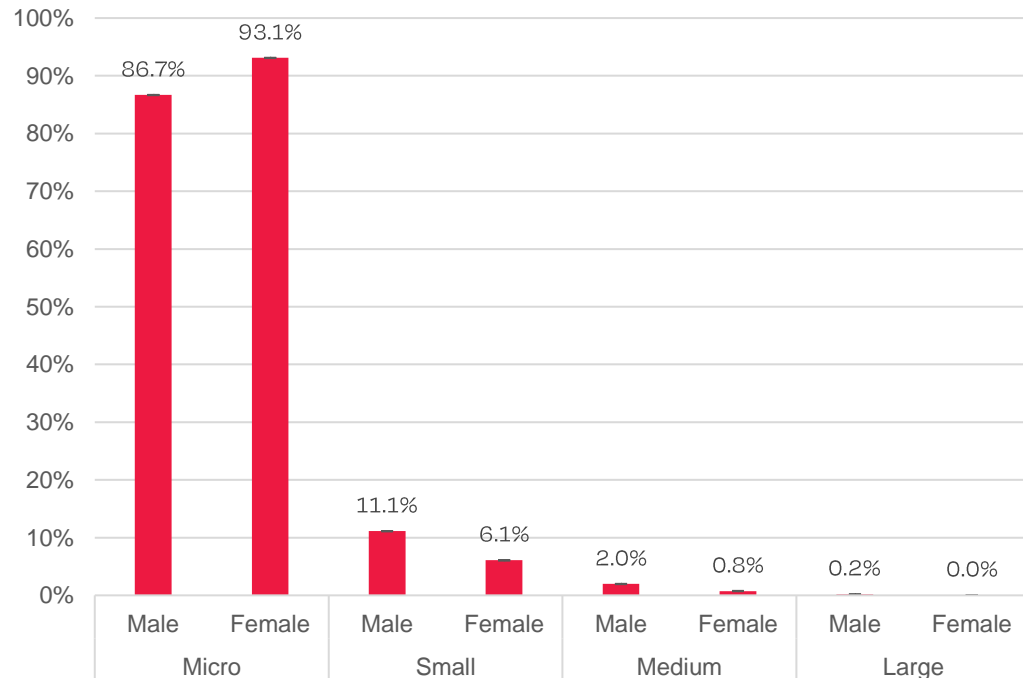


\*Note: Business size is the total annual revenue in 2019

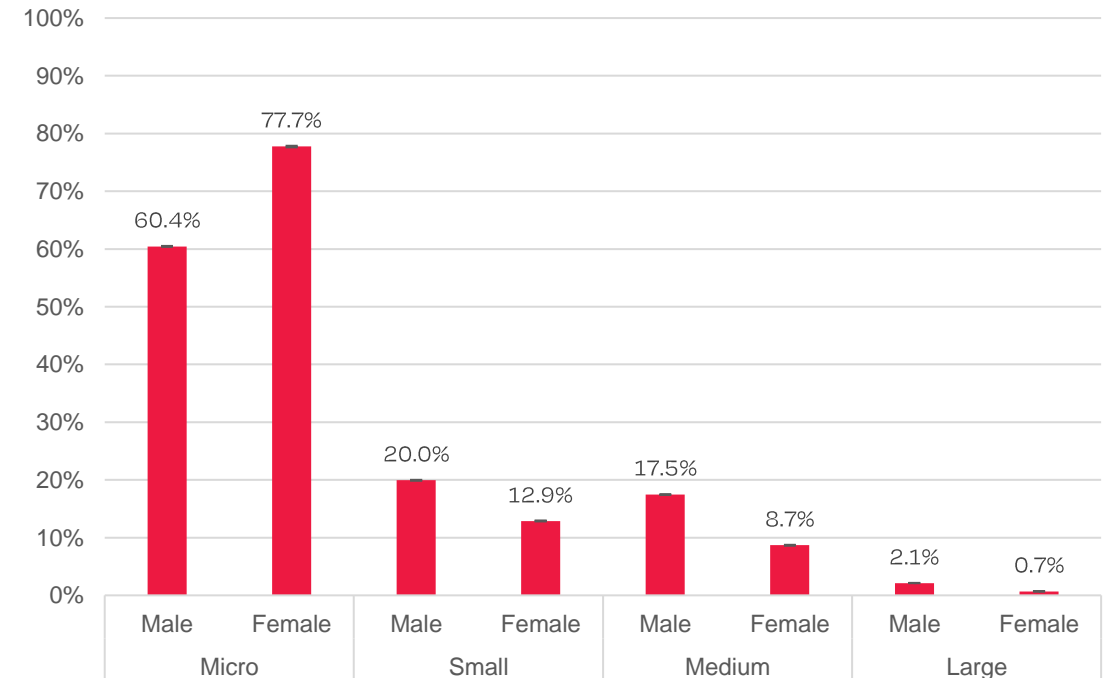


# This is in contrast with the larger male-owned businesses among more typical non-agricultural businesses, even if restricted to those internet-using non-agricultural businesses

Distribution of non-agricultural enterprises by business size



Distribution of internet-using non-agricultural enterprises by business size



Source: Economic Census 2016

# Female merchants' business characteristics:



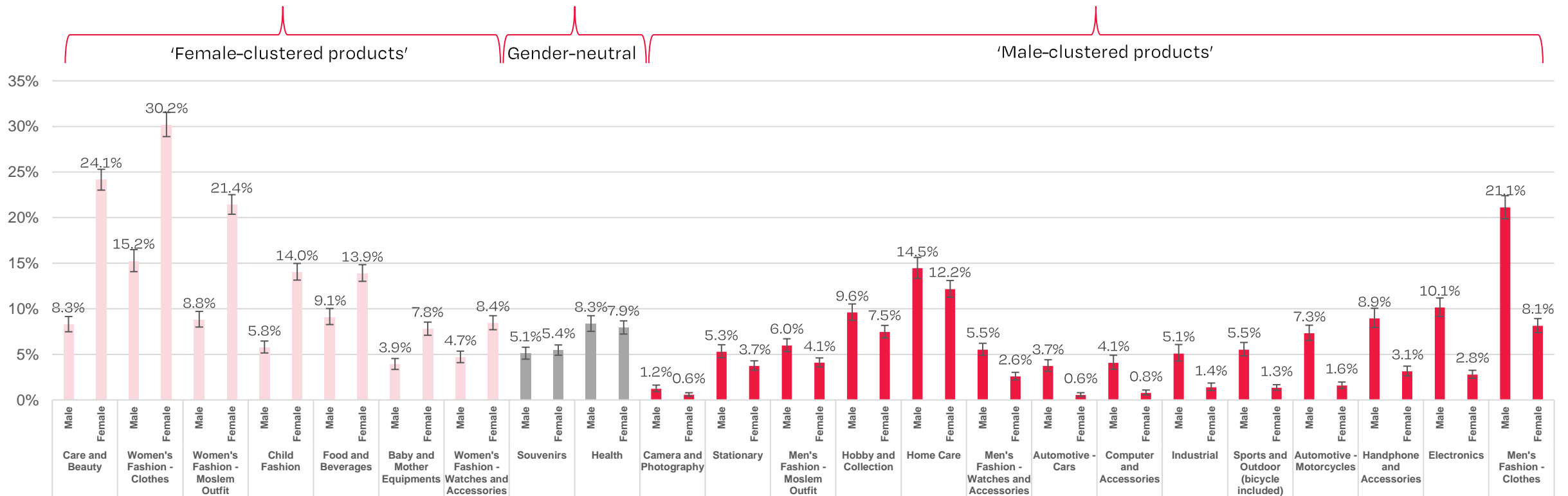
Selling **traditionally feminine products** (women's fashion, baby & mother, care & beauty, F&B)



Have been **selling online longer** than male merchants

# Female merchants might self-select into traditionally feminine products

Distribution of merchants by product categories:  
Female vs. Male



# Why do female merchants self-select into traditionally feminine products?

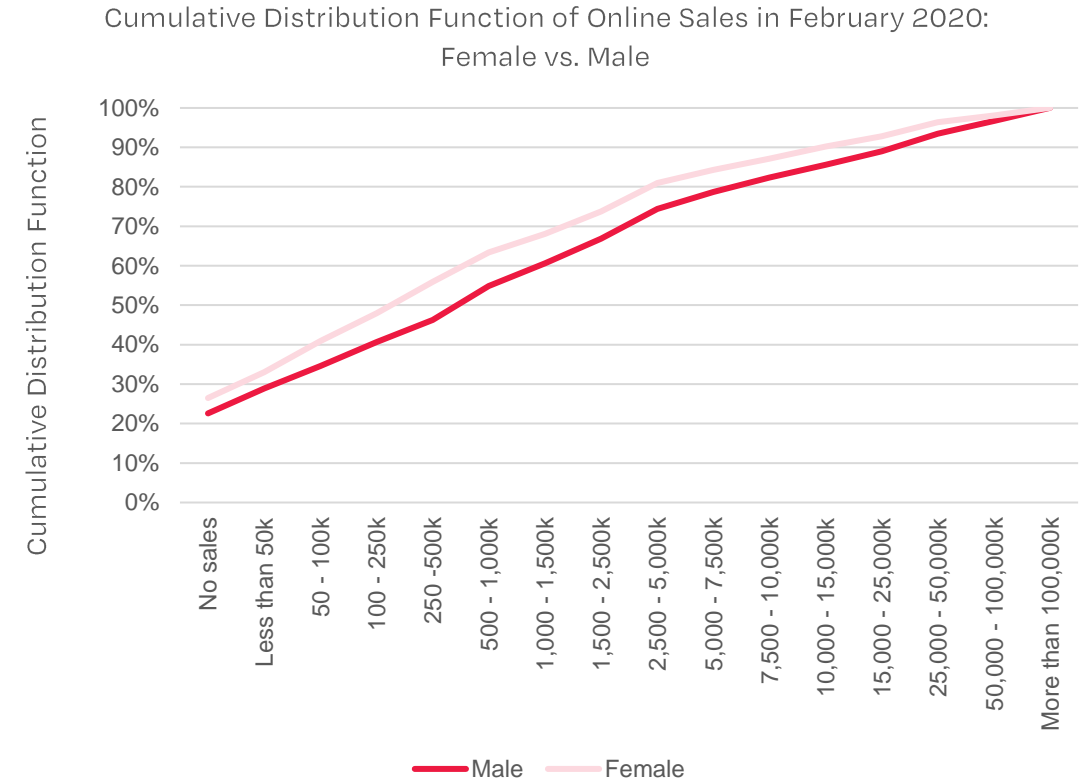
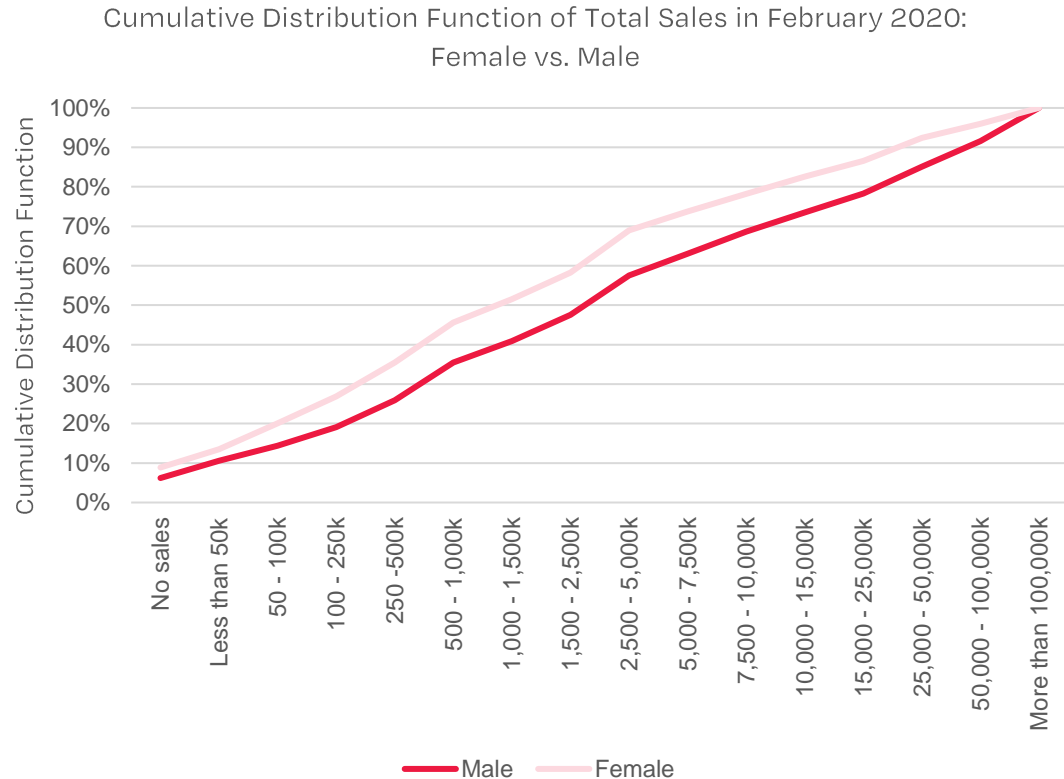
- **Occupational segregation**
  - This product-sorting into 'female-clustered' and 'male-clustered' product categories is in line with the evidence of occupational segregation, which is omnipresent throughout entrepreneurship and labor markets around the world.
  - A few studies on the issue of women entrepreneurs self-selecting into less profitable sectors due to social norms can be found [here](#), [here](#), and [here](#).
- **Lack of market information**
  - This drives women to sell products that they themselves use and know about.

