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**THE IMPACTS OF THE COVID-19
PANDEMIC ON MICRO, SMALL, AND
MEDIUM ENTERPRISES IN ASIA AND
THEIR DIGITALIZATION RESPONSES**

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Abstract

Soon after the outbreak of the COVID-19 pandemic, many governments began extending financial and other forms of support to micro, small, and medium enterprises (MSMEs) and their workers because smaller firms are more vulnerable to negative shocks to their supply chain, labor supply, and final demand for goods and services than larger firms. Since MSMEs are diverse, however, the severity of the pandemic's impact on them varies considerably depending on their characteristics. Using online survey data of MSMEs from eight developing economies in South, Southeast, and Northeast Asia, this paper attempts to deepen our understanding of the impact of the pandemic on MSMEs, especially their employment, sales revenue, and cash flow. It also characterizes those firms that began participating in online commerce and tries to determine how their use of online commerce and their employment are related in this difficult time. This paper also examines the government support that MSMEs have received and the extent to which it has satisfied their support needs.

Keywords: COVID-19; micro, small, and medium enterprises (MSMEs); layoffs; cash shortage; digitalization

JEL Classification: D22, J63, L25, O53

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1. INTRODUCTION

Within a month or a few months of the World Health Organization (WHO) declaring COVID-19 to be a global public health emergency of international concern on 30 January 2020 (WHO 2020), governments in many countries as well as the multilateral development banks launched rapid policy responses, including support for vulnerable groups of micro, small, and medium enterprises (MSMEs) (e.g., ADB 2020a; Felipe and Fullwiler 2020). Despite the announcement of large-scale economic stimulus packages, the economic impacts of the pandemic spread rapidly over the whole world. In June 2020, the ADB (2020b) and the International Monetary Fund (2020a) had to revise downward the GDP growth predictions that they had released less than two months previously.

Initially, government support tended to treat all MSMEs almost equally. Since MSMEs are far from homogeneous, however, there was an expectation that a certain differentiated approach to MSME support would work better than the one-size-fits-all approach. Indeed, many governments began treating MSMEs in different sectors differently after observing substantial diversity among sectors in the damage resulting from the pandemic. With a view to assisting with policy adjustments, several groups of researchers conducted empirical studies of the COVID-19 impacts on MSMEs in different countries, including Bartik et al. (2020) and Fairlie (2020) in the United States; Shafi, Liu, and Ren (2020) in Pakistan; Guo et al. (2020) and Lu et al. (2020) in the People's Republic of China; and Ferrando and Ganoulis (2020) in 12 European countries. While some of these studies examined the severity and significance of the COVID-19 impacts, others explored the characteristics of those firms that the pandemic hit particularly hard, and other studies asked what policy support firms considered to be the most effective. The existing studies are so limited in number that the coverage of countries is very small and the validity of their findings and their generalizability to other countries remain unconfirmed.

The present study uses survey data of MSMEs in eight developing countries in South, Southeast, and Northeast Asia to examine the major disruptions that MSMEs are facing, the characteristics of hard-hit MSMEs, and their policy needs. We conducted our survey first in late May to early June 2020 in Viet Nam and Malaysia and then expanded in August to early September 2020 to cover the other six countries: Bangladesh, India, Pakistan, Indonesia, the Lao PDR, and Mongolia. These eight countries' situations vary considerably in the pandemic's severity in terms of the number of infection cases and the number of deaths relative to the population and the severity of the containment measures as well as the income levels and economic and political institutions. Naturally, we find significant differences among the eight countries in the magnitude of the pandemic's impacts on MSMEs. Interestingly, however, we find that firms that the crisis hit hard in different countries have similar characteristics.

We also find some differences between our findings and those of some existing studies. For example, Fairlie (2020) concluded that the pandemic affected female-owned businesses disproportionately, whereas we do not find any evidence of stronger impacts on firms with female entrepreneurs as their leaders as far as sales revenue is concerned. As another example, while an increasing number of MSMEs in our sample have recently begun selling products and services through online marketplaces and using mobile message services and social media, they lag far behind SMEs in the PRC in Guo et al.'s (2020) sample, which have adopted advanced digital technologies including artificial intelligence (AI), the internet of things (IOT), and platform development. While Guo et al. (2020) argued that digitalization improves firms'

business performance and responses to the pandemic crisis, we do not find any evidence indicating a positive association between e-commerce and sales or between e-commerce and cash flow management.

Instead, we find that online sales have a negative association with employment, that the majority of MSMEs in our sample are willing to expand their e-commerce, and that those MSMEs with a higher percentage of online sales are more willing to increase this percentage. These results suggest that MSMEs' entrepreneurs consider online business to be beneficial, if not profitable; for example, it helps them to gain more stable profits, if not larger profits, or enter a higher value-added niche as opposed to the large-volume, low-price segment of the market. In this sense, our findings lend support to the popular argument that digitalization holds the key to business performance.

As regards government support, we find that there is an association between the need for and the provision of government support. Furthermore, small enterprises are more likely to have received support related to tax and loans than microenterprises and long-established firms are more likely to have received tax- and loan-related support and are keener to receive support than younger firms.

The rest of the paper proceeds as follows. Section 2 describes the survey design and implementation, possible sources of sample selection bias, and the characteristics of sample firms. Section 3 presents the data on changes in employment, sales, and cash shortages and then uses regressions to explore the relationships between these variables and enterprises' characteristics. Sections 4 and 5 report the results of the descriptive and regression analyses of MSMEs' digitalization and government support, respectively. Section 6 concludes the paper with a summary of the major findings.

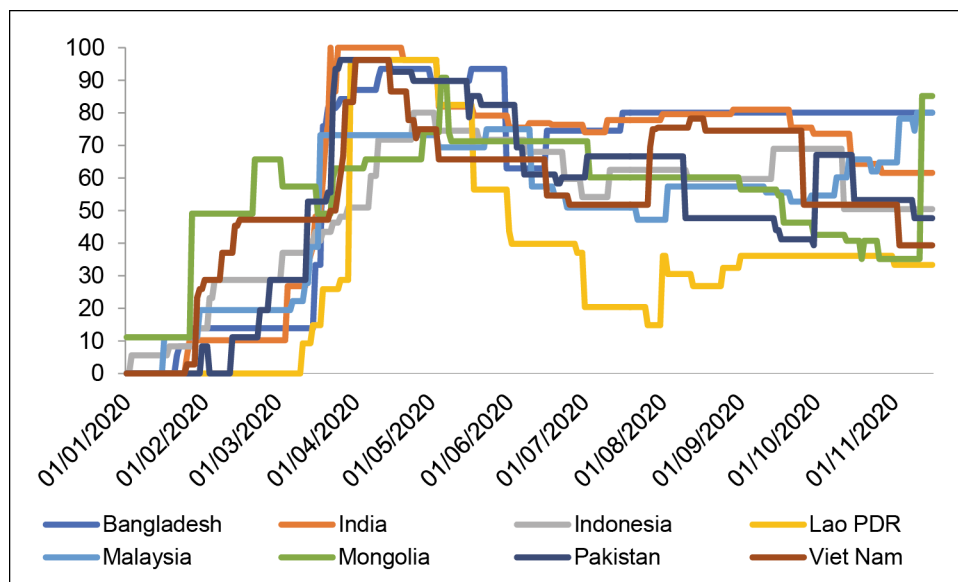
2. SURVEY DESIGN AND DETAILS

We sent out our online survey questionnaire in partnership with the national productivity organizations (NPOs) in the eight Asian countries that we mentioned above and the Asian Productivity Organization (APO). The NPOs promote productivity movements with competitiveness and quality improvement initiatives through consulting, training, and awareness activities in coordination with the APO, an intergovernmental organization. The NPOs are private entities or government bodies, depending on the country. Their clients are predominantly MSMEs.