**How** did female  
merchants with  
*a pre-existing*  
business before  
COVID perform?

03

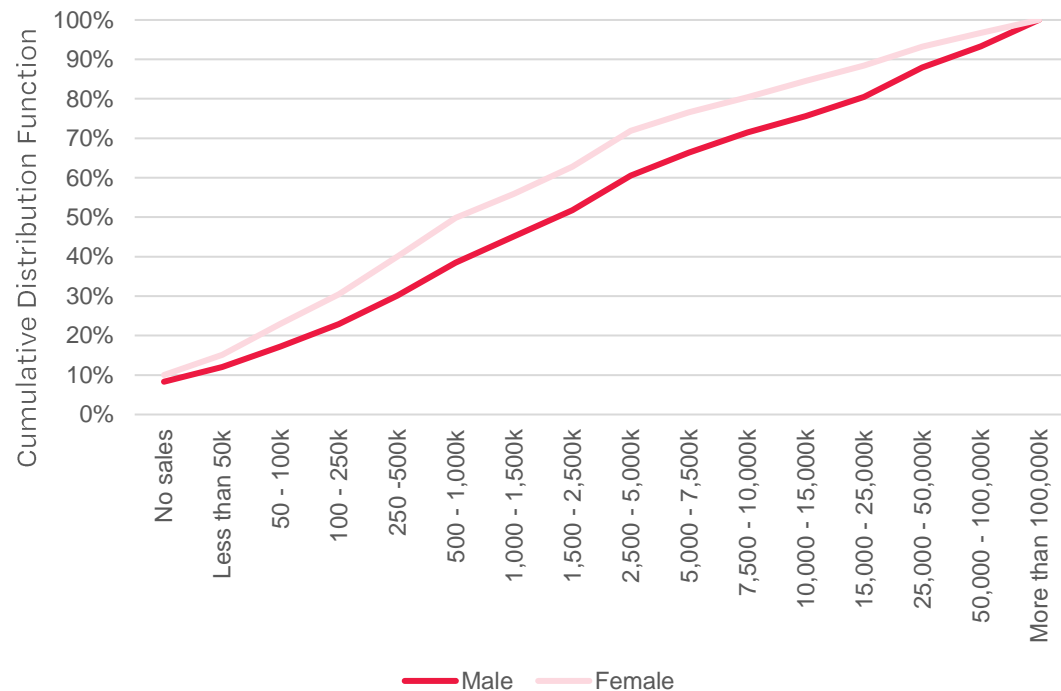
**At a glance, female merchants performed less well than their male counterpart pre- and during the pandemic in both their online and total sales...**

# Pre-pandemic in February 2020, female merchants' sales appeared inferior to those of male merchants....

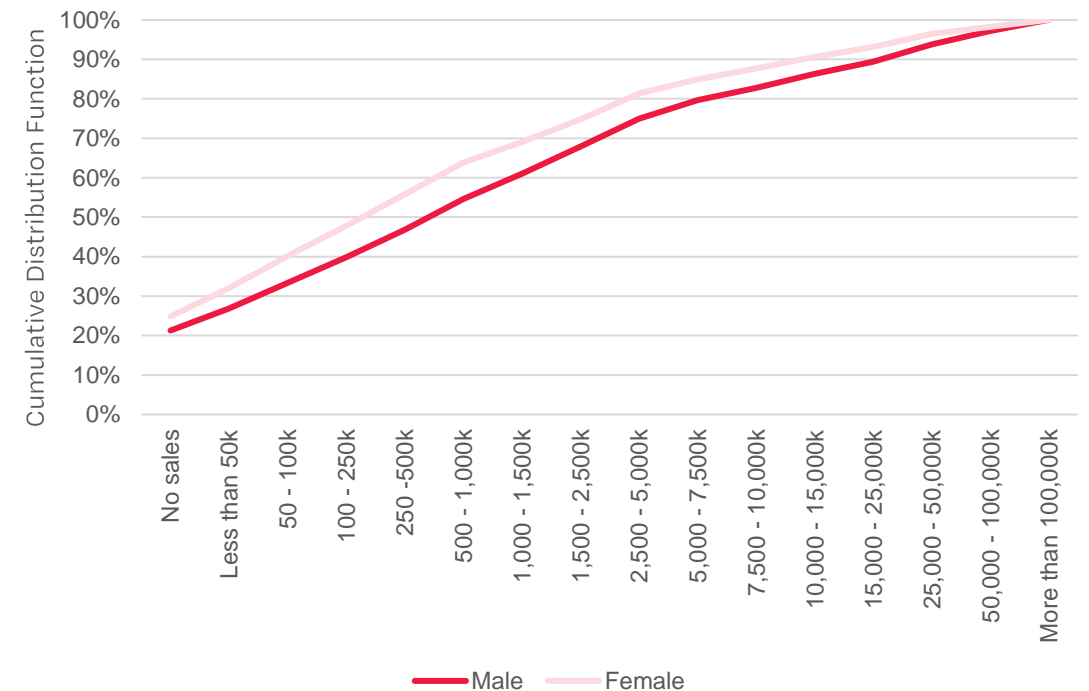


# ... and this continued in April 2020 when the first Covid-19 surge hit the country

Cumulative Distribution Function of Total Sales in April 2020:  
Female vs. Male



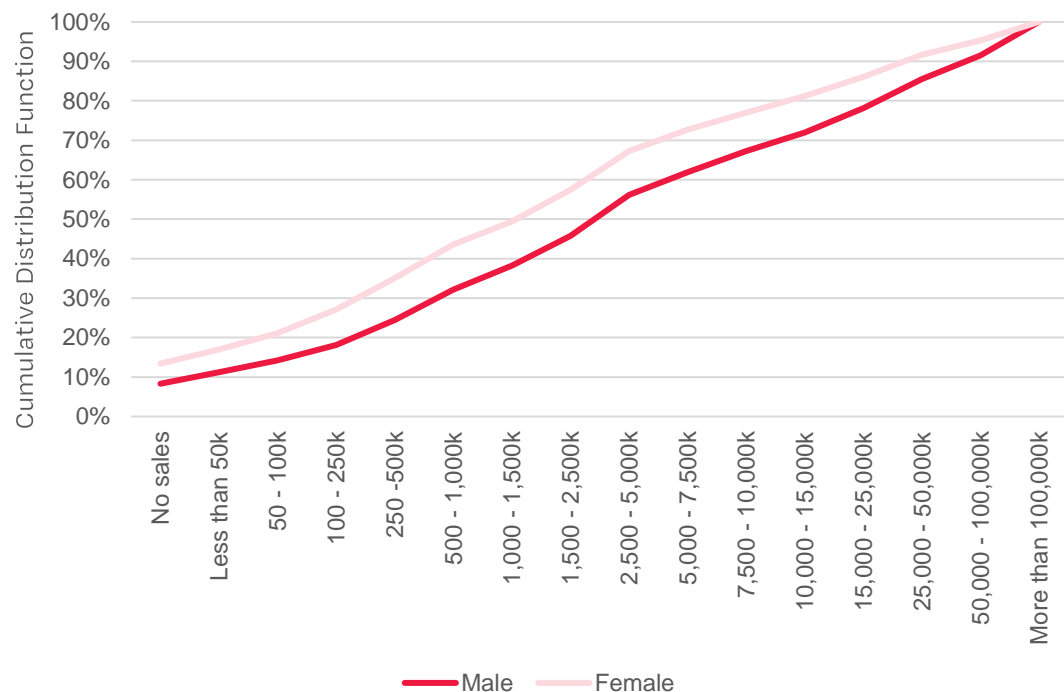
Cumulative Distribution Function of Online Sales in April 2020:  
Female vs. Male



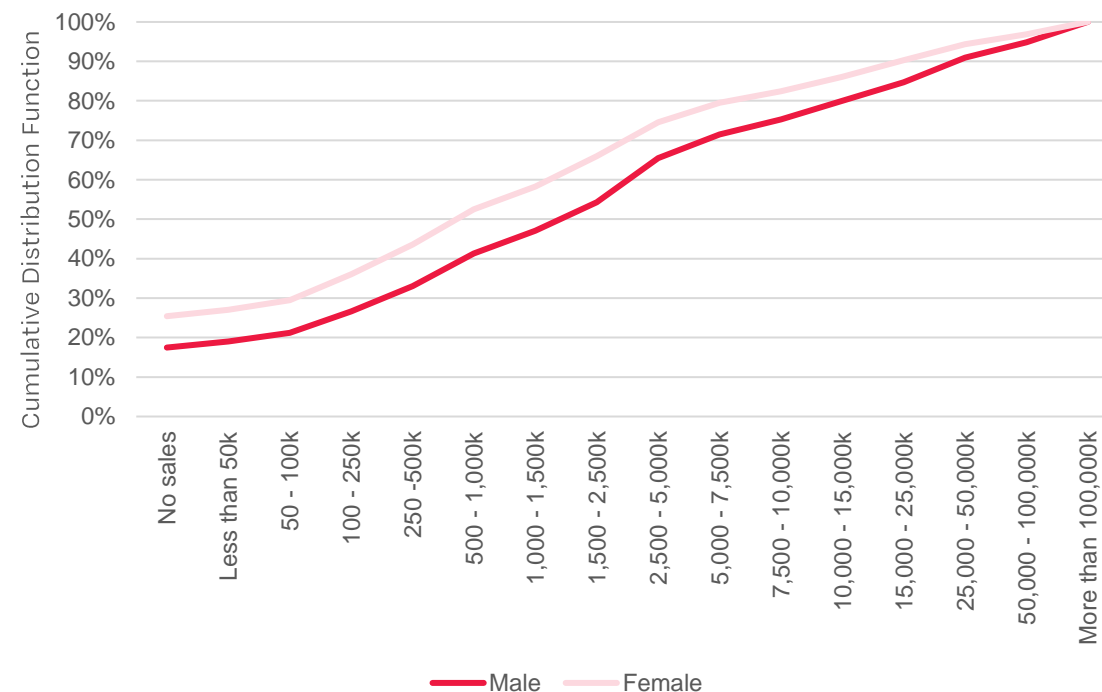


# By November 2020, at a low point of daily Covid-19 cases, female merchants still appeared underperforming relative to male merchants

Cumulative Distribution Function of Total Sales in November 2020:  
Female vs. Male



Cumulative Distribution Function of Online Sales in November 2020:  
Female vs. Male



...*however*, this could be partly explained by differences in the distribution of employment status and product categories between male and female merchants



# Being a homemaker and selling some traditionally feminine product categories were associated with lower sales \*

Being a **homemaker** for both male and female merchants was associated with *lower sales*, but there was a much *higher percentage* of female merchants relative to male merchants in this type of employment status

Being a **self-employed** for both male and female merchants was associated with *higher sales*, but there was a much *lower percentage* of female merchants relative to male merchants in this type of employment status

Some product categories that female merchants clustered into such as **F&B** were associated with *lower sales* while some product categories that male merchants clustered into such as **electronics** and **motorcycles** were associated with *higher sales*.