In late April to early May 2020, we drafted an online survey questionnaire in English using cloud-based software, SurveyMonkey, and revised it in consultation with the APO and the NPOs. The NPO in each country then translated the draft questionnaire into the local language or languages. The questionnaire contained 38 questions. It would take a typical respondent less than 15 minutes to answer all the questions. As we mentioned in the introduction, we conducted the survey in Viet Nam and Malaysia first and later extended the scope to include the other six countries. In Viet Nam, the survey period was from 18 May to 29 May; in Malaysia, it was between 18 May and 6 June. Thus, according to the Oxford COVID-19 Government Response Tracker, which Figure 1 presents, the survey periods in these two countries were in the middle of or immediately after the peak of the stringent containment measures, which would coincide with the peak of social tension due to the pandemic.¹

¹ The Oxford COVID-19 Government Response Tracker is based on systematically gathered information on several different common policy responses that governments have taken to respond to the pandemic.

Figure 1: Government Response Stringency Index, January 2020–November 2020



Source: Hale et al. (2020).

In the other six countries, the NPOs were busy with their own events or were involved in studies that their governments commissioned in May and June, and we conducted the survey between 17 August and 11 September, except in the Lao PDR, where it took place between 8 September and 13 October. It is clear from Figure 1 that the survey in these countries occurred much later than the peak of the stringent containment measures. Note, moreover, that the government response stringency level varied considerably between Viet Nam and Malaysia in June and among the other six countries in September. Thus, we have to keep in mind that the observed cross-country differences in firm behaviors are likely to reflect not only the cross-country differences in various institutions and the level of economic development but also the difference in the government response stringency and the respondents' feeling of tension.

After the survey in the first two countries, we revised the questionnaire, adding three questions and deleting two questions for the survey in the other six countries. As a result, data on some variables are not available for firms in Viet Nam and Malaysia or the other six countries.

The NPOs sent the questionnaire to their clients in a broad sense, many of which are firms that receive advice, training, or newsletters. We did not specify the sectors, types of business, or range of enterprise sizes, but we requested that the NPOs sent the questionnaire to either an owner or a manager of an enterprise. In addition, our questionnaire asks whether the respondent is a manager or an owner, and we regard those responses that did not include an answer to this question as invalid responses. Out of 2,344 valid responses, 1,583 were from owners, many of whom play the role of manager, and 761 were from managers.

We left the decision on whether to respond to our survey to those who received it. We offered no payments to the respondents, and responses were voluntary. However, several days after distributing the survey to potential respondents, the NPOs began calling or sending messages to those who had not responded or whose responses were grossly incomplete to ask for cooperation. During the survey, we checked the responses every day and shared the response information with the NPOs. In the

Lao PDR, the NPO used the printed questionnaire as well for those respondents who do not use a smartphone. We collected 1,908 responses with complete answers to all the questions. For most variables, which appear in Table 1, the number of observations is 2,170, and some variables have 2,140 observations. Some variables have fewer than 1,500 observations from only six countries, excluding Viet Nam and Malaysia. These variables are based on the answers to those questions that we added to the questionnaire after the revision that we mentioned above.

Table 1: Firm Characteristics

	(1) Mean and (SD) Whole Sample	(2) Highest Country Mean	(3) Lowest Country Mean
Agriculture	0.032 (0.18)	0.072 IND	0.01 MSY
Hard-hit manufacturing	0.194 (0.40)	0.446 IDN	0.059 MNG
Other manufacturing	0.378 (0.49)	0.799 BGD	0.157 IDN
Hard-hit service	0.065 (0.25)	0.094 MNG	0.004 BGD
Other service	0.328 (0.47)	0.563 MNG	0.046 BGD
Microenterprise	0.494 (0.50)	0.814 LAO	0.276 BGD
Small enterprise	0.268 (0.43)	0.456 BGD	0.137 IDN
Medium enterprise	0.238 (0.41)	0.467 VNM	0.046 LAO
Female-headed	0.298 (0.46)	0.590 LAO	0.090 IND
Firm age (years)	13.4 (12.4)	20.2 IND	8.9 IDN
Export-oriented	0.194 (0.40)	0.519 PAK	0.064 IDN
Selling online	0.590 (0.49)	0.836 VNM	0.257 MNG
Online sales 2019	0.210 (0.292)	0.352 VNM	0.087 BGD

Notes: All the variables in this table are binary variables with a value equal to zero or one, except for firm age and online sales 2019. The hard-hit manufacturing dummy is equal to one if the firm belongs to the food processing and beverage or textile and apparel sectors and zero otherwise. The hard-hit service dummy indicates whether the firm is in the tourism, accommodation, sports, and entertainment or restaurant and bar sectors. The table classifies firm sizes into micro, small, and medium based on the number of permanent employees as of the end of 2019: a microenterprise has fewer than 10 permanent employees, while a small enterprise has 11 to 30 and a medium enterprise has more than 30. The export dummy is equal to one if exports account for about a half or more of firms' sales revenues and zero otherwise. Selling online is a dummy indicating whether the firm had online sales in 2019. Online sales 2019 is the proportion of sales revenues from online sales in 2019.

The data on all the variables in this table are available from the eight countries. The number of observations is 2,170 for the micro, small, and medium enterprise dummies and the female dummy and 2140 for the export dummy and the online variables. In column (1), the numbers in parentheses are the standard deviation (SD). Columns (2) and (3) show the name of the country that has the highest or lowest mean value, respectively, and that mean value.

In columns (2) and (3), the country names are abbreviated as follows: Bangladesh (BGD), India (IND), Indonesia (IDN), Malaysia (MSY), Mongolia (MNG), the Lao PDR (LAO), Pakistan (PAK), and Viet Nam (VNM).

Note that there are at least three sources of potential sample bias. First, like many other firm surveys, this survey might cover only those firms that were in operation or surviving. The exclusion of those firms that exited before the survey would cause a sample selection bias in the analyses of firm longevity and growth. As we report in the next section (see Figure 5), our data include many sample firms that experienced a temporary business shutdown after the outbreak of the COVID-19 pandemic but before or even at the time of the survey. Thus, the above type of sample selection bias, if any, may not be very serious in this particular case.

Second, the sample firms have an entrepreneur for whom the NPO in the country knew his or her contact address. According to the recent studies, firms in developing countries, especially microenterprises, are poorly managed, and the vast majority of entrepreneurs in developing countries do not know that training and coaching can improve the business practices that matter for the performance of their firms (e.g., Bloom and van Reenen 2010; Higuchi, Nam, and Sonobe 2015; McKenzie and Woodruff 2017; Bruhn, Karlan, and Schoar 2018; Higuchi, Mhede, and Sonobe 2019; McKenzie 2020). Since the MSMEs in our sample have a connection with the NPO in their country, our sample is unlikely to represent ordinary MSMEs in developing countries. Instead, it is likely that they are biased toward the well-informed type or the forerunner type with respect to knowledge of, if not practices for, productivity improvement. Since the NPOs tend to encourage digitalization, our sample enterprises are probably biased in this respect as well.

Third, the MSMEs in our sample are firms that chose to answer most of the questions in the questionnaire. This may imply that they are more willing to maintain a good relationship with the NPO. Those entrepreneurs who were giving up their business permanently would have little motivation to respond to the survey. Note that the sample firms are not limited to those firms in operation at the time of the survey. Indeed, as many as 716 out of 2,344 firms experienced a temporary shutdown between the outbreak of the pandemic and the time of the survey. However, they responded to the survey, and this fact suggests that they intended to continue or resume their operation. Readers should interpret the findings that we report below with these potential biases in mind.