\*Note: Using multinomial logit and OLS regressions, we regress total and online sales in November and the probability to be at the bottom 40% and top 10%, on characteristics of merchants (gender, age, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with gender) and characteristics of business (business age since joining platform, product categories), as well as sales in April. Samples are restricted to pre-existing merchants. See [Annex 3](#) for the regression results.



## Some hypotheses of why some feminine product categories were associated with lower sales:

1

They tend to be low-value items, compared to, say, automotive and electronics

2

Higher competition resulting in lower average sales per merchant

3

During the pandemic, women tend to reduce their own consumption resulting in lower demand for feminine products

4

Moreover, female merchants might need to penetrate broader product categories and markets to build resilience, resulting in lower supply



## **Other *less observable* factors might explain the rest of the differences in sales performance**

### **Female merchants are “entrepreneurs by necessity”**

- Indraswari (2006) finds that Indonesian women choose to open small-scale businesses (and become own-account workers) with the aim of contributing to family income, but without needing to enter the formal labor market, which they perceive would entail sacrificing their position as a mother
- E-commerce is used by female merchants as a way to return to labor market, for example after giving birth (World Bank, 2021a)

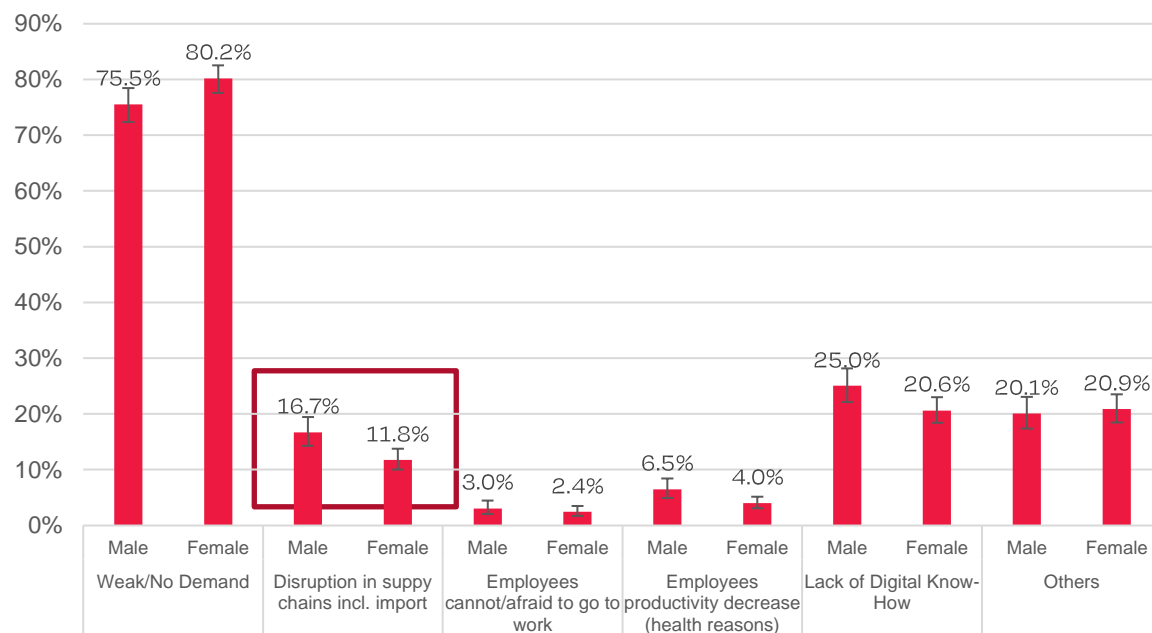
### **Social norms**

- Established social norms that the responsibility of childcare relies primarily on women (see Purnamasari and Town, 2021) that continues to affect and limit women’s choices especially in the absence or shortage of the care economy in Indonesia (see World Bank, 2021b)
- The OECD (2019) finds that nearly one-third of respondents in a perceptions survey disagreed with the statement “it is perfectly acceptable for any women in their family to have a paid job outside the home if she wants one.”

More studies are needed to explain in more depth remaining differences in the sales performance between male and female merchants beyond the observables.

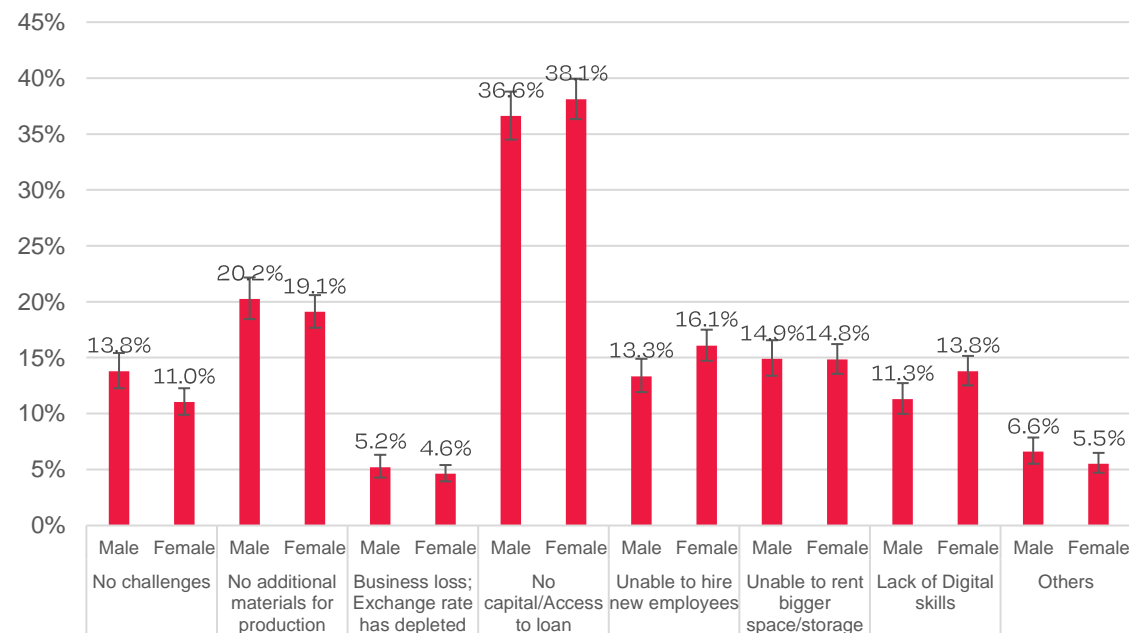
# Male merchants reported higher incidence of disruption in supply chains (including imports) as a reason why sales went down, compared to female merchants

Reasons for sales going down  
(April-November):  
Female vs. Male\*



\*Only among merchants who experienced sales decline  
\*\*Only among merchants who experienced sales increase

Challenges to increase/recover demand  
(April-November):  
Female vs. Male\*\*



No significant difference in how male and female merchants were facing challenges to increase demand

**How** did  
*new* female  
merchants  
perform?

04

Generally, being female decreased the likelihood of adopting e-commerce during the pandemic....

...however, take-up rates were higher amongst some groups of female entrepreneurs





# Who were joining e-commerce during the pandemic?\*

Female entrepreneurs who were **students** or worked as **part-time employees** were more likely to join e-commerce than men. The same can be said about women who worked as **full-time employees** compared to other women in general.

This suggests that these particular female entrepreneurs were looking for an alternative source of income, perhaps due to school

closures and reduced working hours that allows for more free time, besides the need for compensating a possible loss of household income.

This was not observed in females who were self-employed, doing household work, or non-workers.

\*Note: Using a logit regression, we regress the new merchant dummy on characteristics of merchants, namely gender, being youth, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with gender. See [Annex 4](#) for regression results.



# These *non-traditional* new female merchants had some intrinsic advantages

## FEMALE STUDENT MERCHANTS

They were found to be more likely to **switch product categories** compared to male students or other types of merchants. Merchants switch product categories during the pandemic to cope with changing consumer preferences, and the ability to switch product categories was highly associated with higher sales performance.

(Note that students might be just helping their parents to sell online)

## PART-TIME (AND FULL-TIME) EMPLOYEES

They have been in formal employment and are found to be **more educated** and therefore presumably have innate skills to perform well in e-commerce

---

This might lead to better sales performance among new female merchants



# Indeed, we find that, in terms of sales performance in November \*

1

## New merchants outperformed pre-existing merchants

New merchants had a higher (lower) likelihood to be at the top 10% (bottom 40%) of sales in November 2020. They also had a higher increase in sales between April and November

2

## New female merchants outperformed new male merchants

New female merchants had a higher likelihood to be at the top 10% of total sales and lower likelihood to be at the bottom 40% of online sales in November 2020, compared to new male merchants

3

## New female merchants outperformed pre-existing female merchants

New female merchants had a higher likelihood to be at the top 10% of total sales and lower likelihood to be at the bottom 40% of online sales in November 2020, compared to pre-existing female merchants

\*Note: Using a multinomial logit and OLS regressions, we regress total and online sales in November and the probability to be at the bottom 40% and top 10%, on characteristics of merchants (gender, age, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with gender), characteristics of business (business age since joining platform, product categories), sales in April, and a new merchant dummy as well as its interaction term with a female dummy. Samples include all merchants. See [Annex 5](#) for the regression results.



**How** did female  
merchants  
cope with the  
pandemic?

05

# Merchants who switched product categories were associated with better sales performance

**Switching product categories was associated with\*:**

**1**

A lower probability to be in the bottom 40% of sales performance

**2**

A higher probability to be in the top 10% of sales performance

**3**

A lower sales decline in total sales between April and November

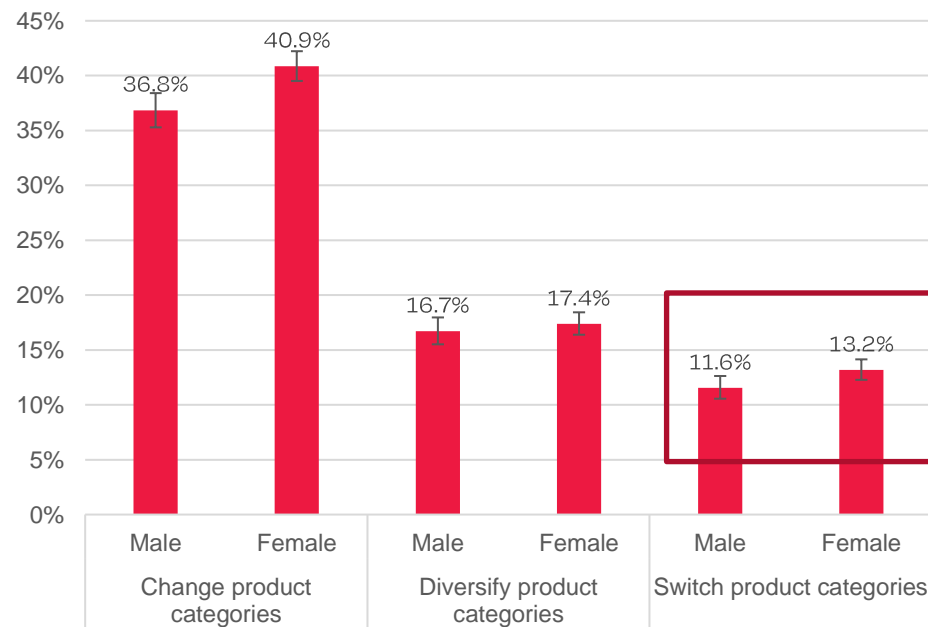
\*Note: See [Annex 5b](#)



## Female merchants had a higher incidence of switching product categories...

...driven by *female students* who had a higher probability of switching product categories than any other types of merchants\*