Table 1 presents the basic statistics of the variables that we intend to capture the characteristics of the sample firms. It is well known that the pandemic is affecting tourism, hotel, entertainment, and restaurant businesses disproportionately in many countries. Throughout this paper, we refer to these subsectors of the service industry as the hard-hit service sector. In the manufacturing sector, the considerable decline in demand tends to affect ready-made garment factories, dressmakers, and tailors severely. The food processing industry in many developing countries is also experiencing a severe impact, although this may not be the case in developed countries. This paper refers to the apparel and food processing industries as the hard-hit manufacturing sector. The manufacturing industry (i.e., hard-hit manufacturing and other manufacturing combined) accounts for about 58% of the sample enterprises, and the service industry (i.e., hard-hit services and other services combined) accounts for about 39%. Our sample includes a small number of agribusiness firms as well.

As columns (2) and (3) of Table 1 indicate, the industry composition of the sample varies considerably among the eight countries. For example, the presence of hard-hit manufacturing is much greater in the Indonesian sample than in the whole sample. Bangladesh is known for the high performance of its export-oriented garment industry, which consists of large-scale factories and accounts for 75% of the country's foreign currency earnings (Mottaleb and Sonobe 2011). However, the Bangladeshi sample includes only a small number of firms belonging to that industry and instead a large

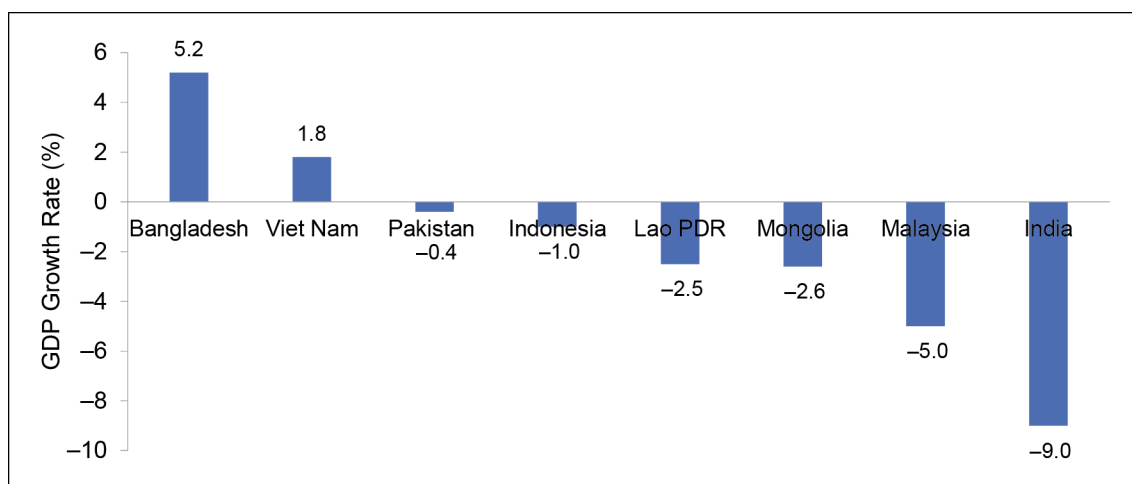
number of micro- and small-scale manufacturers in other manufacturing subsectors. The large share of the service industry, both hard-hit and other services, is an outstanding feature of the Mongolian sample. The diversity in industry composition seems to reflect the diversity among the eight NPOs in their interest and focus.

Table 1 also reports the size distribution. In our classification, microenterprises have fewer than 10 permanent employees, small enterprises have 11 to 30, and medium enterprises have more than 30. The mean values of fractions that the table shows are based on the number of permanent employees as of December 2019. The sample enterprises are predominantly microenterprises in the Lao PDR. By contrast, microenterprises are not in the majority in Bangladesh and Viet Nam. In the Viet Nam sample, the fraction of medium enterprises is much larger than the mean in the whole sample.

Female entrepreneurs account for 30% of the whole sample. The female fraction is high in the Lao PDR and low in India and Pakistan. Most firms in our sample cater to domestic markets: only 20% of the sample firms are export oriented in the sense that exports account for more than half of their sales revenue. Nearly 60% of the sample firms have adopted online sales, and they account for 21% of sales revenues. Note, however, that the percentage of online sales varies considerably both within and between countries, and its median in the whole sample is 5%.

Before closing this section, it may be useful to highlight the GDP growth of each country. Figure 2 presents the Asian Development Bank’s 2020 annual GDP growth forecast as of September 2020 for the eight Asian countries. It predicted positive growth rates of 5.2% and 1.8% for Bangladesh and Viet Nam, respectively. Despite their large commitment to pandemic relief policy packages, the other six economies had projections of negative growth. In particular, ADB expected the Indian economy to shrink considerably due to the severe contraction of private consumption and investment, which stemmed from local lockdowns and the continued COVID-19 outbreak (ADB 2020c).

Figure 2: GDP Growth Rate: 2020 Forecast (%)



Source: ADB Asian Development Outlook, September 2020.

3. EMPLOYMENT, SALES, AND CASH FLOW

This section attempts to characterize the MSMEs that experienced more severe effects of the pandemic and the related changes in business environments than others. Our questionnaire asked the respondents about the magnitude of changes in permanent employment as follows: “Was the number of permanent employees at the time of the survey less than 40% of that in December 2019, more than 40%, more than 60%, more than 80%, about 100%, more than 100%, or more than 120%?” Based on the respondents’ answers to this question, Figure 3-1 shows the percentage of firms that reduced their number of permanent (or regular) employees by any percentage after the outbreak of the pandemic and the percentage that reduced the number by more than 40%. Similarly, Figure 3-2 shows the corresponding percentages for non-permanent employees. Except for Bangladesh, Malaysia, and Mongolia, scores of MSMEs in the sample countries had to cut not only their temporary but also their permanent employees considerably. Malaysian firms reduced their temporary employment more drastically than their counterparts in the other countries, which might have helped them to maintain their permanent employment.

Figure 3-1: Percentage of Firms that Reduced the Number of Permanent Employees after the Outbreak of the Pandemic

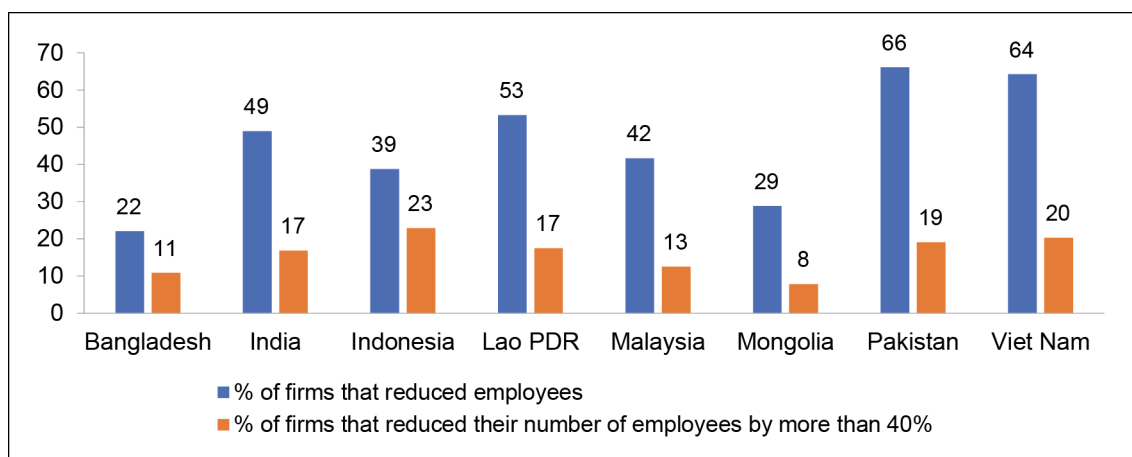
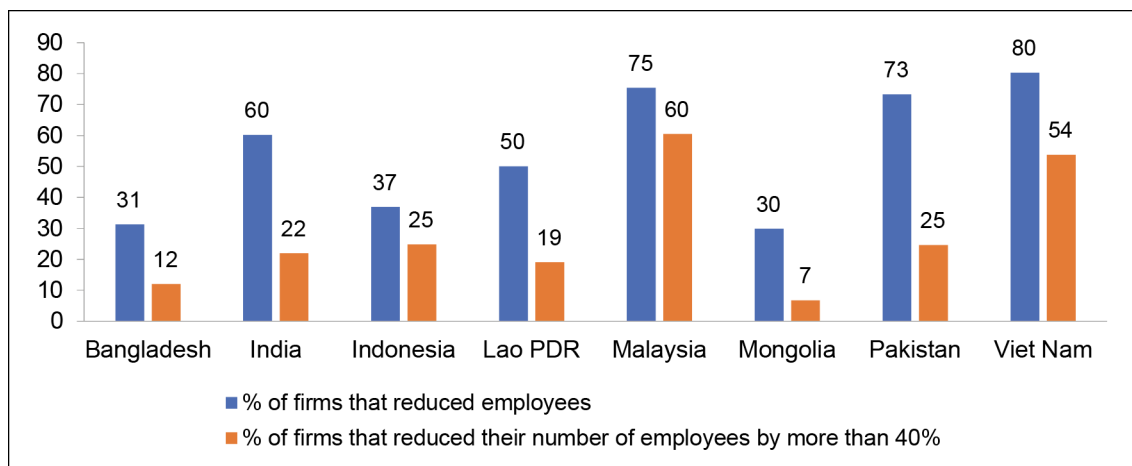