Merchants' Coping Strategies:  
Female vs. Male



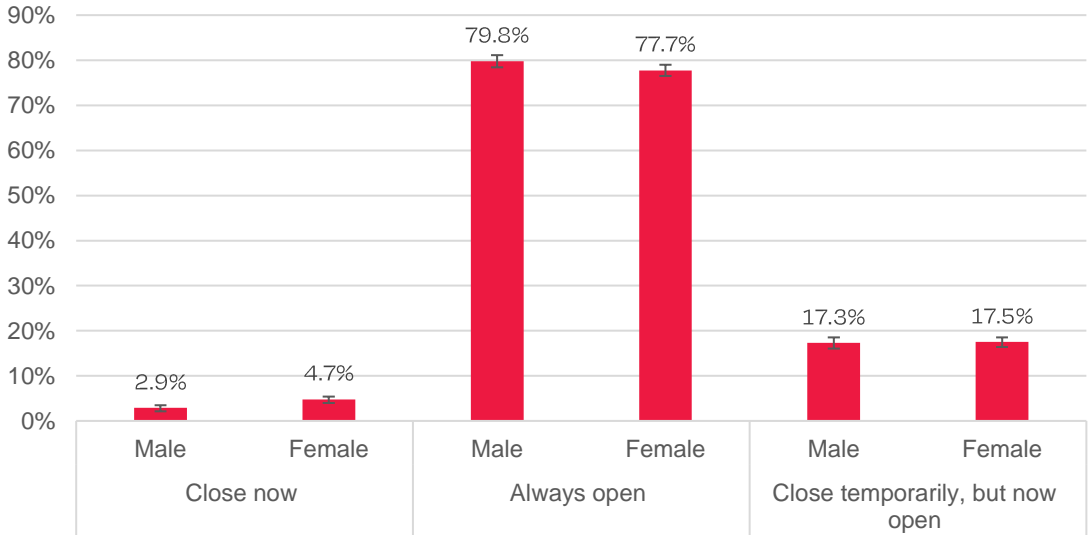
First, students in general are more likely to sell products that are not associated with big initial investment, which made switching their entire product lineup easier and less costly to do.

Second, certain product categories that female students might be more familiar with, such as F&B and care & beauty, are in high demand during the pandemic, so they could easily enter these product categories.

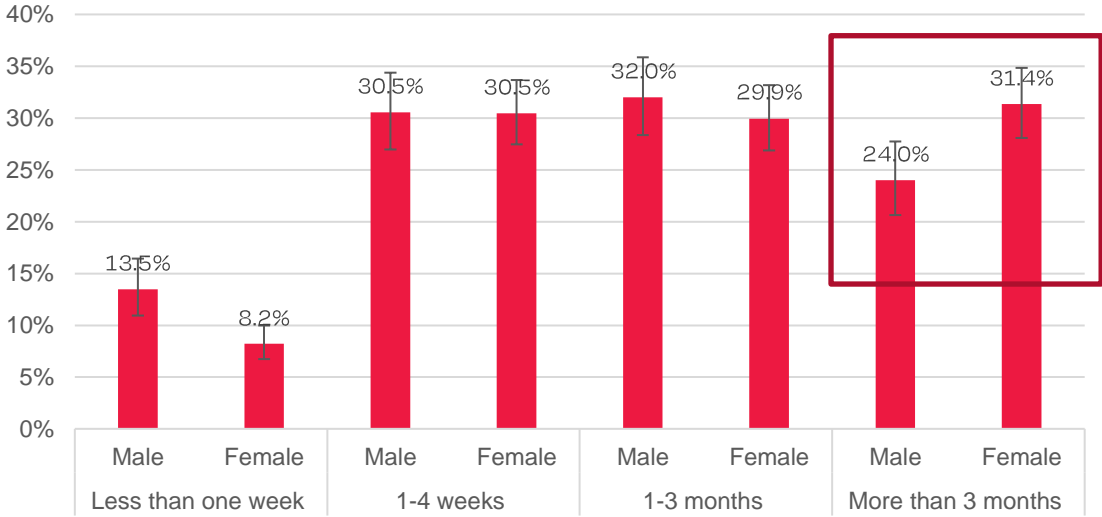
\*Note: Using a logit regression, we regress on "switching" dummy on characteristics of merchants (gender, age, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with a female dummy) and product categories. Samples include all merchants. See [Annex 6](#) for the regression results.

# Female merchants kept their business closed for longer (over 3 months)...

Business closure:  
Female vs. Male



If closed, how long business closed?  
Female vs. Male



Possible reasons why female merchants closed their business for a longer period: (1) Lack of business loans/credits/networks, (2) Busy with other household responsibilities, like taking care of children who do online schooling, (3) Some product categories that female merchants were associated with, such as women's fashion, with were hit hard.

# But, not all female merchants were vulnerable to closing their business; female merchants who were *full-time employees* were less likely to ever close their business compared to male merchants\*

Although being female lowered the probability of always being open for business during the pandemic, being female and a full-time employee increased the probability of their business always remaining open compared to their male counterpart.

One possible reason is being a full-time employee might mean having more savings and additional constant income and cashflow to keep the online business open during difficult times.

Both male and female merchants, who were self-employed or a full-time employee, aged above 45, with tertiary/further education, with one or no dependent, and were using e-commerce as their primary source of income, while not being the household's breadwinner, had a higher likelihood of always opening their business during the pandemic.

Closing for more than 3 months was associated with not being a self-employed or not being old enough (55 or above), which could be related to work experience.

\*Note: Using a logit regression, we regress on "always open" dummy on characteristics of merchants (gender, age, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with a female dummy) and product categories. Samples include all merchants. See [Annex 7](#) for the regression results.

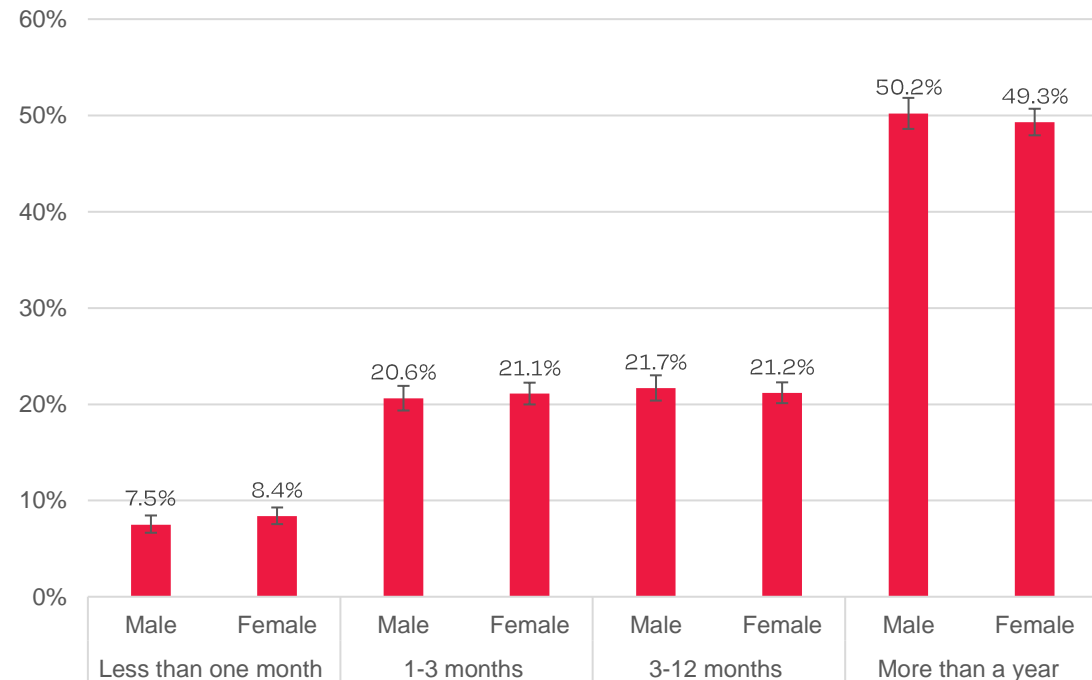




# There is no apparent difference in terms of how female and male merchants perceived business sustainability going forward if current conditions persisted



Perception of future business sustainability:  
Female vs. Male

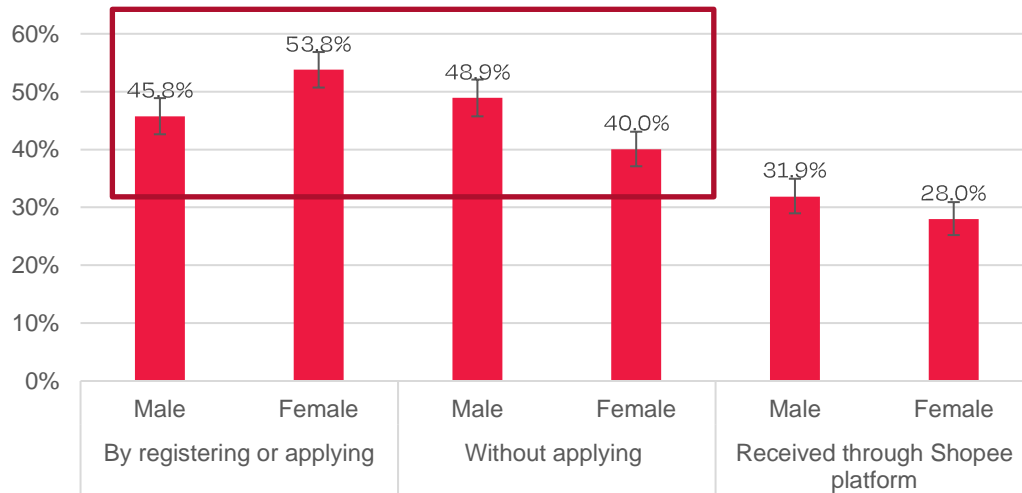


**What** types  
of business support  
and government  
assistance were  
received and  
desired?

06

## Female merchants had a higher incidence of applying for government assistance than male merchants

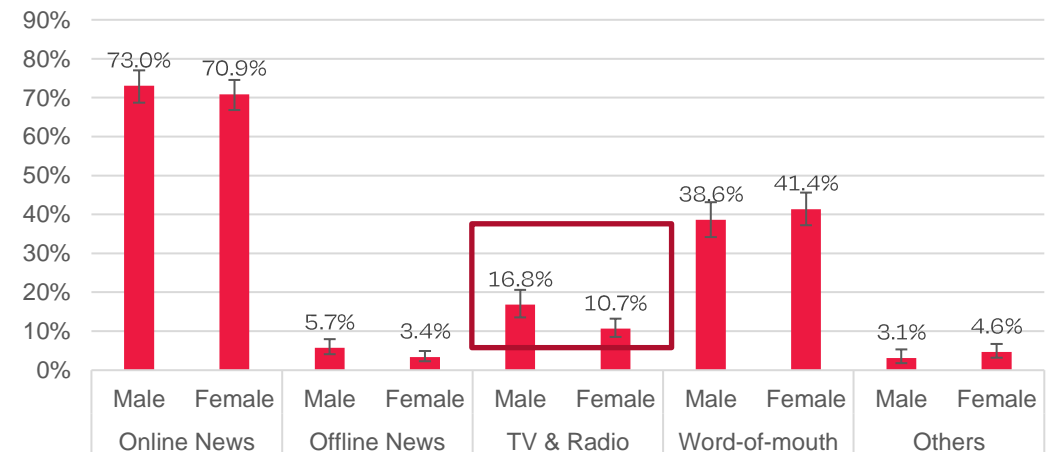
Distribution of how merchants received government assistance during the pandemic:  
Female vs. Male\*



\*Note: Only among merchants who received one or more government assistance program(s). Multiple answers are allowed.

## Male merchants had a higher incidence of using TV & Radio to access information about government assistance than female merchants

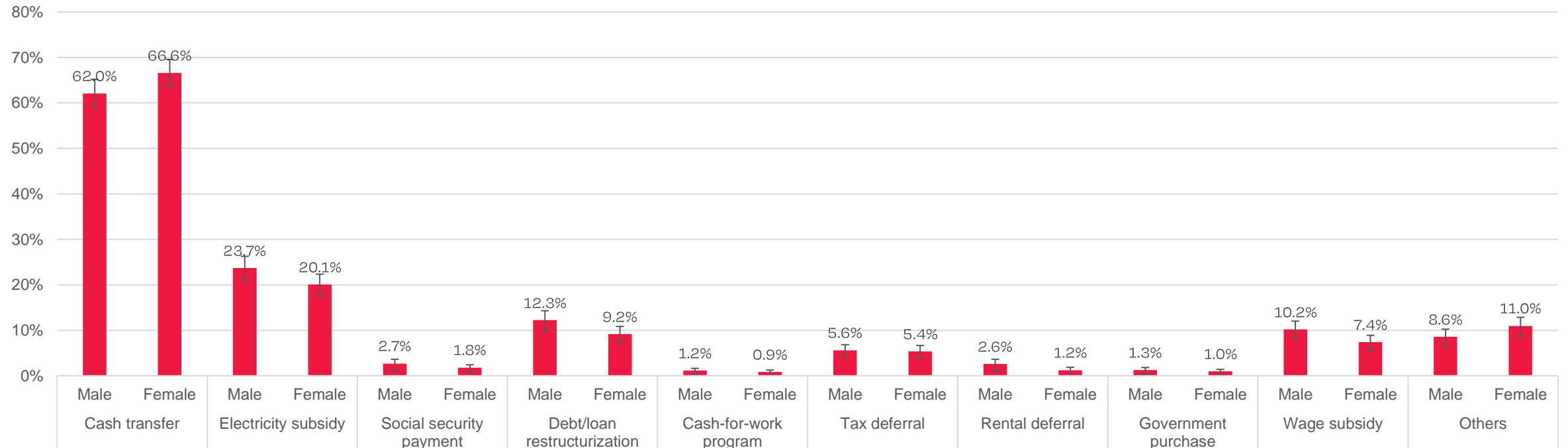
Distribution of how merchants who applied heard about government assistance programs:  
Female vs. Male\*\*



\*\*Note: Only among merchants who registered/applied for government assistance program(s) and received one or more government assistance program(s). Multiple answers are allowed.

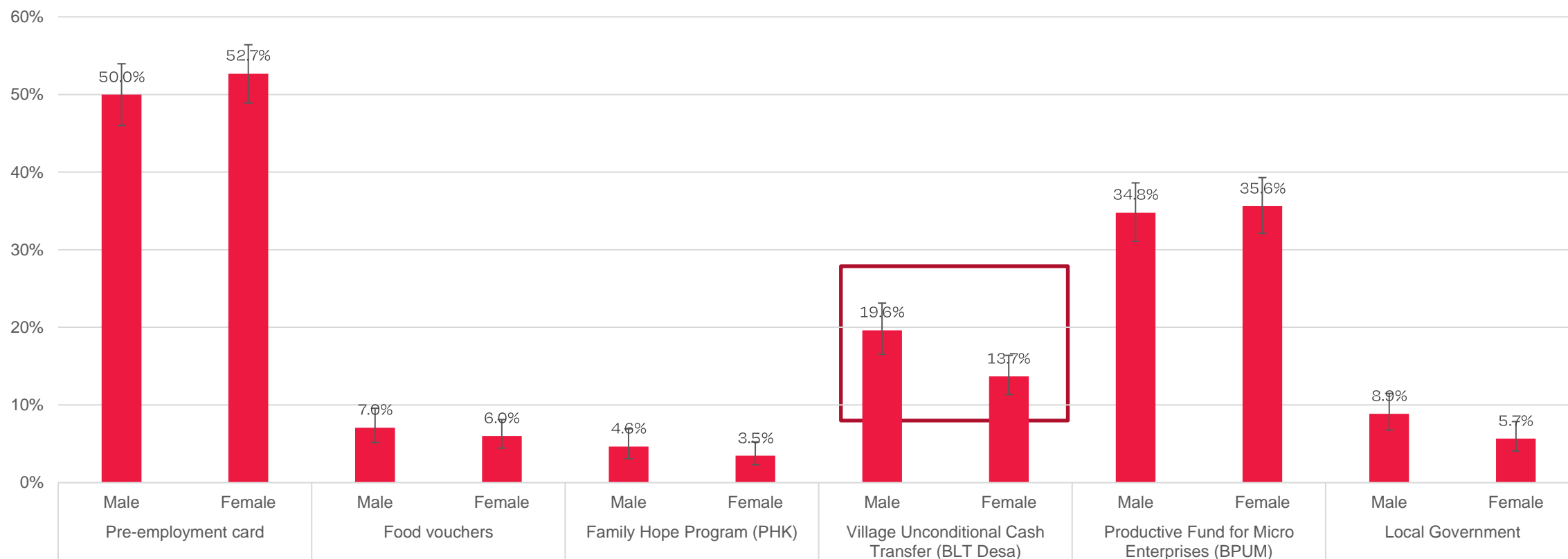
# There was no significant difference in the type of government assistance received between female and male merchants

Distribution of government assistance programs received:  
Female vs. Male



\*Note: Only among merchants who received one or more government assistance program(s). Multiple answers are allowed.

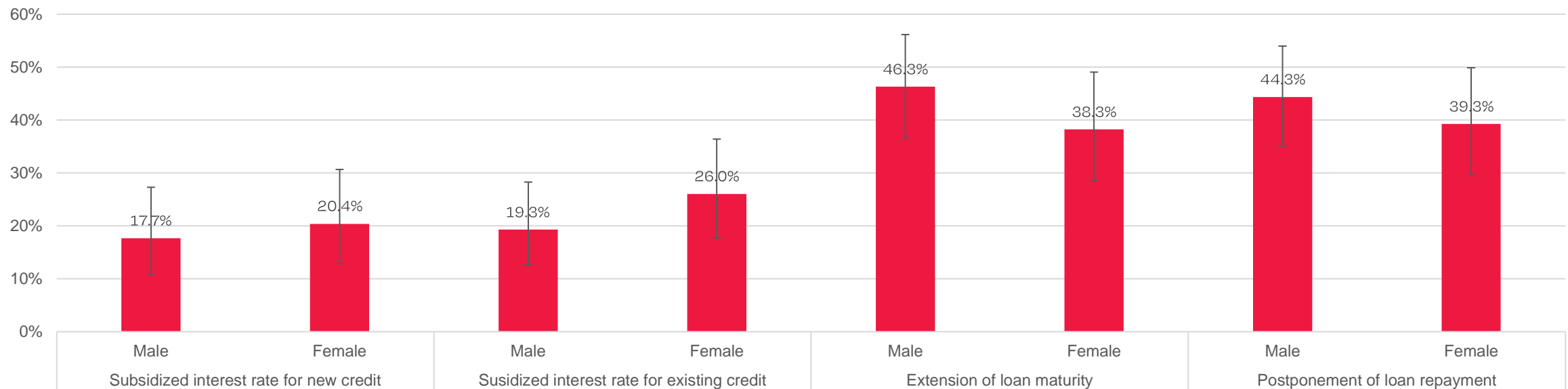
# Among those who received cash assistance programs, only for the village unconditional cash transfers program, male merchants appeared to have a higher incidence of receiving it than female merchants



\*Note: Only among merchants who received one or more government cash assistance program(s). Multiple answers are allowed.

# There was no apparent difference between male and female merchants in terms of the types of debt service restructuring program they received, although a small sample bias issue could weaken the finding

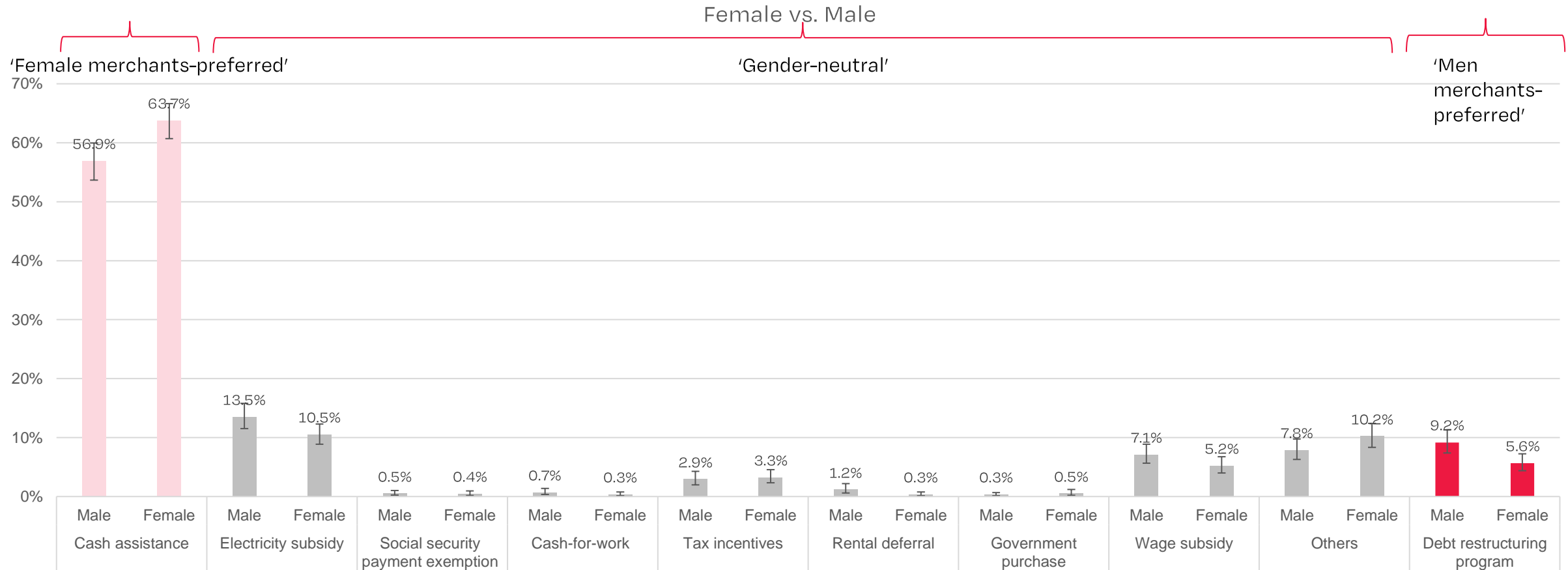
Distribution of debt restructuring programs received:  
Female vs. Male\*



\*Note: Only among merchants who received one or more government debt restructuring program(s). Multiple answers are allowed. Sample size: 318 (unweighted)

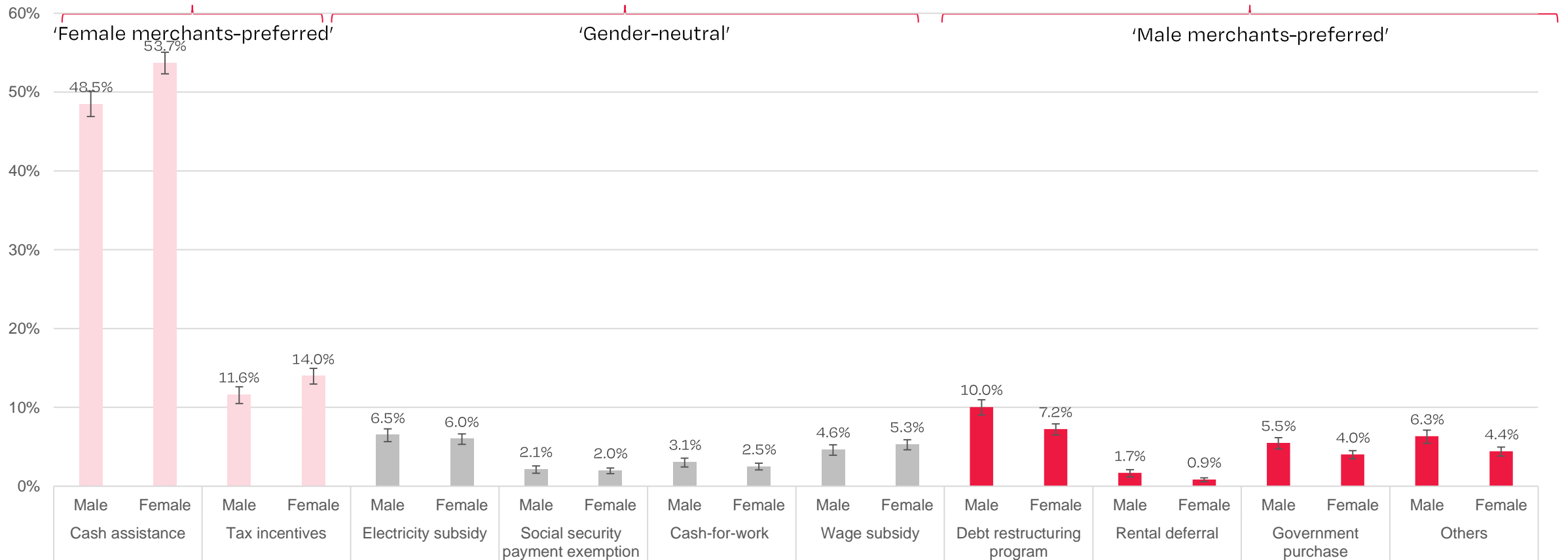
# A higher share of female merchants found cash assistance useful to have mitigated the impacts of the pandemic, while a higher share of male merchants found debt restructuring program useful