Figure 3-2: Percentage of Firms that Reduced the Number of Temporary Employees after the Outbreak of the Pandemic



The vast majority of the sample firms experienced declines in sales revenues in the first half of 2020 compared with a year previously. Figure 4-1 shows the extent of sales reduction in the same manner as Figures 3-1 and 3-2, except that data on sales reduction are not available for Viet Nam and Malaysia. Indonesia had a greater reduction than the other sample countries. The percentage of the firms that lost more than 40% of their sales was higher in Indonesia than in any other sample country. As shown in Figure 4-2, however, and to our surprise, it was Indonesia that had the lowest percentage of firms expecting negative sales growth in 2020. Optimism is also observable in Viet Nam, where only 18% of the sample firms predicted negative sales growth even though their job cuts were substantial, as Figures 3-1 and 3-2 showed. By contrast, the Bangladeshi respondents were very pessimistic. More than 90% of them expected negative sales growth, and 44% expected their sales to reduce by more than 40%, even though they made relatively few job cuts. Their pessimism is also in stark contrast to the high economic growth rate of their country, as Figure 2 shows.

Figure 4-1: Percentage of Firms that Reduced Sales in the First Half of 2020 in a Year-to-Year Comparison (Data Are Available Only for the Six Countries)

Sales change and expectation

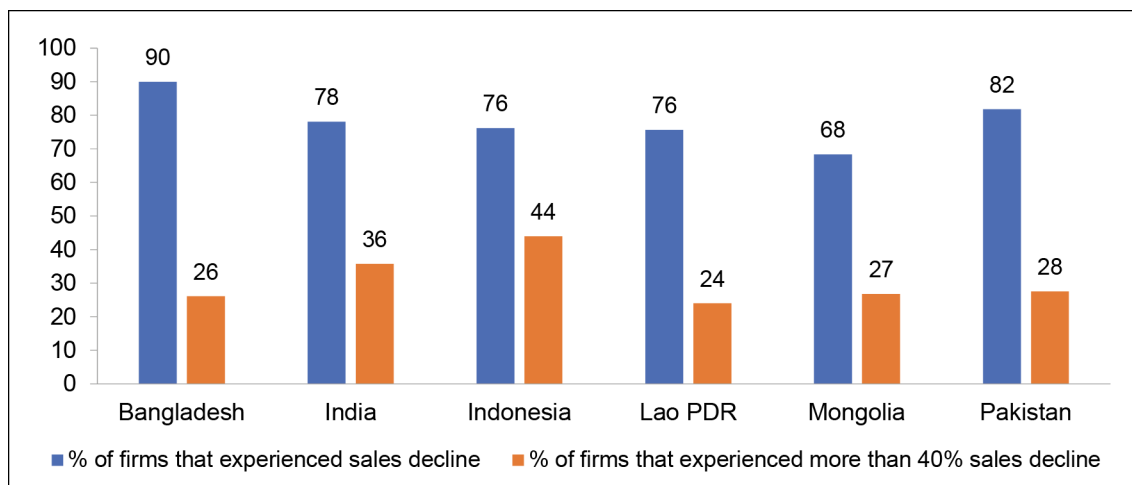
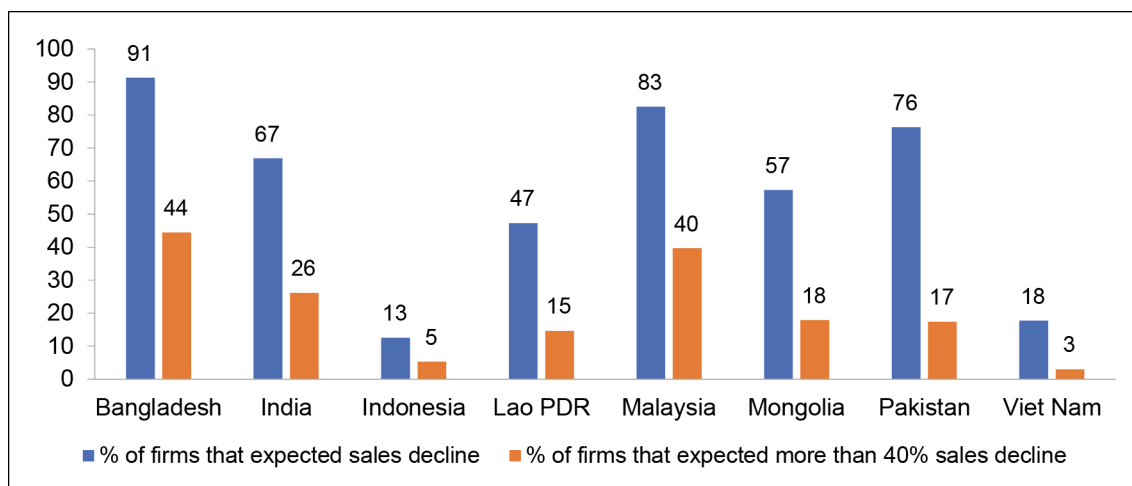


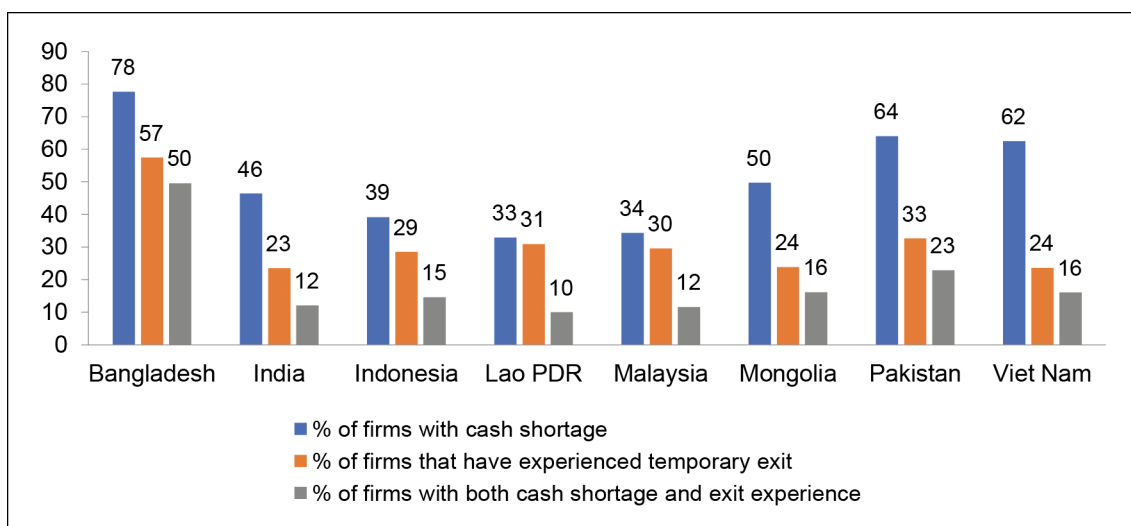
Figure 4-2: Percentage of Firms that Expected Negative Growth in the 2020 Annual Sales