Distribution of which government assistance programs received that merchants found useful:



# Female and male merchants had slightly different preferences in terms of government assistance programs they *hoped* to receive

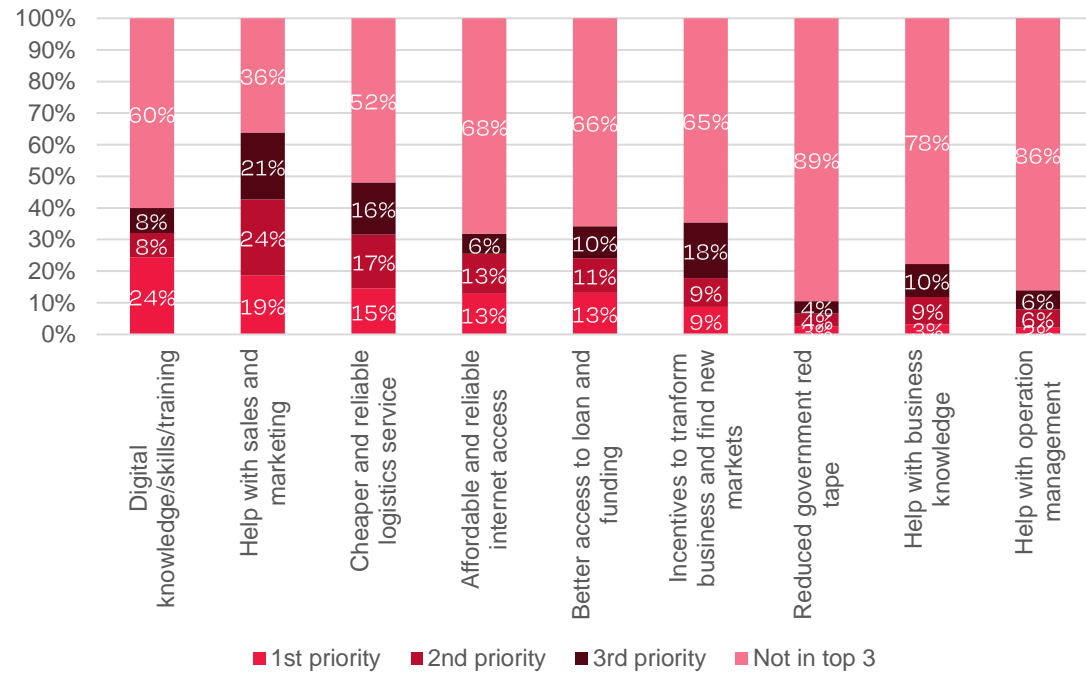
Distribution of government assistance programs that merchants hoped to receive:  
Female vs. Male



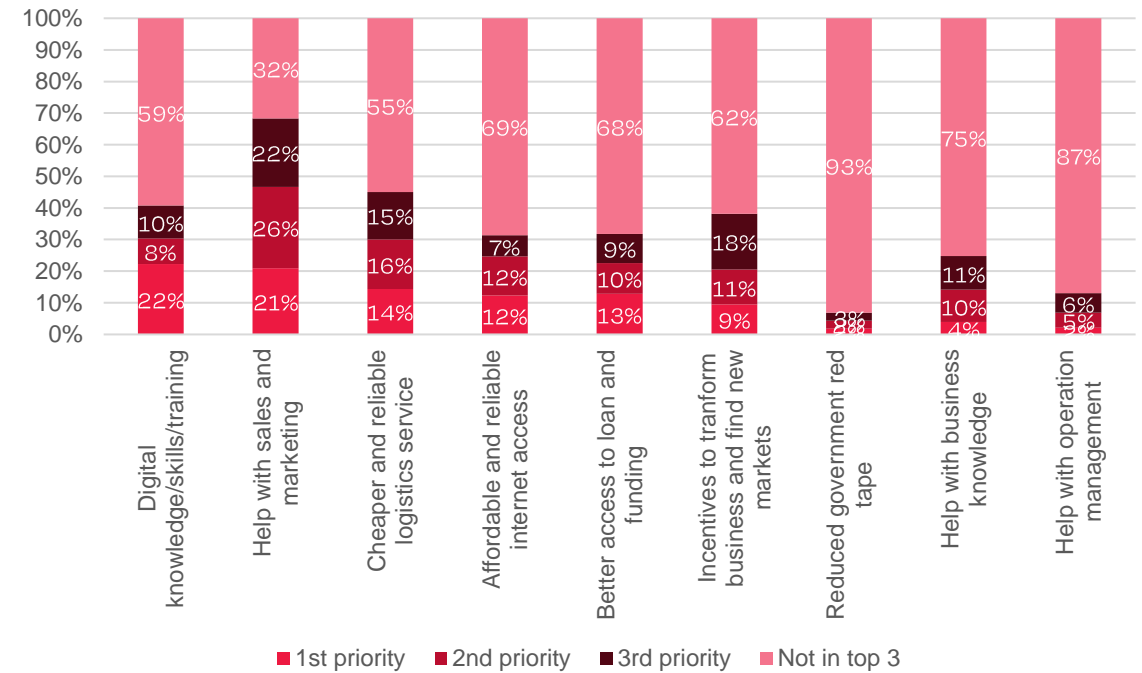


# There is no apparent difference in the top three business support programs desired by female and male merchants: (1) digital knowledge/skills/training, (2) sales and marketing, and (3) cheaper and reliable logistics

Distribution of the top three business support programs desired by male merchants



Distribution of the top three business support programs desired by female merchants



# Controlling for other factors, female merchants were more likely to allocate their cash assistance on savings compared to male merchants\*

Generally, recipients of government cash assistance used their cash for usage in line with the program's goal.\* For example, food voucher program was most likely used for consumption while productive fund for micro enterprises (BPUM) was most likely used for business.

VARIABLES	Cash Transfer: Use for business	Cash Transfer: Use for consumption	Cash Transfer: Use for saving
<b>Female (D=1)</b>	0.282 (0.383)	0.171 (0.369)	1.114* (0.595)
<b>Self-employed/owner</b>	0.727** (0.301)	-0.745*** (0.266)	-0.087 (0.529)
<b>Household worker</b>	-0.176 (1.102)	0.321 (0.849)	0.242 (1.367)
<b>Student</b>	0.905 (0.684)	-1.542* (0.910)	0.631 (0.651)
<b>Part-time employee</b>	-0.059 (0.429)	-0.186 (0.397)	0.923 (0.642)
<b>Full-time employee</b>	0.437 (0.368)	-0.041 (0.360)	0.619 (0.612)
<b>Female * Self-employed/owner</b>	-0.337 (0.416)	0.099 (0.388)	-0.747 (0.654)
<b>Female * Household worker</b>	0.056 (1.141)	-0.648 (0.912)	-1.457 (1.408)
<b>Female * Student</b>	-0.952 (0.863)	0.856 (1.068)	No obs
<b>Female * Part-time employee</b>	-0.512 (0.627)	-0.398 (0.557)	-1.403 (0.963)
<b>Female * Full-time employee</b>	-0.932* (0.544)	0.122 (0.521)	-0.728 (0.812)
<b>Cash Transfer: Pre-employment Card</b>	0.741*** (0.200)	0.334* (0.186)	1.442*** (0.298)
<b>Cash Transfer: Food stamps</b>	-0.951*** (0.305)	1.379*** (0.318)	-0.076 (0.554)
<b>Cash Transfer: Family Hope Program</b>	0.241 (0.359)	-0.118 (0.377)	-0.264 (0.619)
<b>Cash Transfer: Unconditional Cash Transfer Village (BLT-Desa)</b>	-0.157 (0.202)	0.957*** (0.217)	1.717*** (0.330)
<b>Cash Transfer: Productive Fund for SMEs (BLT-Produktif)</b>	2.287*** (0.236)	-1.246*** (0.187)	0.848*** (0.298)
<b>Cash Transfer: Local government</b>	-0.017 (0.259)	0.708*** (0.263)	0.461 (0.486)
<b>Constant</b>	-1.724 (1.392)	1.623 (1.290)	-2.458 (1.743)
<b>Observations</b>	2,224	2,224	2,209

\*Note: Using a logit regression, we regress on each of utilization dummies (savings, consumption, and business) on characteristics of merchants (gender, age, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with a female dummy) and product categories. Samples include all merchants. See [Annex 8](#) for the regression results.

# Key Takeaways

1. E-commerce is still a small part of the entrepreneurship business, but rapidly growing
2. Gender gaps are smaller in e-commerce platforms than in the offline business or enterprise population in terms of gender composition, business size, and being a primary breadwinner in the household
3. Gender gaps in e-commerce platforms, especially in sales performance, could be partly explained by occupational segregation and employment status, but not access to government assistance or business support programs, or business size
4. Unexplained gender gap in sales performance demands more studies
5. Among female merchants, there were heterogeneities in terms of sales performance, coping mechanisms, business resilience, etc., indicating that female merchants should not be seen as one aggregated group only
6. Positive deviance of some groups of female merchants who did better than others in some aspects of business performance, such as sales performance, coping mechanisms, and business resilience, could provide lessons learned on how female merchants could be supported in the future

# Next Steps

## Promote and enhance online entrepreneurship

- a. Provide business trainings and mentoring programs and establish networking platforms
- b. Offer accelerator programs for growth-oriented entrepreneurs

## Improve participation of women in online entrepreneurship

- a. Tailor programs and business plan training for women with young children
- b. Promote access to safe, reliable, and affordable child and elderly care
- c. Challenge social norms on gendered care responsibilities

## Closing knowledge gaps

- a. Conduct analytical studies to understand gender differences in activities and profits for online entrepreneurs
- b. Conduct RCTs to create growth mindsets paired with other interventions like business training or childcare options.

# Thank you

Contact:

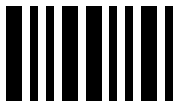
**Maria Monica Wihardja**

Team members:

Maria Monica Wihardja (World Bank)

Putu Sanjiwacika Wibisana (World Bank)

Visit part 1 of our analysis: [Insights from The COVID-19 Digital Merchant Survey](#)



# Annexes



### Calibration Rake/RIM Weighting

Due to the high rates of non-responses and attrition in online surveys, the distribution of responses is often quite different from that of the target population.

A cell weighting approach (e.g. provincial location in the column and business size in the row) can be used to assign a weight to each cell in the sample of the online survey so that the weighted total of each cell becomes identical to the target population.