During the survey, we asked the respondents if they were short of cash at the time of the survey. The respondents could interpret this question in various ways, and many small business owners tended to answer “yes” even though they did not face a serious problem due to a cash shortage. Thus, in addition to this question, we also asked if they had difficulty in fulfilling their contracts. Only about half of those who said that they were short of cash answered this additional question affirmatively, whereas more than 80% of those who answered this question affirmatively said that they were short of cash. We decided to regard only those respondents who answered both questions affirmatively as facing a cash shortage.²

Figure 5 shows the data on cash shortages in this sense, together with the data on the experience of a temporary shutdown or market exit. For each country, the first bar indicates the percentage of firms suffering a cash shortage, the second bar the percentage of firms that experienced (or were experiencing) an exit, and the third bar the percentage of firms with both experiences. Again, in marked contrast to its high economic growth performance, Bangladesh had many MSMEs that experienced a cash shortage and temporary exit during the pandemic period.

Figure 5: Percentage of Firms that Experienced a Cash Shortage and Temporary Exit



To identify the firms that lost more employment than others, we estimate ordered logit models, which explain the employment variables in terms of the enterprise characteristics listed in Table 1. Table 2 reports the estimated coefficients in the models, and Appendix Tables A1 and A2 contain the corresponding marginal effects. In Table 2, the first two columns present the estimated coefficients and their standard errors of the ordered logit model explaining the number of permanent employees, and the next two columns present those of the model for the number of non-permanent employees. We include the export-oriented dummy in all the columns and the selling online dummy in the first and third columns, even though we suspect that they are

² We are not sure that this is an appropriate approach to identifying cash shortages. To estimate the number of firms facing a liquidity shortage during a crisis like the COVID-19 pandemic, many studies have used the partial or general equilibrium models, which make scores of assumptions, rather than counting such firms (e.g., Gourinchas et al. 2020; Miyakawa et al. 2021). The reason must be related to the difficulty involved in identifying or counting such firms directly. There is no consensus regarding which approach to counting business failures is reliable.

endogenous. For MSMEs, online sales are a new approach to marketing. Like the adoption of a new technology, the use of this marketing approach may save labor input, but it may also create jobs through its sales expansion effect. We include both the online sales 2019 variable, which is the fraction of sales revenue from online sales, and its squared term in the second and fourth columns to allow for the expected non-linear relationship between online sales and changes in employment size. We include seven country dummies as well, with Bangladesh as the point of reference.

Throughout all the columns, the hard-hit manufacturing dummy and the hard-hit services dummy have negative and highly significant coefficients. The coefficients for the female entrepreneur dummy are positive and slightly significant in the first two columns and insignificant in the last two columns. Thus, we can say that those countries with a high prevalence of female entrepreneurs have tended to maintain the employment of not only permanent but also non-permanent workers, but it is difficult to say that female entrepreneurs have maintained employment more than male entrepreneurs. Note also that we find no evidence supporting the view that female entrepreneurs are prone to losing their employment in crises.

There is a common assumption that non-permanent workers of microenterprises are more vulnerable. The coefficients for the small enterprise dummy and the medium enterprise dummy indicate that, while these enterprises tend to cut permanent employees less drastically than microenterprises, no significance difference exists in the severity of job cuts between smaller and larger MSMEs when it comes to non-permanent workers. The coefficients for the export dummy suggest that export-oriented firms had to reduce their number of permanent employees more than their non-exporting counterparts but that MSMEs reduced their number of non-permanent employees regardless of their export orientation.

An interesting finding is that employment reductions, whether permanent or non-permanent, were greater for those firms that adopted online sales than for those that did not, as columns (1) and (3) indicate, and that the difference was highly significant. In addition, the significant coefficients for the online sales in 2019 and their square had negative and positive signs, respectively, as indicated in columns (2) and (4). These coefficients suggest a non-linear relationship between the online sales share and the employment size, which reaches the lowest point when the online sales share is around 40%.³ Up to around 40%, an increase in online sales has an association with a higher probability that firms decreased their employment size by a certain level and a lower probability that they maintained or increased their number of employees. In contrast, once the share reaches 40%, an increase in online sales comes with a higher probability of employment cuts and a lower probability of employment increases.

³ In the regression equation, $y = a + bx + cx^2 + \dots + \text{error term}$, where x and x^2 are online 2019 and its squared term, y and x have a bottom if $b < 0$ and $c > 0$. We find the bottom at $x = -b/2c$, where the partial derivative is 0, and this x is equal to $2.209 / (2 \times 2.916) = 0.379$ for permanent employees and $1.281 / (2 \times 1.547) = 0.414$ for non-permanent employees.

Table 2: Estimated Functions Explaining Employment: Ordered Logit Regression Results for Permanent and Non-Permanent Employees (Estimated Coefficients)

Variables	(1)	(2)	(3)	(4)
	Permanent Employees	Non-permanent Employees		
Agri-business	-0.113 (0.259)	-0.123 (0.259)	-0.157 (0.239)	-0.172 (0.238)
Hard-hit manufacturing	-0.424*** (0.124)	-0.419*** (0.124)	-0.325*** (0.123)	-0.333*** (0.123)
Hard-hit service	-0.832*** (0.177)	-0.830*** (0.179)	-0.656*** (0.184)	-0.658*** (0.184)
Other service	-0.051 (0.110)	-0.069 (0.111)	0.052 (0.109)	0.040 (0.109)
Female-headed	0.186* (0.101)	0.198* (0.102)	0.159 (0.101)	0.162 (0.102)
Firm age (years)	0.003 (0.004)	0.004 (0.004)	0.001 (0.004)	0.001 (0.004)
Small enterprise	0.334*** (0.110)	0.327*** (0.110)	0.054 (0.107)	0.042 (0.107)
Medium enterprise	0.334*** (0.122)	0.312** (0.121)	-0.003 (0.119)	-0.025 (0.119)
Export-oriented	-0.249** (0.113)	-0.283** (0.114)	-0.152 (0.113)	-0.179 (0.113)
Selling online	-0.307*** (0.098)		-0.295*** (0.098)	
Online sales 2019		-2.209*** (0.511)		-1.281** (0.504)
Online sales 2019 squared		2.916*** (0.583)		1.547*** (0.565)
India	-0.694*** (0.201)	-0.814*** (0.200)	-0.706*** (0.193)	-0.785*** (0.192)
Indonesia	-0.298 (0.211)	-0.431** (0.211)	-0.138 (0.206)	-0.243 (0.205)
Lao PDR	-0.573*** (0.201)	-0.622*** (0.198)	-0.367* (0.195)	-0.444** (0.191)
Malaysia	-0.312* (0.173)	-0.387** (0.171)	-2.192*** (0.173)	-2.272*** (0.171)
Mongolia	0.129 (0.185)	0.099 (0.186)	0.203 (0.177)	0.190 (0.178)
Pakistan	-0.883*** (0.200)	-0.962*** (0.197)	-0.823*** (0.192)	-0.914*** (0.189)
Viet Nam	-1.088*** (0.184)	-1.156*** (0.183)	-1.805*** (0.181)	-1.885*** (0.181)
Pseudo R-squared	0.0333	0.0364	0.0828	0.0826
Log-likelihood	-2,827	-2,818	-2,863	-2,864

Notes: The numbers in parentheses are standard errors. ***, **, and * indicate the 1%, 5%, and 10% significance levels, respectively. The notes to Table 1 and the text in Section 3 define the explanatory variables. The coefficients for sector dummies, agri-business, hard-hit service, hard-hit manufacturing, and other service indicate the differences from the other manufacturing sector. The coefficients for the country dummies indicate the differences from Bangladesh. The number of observations is 2,051.

Table 3: Estimated Functions Explaining Sales in the First Half of 2020 and Expected Sales Growth: Ordered Logit Regression (Estimated Coefficients)

Variables	(1)	(2)	(3)	(4)
	Sales in First Half of 2020		Expectation of Sales Growth in 2020	
Agri-business	0.120 (0.258)	0.125 (0.257)	0.399 (0.250)	0.404 (0.250)
Hard-hit manufacturing	-0.257* (0.150)	-0.246 (0.151)	-0.027 (0.123)	-0.025 (0.123)
Hard-hit service	-1.175*** (0.226)	-1.171*** (0.225)	-1.114*** (0.184)	-1.120*** (0.185)
Other service	0.130 (0.139)	0.123 (0.140)	0.144 (0.104)	0.147 (0.104)
Female-headed	-0.144 (0.122)	-0.135 (0.122)	0.086 (0.099)	0.084 (0.099)
Firm age (years)	-0.004 (0.004)	-0.005 (0.004)	-0.001 (0.004)	-0.001 (0.004)
Small enterprise	0.324** (0.129)	0.327** (0.129)	0.181* (0.105)	0.183* (0.105)
Medium enterprise	0.172 (0.153)	0.184 (0.152)	0.186 (0.117)	0.192* (0.117)
Export-oriented	0.230* (0.139)	0.260* (0.139)	0.042 (0.110)	0.031 (0.110)
Selling online	0.079 (0.117)		0.059 (0.094)	
Online sales 2019		0.022 (0.641)		0.079 (0.500)
Online sales 2019 squared		-0.188 (0.728)		0.164 (0.570)
India	-0.057 (0.193)	-0.022 (0.191)	1.212*** (0.194)	1.207*** (0.193)
Indonesia	0.010 (0.208)	0.072 (0.206)	4.319*** (0.227)	4.304*** (0.226)
Lao PDR	0.634*** (0.199)	0.691*** (0.194)	2.216*** (0.197)	2.226*** (0.194)
Malaysia			0.404** (0.159)	0.406*** (0.157)
Mongolia	0.433** (0.175)	0.439** (0.175)	1.475*** (0.171)	1.473*** (0.171)
Pakistan	-0.017 (0.194)	0.020 (0.189)	1.116*** (0.190)	1.134*** (0.187)
Viet Nam			3.107*** (0.183)	3.094*** (0.182)
	(0.198)	(0.197)	(0.169)	(0.169)
Observations	1,344	1,344	2,051	2,051
Pseudo R-squared	0.0156	0.0157	0.124	0.124
Log-likelihood	-2,100	-2,100	-3,114	-3,113

Notes: The numbers in parentheses are standard errors. ***, **, and * indicate the 1%, 5%, and 10% significance levels, respectively. The notes to Table 1 and the text in Section 3 define the explanatory variables. The coefficients for sector dummies, agri-business, hard-hit service, hard-hit manufacturing, and other service indicate the differences from the other manufacturing sector. The coefficients for the country dummies indicate the differences from Bangladesh.

Table 3, in the same manner as Table 2, reports the estimates of the logit model for sales in the first half year in columns (1) and (2) and those for expected sales for the entire year in columns (3) and (4). The hard-hit service sector had significantly larger decreases in sales in the first half year, as expected, while the coefficients for the hard-hit manufacturing sector are marginally significant in column (1) and insignificant in column (2). Small enterprises performed better than microenterprises in the first half year, although medium enterprises did not. The export-oriented firms and their non-exporting counterparts differ in the amount of sales in the first half year, but the difference is only marginally significant.

Regarding the expected sales growth shown in columns (3) and (4), except for country dummies, the coefficients of most of the variables are insignificant. The coefficients for the country dummies have highly significant coefficients. In other words, the sales growth expectation depends on the situation that the country is facing rather than the firm characteristics. The only notable exception is that the firms in the hard-hit service sector are much more pessimistic than those in any other sector. Positive coefficients for all the country dummies suggest a more permissive outlook of firm owners in Bangladesh despite the more optimistic forecast for the country's economy that international organizations shared (ADB 2020b; International Monetary Fund 2020b). As Figure 2 shows, ADB anticipated 5.2% GDP growth in Bangladesh, the highest among the Asian countries.

Turning to cash flow disruption, Table 4 presents the estimates of the logit models in the odd-numbered columns and the corresponding estimated marginal effects in the even-numbered columns. In columns (3) and (4), the model includes the dummy variables indicating different degrees of permanent employment reduction as control variables. The table offers some interesting points. First, the hard-hit manufacturing sector and the other service sector had a significantly lower likelihood of cash flow disruptions than the other manufacturing sector. Second, the agri-business sector and hard-hit service sector had about the same likelihood of facing a cash shortage as the other manufacturing sector. In other words, although the hard-hit manufacturing sector and the hard-hit service sector were devastated in terms of employment, as we saw in Table 2, and to a lesser extent in terms of sales, as we saw in Table 3, they were not at all badly affected in terms of cash flow disruption risk.

This is not to say that employment reduction and cash shortages had no association. On the contrary, we can see in columns (3) and (4) that they have a significant correlation and that, even when controlling for employment reduction, the hard-hit manufacturing dummy variable and the other service dummy variable have significant coefficients. Why are some sectors more prone to cash shortages than other sectors? A possible explanation is that the ability of a firm to avoid a cash shortage varies considerably from sector to sector (and within the same sector). Firms in some sectors tend to have much more cash, physical capital, inventory, goodwill, or other assets than firms in other sectors. With or without this ability, however, firms would try to reduce their employment if they found it to be less loss making. Another possible explanation is that sectors that reduced their employment to similar degrees might have had different reasons, such as an expected or actual contraction in demand, material supply disruptions, and refraining from operating their business, which had different consequences for the likelihood of a cash shortage.

Table 4: Estimated Functions Explaining Cash Shortage: Logit Regression

Variables	(1)	(2)	(3)	(4)
	Coefficient	ME	Coefficient	ME
Agri-business	0.244 (0.274)	0.054 (0.060)	0.215 (0.280)	0.045 (0.059)
Hard-hit manufacturing	-0.303** (0.141)	-0.067** (0.031)	-0.405*** (0.147)	-0.085*** (0.031)
Hard-hit service	-0.066 (0.201)	-0.014 (0.044)	-0.288 (0.208)	-0.060 (0.044)
Other service	-0.509*** (0.122)	-0.112*** (0.026)	-0.533*** (0.126)	-0.112*** (0.026)
Female-headed	-0.318*** (0.113)	-0.070*** (0.025)	-0.282** (0.116)	-0.059** (0.024)
Firm age (years)	-0.005 (0.004)	-0.001 (0.001)	-0.004 (0.004)	-0.001 (0.001)
Small enterprise	-0.209* (0.123)	-0.046* (0.027)	-0.140 (0.126)	-0.029 (0.026)
Medium enterprise	-0.159 (0.137)	-0.035 (0.030)	-0.097 (0.142)	-0.020 (0.030)
Export-oriented	0.234* (0.130)	0.052* (0.028)	0.177 (0.133)	0.037 (0.028)
Online sales 2019	0.761 (0.567)	0.075 (0.069)	0.308 (0.586)	0.032 (0.068)
Online sales 2019 squared	-0.965 (0.638)		-0.364 (0.658)	
> 60% decrease in permanent employment			1.167*** (0.189)	0.248*** (0.037)
41–60% decrease in permanent employment			1.154*** (0.207)	0.246*** (0.041)
21–40% decrease in permanent employment			0.987*** (0.174)	0.212*** (0.036)
Up to 20% decrease in permanent employment			0.547*** (0.134)	0.119*** (0.029)
Increase in permanent employment			-0.252 (0.233)	-0.053 (0.048)
Pseudo R-squared	0.0910		0.123	
Log-likelihood	-1,292		-1,247	