Rake/RIM weighting is used to reweight sampled when the cell-level values of the true distribution are unavailable, but row and column totals are provided. It is an iterative procedure that focuses on one feature at a time to make the marginal distribution of the sample in terms of that feature identical to that of the target population, then proceeding to the next features, and repeating the process until convergence is achieved:

Step 1: Calculate the weighted totals of the cells from the survey

Step 2: Compare those totals against the total from the auxiliary data

Step 3: Rake across by dividing the total of the rows in the auxiliary data by the total from the survey data. Multiply the values in each cell of the respective rows. The total in the rows now match those in the auxiliary data

Step 4: Rake down (similar to rake across by using columns instead of rows)

Step 5: Repeat process until convergence is reached

Step 6: Divide the raked totals by the weighted totals from the survey data. Apply these weights to each cell.

## Annex 2

Due to sensitivities to ask directly about sales and hence merchants' reluctance to fill-in the survey, and the higher likelihood of merchants to report inaccurate figures, we asked sales performance using categorical questions:

### (Total or Online) Sales category

1	Business not yet started
2	No sales
3	Less than 50k
4	50 - 100k
5	100 - 250k
6	250 -500k
7	500 - 1,000k
8	1,000 - 1,500k
9	1,500 - 2,500k
10	2,500 - 5,000k
11	5,000 - 7,500k
12	7,500 - 10,000k
13	10,000 - 15,000k
14	15,000 - 25,000k
15	25,000 - 50,000k
16	50,000 - 100,000k
17	More than 100,000k





## Annex 3a: Determinants of sales among pre-existing merchants only (regression specification)

### (1) Multinomial logit

$$P(y_i = 1) = \frac{e^{\beta_1 \cdot X_i}}{1 + \sum_1^2 e^{\beta_k \cdot X_i}},$$
$$P(y_i = 2) = \frac{e^{\beta_2 \cdot X_i}}{1 + \sum_1^2 e^{\beta_k \cdot X_i}}$$

where:

$y_i = 1$ , if total or online sales in November is at the bottom 40%

$y_i = 2$ , if total or online sales in November is at the top 10%

$y_i = 0$ , Not belonging to either two categories is the base category for this regression.

$X'_{1i}$ s

- characteristics of the merchants namely gender, age, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with a female dummy
- characteristics of business namely business age since joining online, product categories, as well as sales in April

Samples are restricted to pre-existing merchants

## Annex 3a: Determinants of sales among pre-existing merchants only (regression specification, cont.)

### (2) OLS

$$y_i = \beta_0 + \beta_1 X_i + \varepsilon_i$$

where:

$y_i$

- Total sales in November
- Total online sales in November

$X'_{1i}$ s

- characteristics of the merchants namely gender, age, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with a female dummy
- characteristics of business namely business age since joining online, product categories, as well as sales in April

Samples are restricted to pre-existing merchants

# Annex 3b: Determinants of sales among pre-existing merchants only (selected regression coefficients)

	Rank based on Total sales in November		Rank based on Online sales in November		Total sales November	Online sales November
	Bottom 40%	Top 10%	Bottom 40%	Top 10%		
<b>Female</b>	0.329 (0.333)	0.963 (0.730)	1.090*** (0.326)	-0.283 (0.773)	-0.481 (0.427)	-1.187*** (0.422)
<b>Self-employed/owner</b>	-0.521*** (0.159)	0.723 (0.439)	-0.609*** (0.145)	0.353 (0.424)	0.832*** (0.212)	0.754*** (0.194)
<b>Homemaker</b>	-0.0134 (0.403)	-13.88*** (0.687)	0.0704 (0.383)	-13.73*** (0.699)	-0.754** (0.333)	-1.134*** (0.399)
<b>Student</b>	0.0428 (0.359)	1.687** (0.719)	0.207 (0.322)	1.577** (0.778)	0.785 (0.563)	0.549 (0.556)
<b>Part-time employee</b>	0.202 (0.221)	-0.108 (0.687)	0.326 (0.203)	-0.159 (0.760)	-0.162 (0.271)	-0.340 (0.296)
<b>Full-time employee</b>	-0.233 (0.236)	0.355 (0.516)	-0.113 (0.212)	-0.0153 (0.515)	0.335 (0.277)	0.120 (0.274)
<b>Female * Self-employed/owner</b>	0.00600 (0.195)	-0.750 (0.563)	0.00219 (0.181)	-0.0461 (0.527)	-0.0276 (0.245)	0.146 (0.235)
<b>Female * Homemaker</b>	0.151 (0.423)	12.88*** (0.799)	0.0468 (0.402)	13.15*** (0.797)	0.593 (0.383)	1.009** (0.425)
<b>Female * Student</b>	-0.569 (0.412)	-1.586* (0.948)	-0.747** (0.380)	-0.513 (0.919)	0.155 (0.631)	0.409 (0.623)
<b>Female * Part-time employee</b>	-0.584 (0.373)	-1.124 (0.953)	-0.616* (0.340)	0.261 (1.137)	0.542 (0.502)	0.856* (0.494)
<b>Female * Full-time employee</b>	0.00931 (0.293)	-1.084 (0.748)	-0.233 (0.269)	-0.00551 (0.694)	-0.169 (0.359)	0.352 (0.352)
<b>Primary income earner</b>	0.408** (0.163)	0.249 (0.233)	0.431*** (0.162)	0.569** (0.247)	-0.421** (0.165)	-0.379** (0.184)
<b>Female * Primary income earner</b>	-0.476*** (0.183)	-0.362 (0.287)	-0.429** (0.182)	-0.785*** (0.299)	0.409** (0.193)	0.335 (0.213)
<b>Online sales as primary income</b>	-0.137 (0.151)	-0.113 (0.212)	0.0647 (0.137)	-0.257 (0.247)	0.0168 (0.156)	-0.143 (0.181)
<b>Female * Online sales as primary income</b>	0.0105 (0.186)	0.0280 (0.326)	-0.320* (0.171)	0.625* (0.370)	0.199 (0.209)	0.560** (0.225)
<b>Changed product category</b>	0.153 (0.103)	-0.0367 (0.194)	0.235** (0.0992)	-0.200 (0.211)	-0.330*** (0.121)	-0.298** (0.124)
<b>Diversify product category</b>	-0.317*** (0.118)	0.0522 (0.216)	-0.317*** (0.113)	0.297 (0.231)	0.509*** (0.139)	0.417*** (0.145)
<b>Switch product category</b>	-0.335*** (0.124)	0.294 (0.236)	-0.493*** (0.121)	0.239 (0.272)	0.471*** (0.146)	0.604*** (0.160)
<b>Product cat: electronic</b>	-0.268 (0.175)	0.293 (0.241)	-0.0534 (0.167)	-0.178 (0.318)	0.362* (0.194)	0.0949 (0.214)
<b>Product cat: womanmuslim</b>	0.179** (0.0863)	-0.212 (0.158)	0.167** (0.0840)	-0.158 (0.159)	-0.277*** (0.101)	-0.268** (0.107)
<b>Product cat: food</b>	0.281*** (0.0950)	-0.130 (0.179)	0.281*** (0.0936)	-0.308 (0.204)	-0.427*** (0.113)	-0.413*** (0.120)
<b>Product cat: motorcycle</b>	-0.0436 (0.164)	0.135 (0.297)	0.0691 (0.161)	0.706** (0.283)	0.440** (0.183)	0.361* (0.197)
<b>_cons</b>	3.728*** (0.743)	-9.551*** (1.275)	2.481*** (0.605)	-5.242*** (1.690)	1.900** (0.902)	2.347*** (0.872)
<b>N</b>	11237		11237		11237	11237

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Annex 4a: Determinants of being a new merchant (regression specification)

### Logit

$$P(y_i = 1) = \frac{e^{\beta_0 + \beta_1 \cdot X_i}}{1 + e^{\beta_0 + \beta_1 \cdot X_i}},$$

where:

$y_i = 1$ , if merchant is a new merchant (joining online after February 2020)

$y_i = 0$ , otherwise

$X'_{1i}$ s

- characteristics of the merchants namely gender, age, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with a female dummy
- characteristics of business namely business age since joining online, product categories, as well as sales in April

Samples are unrestricted (all merchants)

Annex 4b:  
Determinants of  
being a new  
merchants  
(selected  
regression  
coefficients)

VARIABLES	Is new merchant (joined after pandemic)?
Female (D=1)	-0.407*** (0.130)
Self-employed/owner	-0.460*** (0.107)
Homemaker	-0.003 (0.386)
Student	0.141 (0.211)
Part-time employee	-0.216 (0.159)
Full-time employee	-0.189 (0.142)
Female * Self-employed/owner	0.213 (0.145)
Female * Homemaker	-0.294 (0.401)
Female * Student	0.448* (0.247)
Female * Part-time employee	0.475** (0.231)
Female * Full-time employee	0.357* (0.183)
Youth (15-24)	0.543*** (0.068)
Primary school	-0.313 (0.392)
Junior high school	-0.349 (0.350)
Senior high school	-0.342 (0.337)
Diploma III (D3)	-0.453 (0.346)
Diploma IV (D4)	-0.354 (0.403)
Bachelor's degree	-0.457 (0.338)
Master degree	-0.531 (0.377)
PhD	-0.495 (1.099)
Only 1 dependent	-0.148 (0.105)
Only 2 dependents	-0.247*** (0.092)
3 or more dependents	-0.386*** (0.085)
If primary income earner	0.084 (0.059)
If online selling is primary income	-0.148** (0.067)
Constant	0.550 (0.361)
Observations	15,238

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Annex 5a: Determinants of sales among all merchants (regression specification)

### (1) Multinomial logit

$$P(y_i = 1) = \frac{e^{\beta_1 \cdot X_i}}{1 + \sum_1^2 e^{\beta_k \cdot X_i}},$$
$$P(y_i = 2) = \frac{e^{\beta_2 \cdot X_i}}{1 + \sum_1^2 e^{\beta_k \cdot X_i}}$$

where:

$y_i = 1$ , if total or online sales in November is at the bottom 40%

$y_i = 2$ , if total or online sales in November is at the top 10%

$y_i = 0$ , Not belonging to either two categories is the base category for this regression.

$X'_{1i}$ s

- characteristics of the merchants namely gender, age, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with a female dummy
- characteristics of business namely business age since joining online, product categories, as well as sales in April
- a dummy of being a new merchant (joining online after February 2020) and its interaction term with a female

dummy

Samples are unrestricted (all merchants)

## Annex 5a: Determinants of sales among all merchants (regression specification, cont.)

### (2) OLS

$$y_i = \beta_0 + \beta_1 X_i + \varepsilon_i$$

where:

$y_i$

- Total sales change between April and November
- Total online sales change between April and November