Notes: The numbers in parentheses are standard errors. ***, **, and * indicate the 1%, 5%, and 10% significance levels, respectively. The number of observations is 2,051. The notes to Table 1 and the text in Section 3 define the explanatory variables. The coefficients for the sector dummies, agri-business, hard-hit service, hard-hit manufacturing, and other service indicate the differences from the other manufacturing sector. The permanent employment cut dummies show the difference from no change in permanent employment. We include the seven country dummy variables (Bangladesh is the default) and the constant term in the regression specification although the table does not show their coefficients.

The third noteworthy finding from Table 4 is that firms with a female head are less prone to cash shortages. It is beyond the scope of this study to provide an explanation for this result. The fourth noteworthy finding is that online sales have no association with the likelihood of facing a cash shortage or with the magnitude of sales reduction or expected sales growth, as we saw in Table 3. Nonetheless, it does have an association with permanent and non-permanent employment, as Table 3 suggests. We will return to these findings toward the end of the next section.

4. DIGITALIZATION

For many MSMEs in the eight Asian countries in our sample, digitalization means mostly the use of a company website, social media (e.g., Facebook or Instagram), or mobile messaging services (e.g., WhatsApp) or participation in an online or freelance marketplace (e.g., Amazon, Taobao, eBay, Fiverr, or Lyft) for a commercial purpose, which this paper refers to as online sales, and the use of digital wallets/online payments (e.g., Paypay, Mobivi, or 2C2P) or mobile payments (e.g., Apple Pay, Google Pay, LINE Pay, or GrabPay) for the settlement of commercial transactions, which this paper refers to as digital payment.

Table 5 presents the basic statistics of the variables that we intend to capture digitalization in this sense. In the whole sample, online sales accounted for 21% of sales revenue in 2019 on average, and 69.5% of the sample firms were planning to increase their percentage of online sales in the near future. In the sample of the six countries other than Viet Nam and Malaysia, 38.5% of the firms were using digital payments. In this smaller sample, although Table 5 does not show this, online sales accounted for 21% of the sales revenue in 2019 on average; 23.2% of the firms were using social media or mobile messaging services; 18.9% were using a company web page; 11.9% were using online or freelance marketplaces; and 69% were planning to increase their percentage of online sales in the near future. The use of digital technology is growing among MSMEs. For example, more than 8% of those firms with no online sales in 2019 were engaging in online sales at the time of the survey.

Table 5: Digitalization

	(1) Mean and (SD) Whole Sample	(2) Highest Country Mean	(3) Lowest Country Mean	(4) No. of Observations
Online sales 2019	0.210 (0.292)	0.352 VNM	0.087 BGD	2,140
Digital payment dummy	0.385 (0.487)	0.681 LAO	0.071 BGD	1,425
Plan to increase online sales dummy	0.695 (0.461)	0.847 IDN	0.388 MNG	2,140

Notes: Online sales 2019 is the proportion of sales revenue from online sales in 2019. The digital payment dummy is equal to one if the firm uses a digital wallet/online payments (such as Paypay, Mobivi, and 2C2P) or mobile payments (such as Apple Pay, Google Pay, Line Pay, and Garb Pay) and zero otherwise. The plan to increase online sales dummy is equal to one if the firm plans to increase its percentage of online sales and zero otherwise.

Data for online sales 2019 and the plan to increase online sales dummy are available for all the eight countries, but data on the digital payment dummy are available only for the six countries other than Viet Nam and Malaysia. The country name abbreviations are the same as in the notes to Table 1.

To determine the characteristics of those firms that are leading other firms in digitalization, we ran an OLS regression of the online sales 2019 variable using the full sample. Column (1) of Table 6 reports the result. The two hard-hit sectors were more digitalized than the other sectors even before the outbreak of the COVID-19 pandemic, and firms with female entrepreneurs, younger firms, and export-oriented firms tended to have a larger share of online sales in 2019.

Table 6: Estimated Functions Explaining the Current and Planned Digitalization

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Online Sales 2019	Digital Payment					
	OLS Coeff.	Logit Coeff.	ME	Logit Coeff.	ME	Logit Coeff.	ME
Agri-business	1.758 (3.567)	0.051 (0.316)	0.010 (0.059)	0.513 (0.334)	0.081 (0.053)	0.490 (0.338)	0.076 (0.052)
Hard-hit manufacturing	3.740** (1.823)	0.161 (0.192)	0.030 (0.036)	0.523*** (0.181)	0.083*** (0.028)	0.604*** (0.186)	0.094*** (0.029)
Hard-hit service	5.832** (2.644)	-0.253 (0.266)	-0.047 (0.049)	0.425 (0.262)	0.067 (0.041)	0.461* (0.267)	0.072* (0.041)
Other service	0.328 (1.597)	0.023 (0.172)	0.004 (0.032)	-0.024 (0.143)	-0.004 (0.023)	0.065 (0.145)	0.010 (0.023)
Female headed	4.451*** (1.466)	0.280* (0.145)	0.052* (0.027)	0.087 (0.140)	0.014 (0.022)	0.120 (0.142)	0.019 (0.022)
Firm age (years)	-0.236*** (0.055)	0.001 (0.006)	0.000 (0.001)	-0.011** (0.005)	-0.002** (0.001)	-0.010** (0.005)	-0.002** (0.001)
Small enterprise	0.313 (1.581)	0.195 (0.166)	0.037 (0.031)	0.210 (0.144)	0.033 (0.023)	0.220 (0.147)	0.034 (0.023)
Medium enterprise	0.449 (1.771)	-0.315 (0.208)	-0.057 (0.038)	0.133 (0.158)	0.021 (0.025)	0.135 (0.162)	0.021 (0.025)
Export-oriented	10.957*** (1.667)	-0.568*** (0.178)	-0.105*** (0.033)	0.321* (0.166)	0.051* (0.026)	0.303* (0.168)	0.047* (0.026)
Online 2019		5.008*** (0.780)	0.554*** (0.078)	9.634*** (0.875)	1.288*** (0.103)	9.695*** (0.881)	1.273*** (0.101)
Online 2019 squared		-4.864*** (0.877)		-7.621*** (0.994)		-7.627*** (1.004)	
Cash shortage						0.588*** (0.126)	0.091*** (0.019)
> 60% decrease in permanent employment						-0.298 (0.232)	-0.048 (0.038)
41–60% decrease in permanent employment						0.073 (0.241)	0.011 (0.037)
21–40% decrease in permanent employment						0.098 (0.216)	0.015 (0.033)
Up to 20% decrease in permanent employment						-0.060 (0.161)	-0.009 (0.025)
Increase in permanent employment						0.548* (0.288)	0.079** (0.039)
Observations	2,051	1,344	1,344	2,051	2,051	2,051	2,051
R-squared	0.134						
Pseudo R-squared		0.180		0.215		0.226	
Log-likelihood		-734.1		-978.2		-964.3	

Notes: The numbers in parentheses are standard errors. ***, **, and * indicate the 1%, 5%, and 10% significance levels, respectively. The notes to Table 1 and the text in Section 3 define the explanatory variables. The coefficients for the sector dummies, agri-business, hard-hit service, hard-hit manufacturing, and other service indicate the differences from the other manufacturing sector. Although we do not report their coefficients here, we include the complete set of country dummies and the constant term in all the regressions.