$X'_{1i}$ s

- characteristics of the merchants namely gender, age, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with a female dummy
- characteristics of business namely business age since joining online, product categories, as well as sales in April
- a dummy of being a new merchant (joining online after February 2020) and its interaction term with a female

dummy

Samples are restricted to merchants with sales data in April and November 2020

# Annex 5b: Determinants of sales among all merchants (selected regression coefficients)

	Rank based on Total sales in November		Rank based on Online sales in November		Total sales change, April – November		Online sales change, April – November	
	Bottom 40%	Top 10%	Bottom 40%	Top 10%	Up	Down	Up	Down
<b>Female</b>	0.00492 (0.255)	0.421 (0.596)	0.115 (0.243)	0.183 (0.623)	-0.0310 (0.272)	0.435 (0.319)	-0.488* (0.273)	0.211 (0.346)
<b>Self-employed/owner</b>	-0.767*** (0.118)	1.131*** (0.357)	-0.645*** (0.109)	0.874** (0.362)	0.454*** (0.126)	0.00156 (0.143)	0.547*** (0.125)	0.0832 (0.158)
<b>Homemaker</b>	0.393 (0.422)	0.0554 (0.877)	0.259 (0.370)	0.960 (1.290)	-0.500 (0.424)	-0.246 (0.444)	-0.337 (0.395)	0.196 (0.498)
<b>Student</b>	-0.174 (0.255)	1.873*** (0.562)	-0.132 (0.232)	1.940*** (0.635)	0.299 (0.293)	-0.265 (0.344)	0.200 (0.278)	0.176 (0.382)
<b>Part-time employee</b>	-0.00606 (0.170)	0.308 (0.555)	0.0284 (0.160)	-0.0463 (0.639)	0.331* (0.197)	0.401* (0.218)	0.384** (0.192)	0.576** (0.244)
<b>Full-time employee</b>	-0.313* (0.176)	0.996** (0.420)	-0.140 (0.171)	0.715 (0.436)	0.348** (0.175)	0.0903 (0.200)	0.243 (0.177)	0.218 (0.222)
<b>Female * Self-employed/owner</b>	0.0544 (0.150)	-0.789* (0.445)	-0.00943 (0.142)	-0.299 (0.429)	-0.140 (0.169)	-0.266 (0.187)	-0.129 (0.165)	-0.184 (0.204)
<b>Female * Homemaker</b>	-0.416 (0.433)	-0.535 (0.928)	-0.225 (0.382)	-1.134 (1.320)	0.471 (0.441)	0.175 (0.463)	0.342 (0.412)	-0.116 (0.518)
<b>Female * Student</b>	-0.217 (0.291)	-2.051*** (0.711)	-0.269 (0.274)	-1.899*** (0.714)	0.0532 (0.350)	0.0263 (0.410)	0.305 (0.340)	-0.102 (0.457)
<b>Female * Part-time employee</b>	-0.269 (0.274)	-1.319 (0.815)	-0.137 (0.268)	-0.473 (0.900)	-0.277 (0.284)	-0.544* (0.328)	-0.0856 (0.290)	-0.511 (0.366)
<b>Female * Full-time employee</b>	-0.114 (0.222)	-1.085* (0.565)	-0.333 (0.216)	-0.325 (0.540)	-0.149 (0.242)	-0.0718 (0.275)	0.119 (0.238)	-0.220 (0.302)
<b>Primary income earner</b>	0.383*** (0.118)	0.173 (0.182)	0.357*** (0.115)	0.526** (0.214)	-0.293** (0.122)	0.0947 (0.147)	-0.322*** (0.124)	-0.0836 (0.162)
<b>Female * Primary income earner</b>	-0.305** (0.136)	-0.184 (0.227)	-0.271** (0.134)	-0.536** (0.249)	0.188 (0.145)	-0.200 (0.170)	0.216 (0.146)	0.149 (0.187)
<b>New merchant</b>	-1.701*** (0.116)	0.379** (0.187)	-1.863*** (0.107)	1.114*** (0.202)	0.316*** (0.105)	-0.396*** (0.135)	0.746*** (0.116)	-0.252 (0.176)
<b>Female * New merchant</b>	-0.141 (0.129)	0.558* (0.285)	-0.222* (0.120)	0.126 (0.275)	0.122 (0.144)	0.214 (0.183)	0.215 (0.160)	0.147 (0.235)
<b>Female * Only 1 dependant</b>	0.537** (0.244)	0.130 (0.442)	0.359 (0.232)	0.746* (0.452)	-0.0933 (0.266)	0.362 (0.306)	0.228 (0.266)	0.609* (0.339)
<b>Female * Only 2 dependant</b>	0.301 (0.210)	0.389 (0.389)	0.197 (0.203)	0.714* (0.394)	-0.213 (0.230)	0.237 (0.266)	0.0831 (0.233)	0.429 (0.292)
<b>Female * 3 or more dependant</b>	0.158 (0.197)	0.199 (0.342)	0.217 (0.188)	0.501 (0.356)	-0.0637 (0.212)	0.343 (0.246)	0.0714 (0.214)	0.297 (0.271)
<b>Online sales as primary income</b>	-0.0219 (0.114)	-0.152 (0.164)	0.0553 (0.108)	-0.0629 (0.208)	0.0118 (0.110)	0.108 (0.124)	-0.0665 (0.109)	0.148 (0.142)
<b>Female * Online sales as primary income</b>	-0.123 (0.143)	0.140 (0.246)	-0.293** (0.137)	0.349 (0.276)	-0.0101 (0.148)	-0.349** (0.167)	0.283* (0.146)	-0.281 (0.187)
<b>Changed product category</b>	0.157* (0.0885)	-0.150 (0.101)	0.204** (0.0881)	-0.186 (0.171)	0.0545 (0.0851)	0.409*** (0.108)	-0.203 (0.0888)	0.233** (0.118)
<b>Diversify product category</b>	-0.273*** (0.0892)	0.0401 (0.174)	-0.255*** (0.0883)	0.158 (0.179)	0.257** (0.105)	-0.243** (0.114)	0.353*** (0.101)	0.0528 (0.126)
<b>Switch product category</b>	-0.251*** (0.0932)	0.378** (0.182)	-0.336*** (0.0926)	0.512*** (0.187)	0.136 (0.106)	-0.270** (0.120)	0.151 (0.103)	-0.139 (0.132)
<b>_cons</b>	3.908*** (0.556)	-6.075*** (1.305)	3.387*** (0.462)	-5.357*** (1.485)	-0.303 (0.537)	-0.551 (0.648)	-0.589 (0.554)	-1.275* (0.732)
<b>N</b>	15238		15238		13475		13475	

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



## Annex 6a: Determinants of switching product categories (regression specification)

### Logit

$$P(y_i = 1) = \frac{e^{\beta_0 + \beta_1 \cdot X_i}}{1 + e^{\beta_0 + \beta_1 \cdot X_i}},$$

where:

$y_i = 1$ , if merchant switched product categories

$y_i = 0$ , otherwise

$X'_{1i}$ s

- characteristics of the merchants namely gender, age, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with a female dummy
- product categories

Samples are unrestricted (all merchants)

Annex 6b:  
Determinants of  
switching  
product  
categories  
(selected  
regression  
coefficients)

VARIABLES	If merchants change products between February and November	If merchants diversify products between February and November	switch
Female (D=1)	0.174 (0.123)	0.070 (0.159)	0.182 (0.173)
Self-employed/owner	0.015 (0.104)	-0.007 (0.137)	0.041 (0.139)
Household worker	-0.330 (0.331)	-0.665 (0.453)	0.178 (0.416)
Student	0.095 (0.213)	0.224 (0.267)	-0.354 (0.329)
Part-time employee	0.222 (0.157)	0.108 (0.206)	-0.075 (0.224)
Full-time employee	0.122 (0.138)	0.137 (0.177)	0.113 (0.187)
Female * Self-employed/owner	-0.104 (0.136)	-0.008 (0.174)	-0.003 (0.189)
Female * Household worker	0.988 (0.344)	0.587 (0.468)	0.118 (0.438)
Female * Student	-0.229 (0.245)	-0.241 (0.309)	0.616* (0.371)
Female * Part-time employee	-0.142 (0.237)	0.052 (0.286)	-0.116 (0.336)
Female * Full-time employee	0.073 (0.179)	0.032 (0.224)	0.010 (0.249)
Product February: Man fashion (watch, accessories)	0.524*** (0.156)	-0.179 (0.158)	0.428** (0.169)
Product February: Woman fashion (watch, accessories)	0.856*** (0.109)	-0.172 (0.126)	0.699*** (0.135)
Product February: Woman fashion (clothes, shoes, bags)	0.398*** (0.062)	-0.117 (0.077)	-0.323*** (0.096)
Product February: Hobby & collection, incl.travel and entertainment	0.622*** (0.080)	-0.316*** (0.105)	0.272** (0.108)
Product February: Food and beverages	0.841*** (0.071)	-0.043 (0.087)	0.315*** (0.097)
Product February: Care and beauty	0.391*** (0.066)	-0.246*** (0.083)	-0.413*** (0.102)
Product February: Souvenir	1.177*** (0.103)	0.254** (0.111)	0.728*** (0.124)
Observations	15,238	15,238	15,238

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Annex 7a: Determinants of always opening business (regression specification)

### Logit

$$P(y_i = 1) = \frac{e^{\beta_0 + \beta_1 \cdot X_i}}{1 + e^{\beta_0 + \beta_1 \cdot X_i}},$$

where:

$y_i = 1$ , if merchant always opened business

$y_i = 0$ , otherwise

$X'_{1i}$ s

- characteristics of the merchants namely gender, age, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with a female dummy
- product categories

Samples are unrestricted (all merchants)

Annex 7b:  
Determinants of  
always opening  
business  
(selected  
regression  
coefficients)

VARIABLES	Always open (BC: Ever closed)
<b>Female (D=1)</b>	-0.284* (0.147)
<b>Self-employed/owner</b>	0.305** (0.125)
<b>Household worker</b>	0.135 (0.517)
<b>Student</b>	0.197 (0.277)
<b>Part-time employee</b>	-0.226 (0.178)
<b>Full-time employee</b>	0.286* (0.171)
<b>Female * Self-employed/owner</b>	0.147 (0.163)
<b>Female * Household worker</b>	0.048 (0.530)
<b>Female * Student</b>	0.066 (0.321)
<b>Female * Part-time employee</b>	0.190 (0.260)
<b>Female * Full-time employee</b>	0.586** (0.231)
<b>If primary income earner</b>	-0.120* (0.067)
<b>If online selling is primary income</b>	0.359*** (0.075)
<b>Constant</b>	2.879*** (0.522)
<b>Observations</b>	15,225

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Annex 8a: Determinants of utilization of cash assistance (regression specification)

### Logit

$$P(y_i = 1) = \frac{e^{\beta_0 + \beta_1 \cdot X_i}}{1 + e^{\beta_0 + \beta_1 \cdot X_i}},$$

where:

$y_i = 1$ , if merchant used cash assistance for (i) consumption, (ii) business, or (iii) savings

$y_i = 0$ , otherwise

$X'_{1i}$ s

- characteristics of the merchants namely gender, age, highest education, employment status, whether primary breadwinner, whether e-commerce is primary source of income, number of dependents, and interaction terms with a female dummy
- product categories

Samples are unrestricted (all merchants)

Annex 8b:  
Determinants of  
utilization of  
cash assistance  
(selected  
regression  
coefficients)

VARIABLES	Cash Transfer: Use for business	Cash Transfer: Use for consumption	Cash Transfer: Use for saving
<b>Female (D=1)</b>	0.282 (0.383)	0.171 (0.369)	1.114* (0.595)
<b>Self-employed/owner</b>	0.727** (0.301)	-0.745*** (0.266)	-0.087 (0.529)
<b>Household worker</b>	-0.176 (1.102)	0.321 (0.849)	0.242 (1.367)
<b>Student</b>	0.905 (0.684)	-1.542* (0.910)	0.631 (0.651)
<b>Part-time employee</b>	-0.059 (0.429)	-0.186 (0.397)	0.923 (0.642)
<b>Full-time employee</b>	0.437 (0.368)	-0.041 (0.360)	0.619 (0.612)
<b>Female * Self-employed/owner</b>	-0.337 (0.416)	0.099 (0.388)	-0.747 (0.654)
<b>Female * Household worker</b>	0.056 (1.141)	-0.648 (0.912)	-1.457 (1.408)
<b>Female * Student</b>	-0.952 (0.863)	0.856 (1.068)	No obs
<b>Female * Part-time employee</b>	-0.512 (0.627)	-0.398 (0.557)	-1.403 (0.963)
<b>Female * Full-time employee</b>	-0.932* (0.544)	0.122 (0.521)	-0.728 (0.812)
<b>Cash Transfer: Pre-employment Card</b>	0.741*** (0.200)	0.334* (0.186)	1.442*** (0.298)
<b>Cash Transfer: Food stamps</b>	-0.951*** (0.305)	1.379*** (0.318)	-0.076 (0.554)
<b>Cash Transfer: Family Hope Program</b>	0.241 (0.359)	-0.118 (0.377)	-0.264 (0.619)
<b>Cash Transfer: Unconditional Cash Transfer Village (BLT-Desa)</b>	-0.157 (0.202)	0.957*** (0.217)	1.717*** (0.330)
<b>Cash Transfer: Productive Fund for SMEs (BLT-Produktif)</b>	2.287*** (0.236)	-1.246*** (0.187)	0.848*** (0.298)
<b>Cash Transfer: Local government</b>	-0.017 (0.259)	0.708*** (0.263)	0.461 (0.486)
<b>Constant</b>	-1.724 (1.392)	1.623 (1.290)	-2.458 (1.743)
<b>Observations</b>	2,224	2,224	2,209

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1