Columns (2) and (3) present the estimates of the logit model explaining the use of digital payments and the corresponding marginal effects, respectively. The sample size is smaller because we did not ask a question about digital payment in Viet Nam and Malaysia. The regression result indicates that female entrepreneurs and export-oriented firms tend to use digital payment and that there is an inverted U-shaped relationship between the fraction of online sales and the use of digital payments; that is, those firms with a moderate share of online sales tend to use digital payments more than those firms without online sales and those firms that completely specialize in online sales.

Columns (4) and (5) present the estimated logit model characterizing those firms that are more willing to increase their online sales and the corresponding marginal effects. The logit model in column (4) differs from the OLS regression equation in column (1) in that column (4) is about a future plan and includes the online sales 2019 variable and its squared term, the coefficients of which indicate that there is an inverted-U relationship. Thus, the firms with a moderate share of online sales in 2019 are more willing to increase their share of online sales than those firms that did not experience online sales or completely specialized in online sales. The estimated coefficients for the hard-hit manufacturing dummy, the firm age, and the export-oriented dummy (although it is only marginally significant) in column (4) are significant and share the same signs as their counterparts in column (1), which are also significant. Thus, firms in the hard-hit manufacturing sector, relatively young firms, and export-oriented firms tended to have larger shares of online sales in 2019 and are more willing to increase their online sales in the future than other firms that had similar shares of online sales in 2019.

In columns (6) and (7), we insert the dummy variable indicating whether a firm was facing a cash shortage and the set of dummy variables indicating the degrees of permanent employment cuts into the right-hand side of the logit model. The coefficient for the cash shortage dummy is positive and highly significant, but the coefficients for the employment reduction dummies are insignificant except for a positive and marginally significant one for the dummy indicating whether a firm had increased its permanent employment in the middle of the pandemic. The other results that these two columns report are qualitatively the same as those in columns (4) and (5). These results suggest that firms regard an increase in online sales as a way to proceed, especially those firms that are facing a cash shortage, are operating a hard-hit manufacturing business, are export oriented, are relatively young, or have online sales experience. The experience of having to reduce permanent employment does not seem to motivate firms to increase their online sales.

Thus, the results presented in Tables 5 and 6 lend strong support to the view that online sales will increase among many MSMEs in Asia, especially those in the hard-hit sectors, particularly manufacturing firms, younger firms, export-oriented firms, those that have already experienced online sales, firms experiencing a cash shortage, and firms that did not have to reduce their employment. These results suggest that many firms, but not all firms, find it profitable or beneficial in some sense to increase their online sales. As we have seen, however, in Tables 2 and 3, online sales (as a dummy variable) and employment have a negative association, and online sales and sales revenues do not have a significant association. These results seem to warrant considerable further investigation.

5. GOVERNMENT SUPPORT

In the survey, we asked, “What support did your firm receive from the government?” and “What support does your firm need to mitigate the impacts of the COVID-19 pandemic?” For each question, the questionnaire provided several alternatives and allowed the respondents to choose up to four of them. Among the alternatives, the most common choices were support related to tax, such as the postponement or exemption of tax payments and the application of a reduced tax rate, and support related to loans, such as the postponement of or subsidy for a payment, loan restructuring, a guarantee, or other assistance with a new loan. Other forms of government support include lump sum grants, public procurement, the dissemination of information, rent payments, salary/wage payments, and utility fee payments.

Table 7: Support from the Government and Support Needs

	(1)	(2)	(3)	(4)
	Mean and (SD) Whole Sample	Highest Country Mean	Lowest Country Mean	No. of Observations
Support received in March–April				
Any support	0.59 (0.49)	0.82 MSY	0.21 IDN	2,237
Tax support	0.31 (0.46)	0.59 MNG	0.05 BGD	2,237
Loan support	0.25 (0.44)	0.70 BGD	0.07 IDN	2,237
Support received in May–June				
Any support	0.56 (0.50)	0.71 MNG	0.25 IDN	1,475
Tax support	0.31 (0.46)	0.67 MNG	0.06 PAK	1,475
Loan support	0.20 (0.40)	0.41 BGD	0.11 MNG	1,475
Support needed at the time of survey				
Tax support needs	0.53 (0.50)	0.73 MNG	0.08 BGD	2,237
Loan support needs	0.48 (0.50)	0.69 MSY	0.27 IDN	2,237

Notes: All the variables in this table are binary variables with a value equal to zero or one. The any support dummy is equal to one if the firm received any support and zero otherwise. The tax support dummy is equal to one if the firm received support related to tax, such as tax payment deferral, tax exemption, and a lower tax rate, and zero otherwise. The other variables have similar definitions. Support related to loans includes loan repayment deferral or restructuring and government guarantees of new bank loans. Other government support includes rent payment, salary/wage payment, utility fee payment, education and information, and public procurement.

The data on all the variables in this table are available from the eight countries, but the data related to the June dummy are from the six countries other than Viet Nam and Malaysia. In column (1), the numbers in parentheses are the standard deviation (SD). Columns (2) and (3) show the name of the country that has the highest or lowest mean value, respectively, and that mean value. The country name abbreviations are the same as in the notes to Table 1.

We constructed three dummy variables: an any support dummy, a tax support dummy, and a loan support dummy. The first dummy covers all kinds of government support, and the second and third dummies cover tax- and loan-related support, respectively. Table 7 presents the basic statistics of these variables. In March and April 2020, 59% of the firms in the entire sample, 82% in the Malaysian sample, and only 21% in the Indonesian sample received some kind of government support. In May and June, the

Indonesian government remained the least generous provider of support for MSMEs among the sample countries. By contrast, the Mongolian government was the most generous provider of government support, especially tax-related support. The Bangladeshi government provided generous loan-related support.

Table 7 also presents the data on support needs. The questionnaire asked the respondents to choose up to four support areas that they need the most among 12 alternative areas. In the full sample, 53% of the firms needed tax-related support, for example tax payment deferral, tax exemption, and the application of a lower tax rate, and 48% needed loan-related support, such as deferred repayment and loan rescheduling, at the time of the survey. Note, however, that there are considerable variations among countries. For example, 73% of the Mongolian sample firms but only 8% of the Bangladeshi sample firms considered tax-related support to be useful, and 69% of Malaysian sample firms but only 27% of Indonesian firms regarded loan-related support as helpful.

It is easy to imagine that country characteristics, such as economic institutions and the financial condition of the government, would explain the support that the government provided and the MSMEs received to a large extent. Indeed, we find the estimated coefficients for the country dummy variables to have high significance levels in a logit model that explains which firms were likely to receive tax- or loan-support. To save space, however, Table 8 does not report the estimated coefficients for the country dummies. It instead devotes a large amount of space to such variables as the tax support needs dummy, the loan support needs dummy, the cash shortage dummy, and the set of permanent employment reduction dummies. The inclusion of these variables may help us to determine whether those firms that needed this support, suffered a cash shortage, or had to reduce their employment received support.

Columns (1) and (2) report the estimated logit model for the receipt of any tax-related support in the March–April period and the May–June period, respectively. The sample size is smaller for column (2) than for column (1) because the information for the latter period was not available for the sample firms in Viet Nam and Malaysia, where the survey took place earlier. In columns (1) and (2), the tax-related support needs dummy has a positive and highly significant coefficient, which suggests that the support provision and support needs matched. Despite the sizable reduction in the sample size, the coefficient in column (2) has a similar magnitude and significance level to that in column (1). The positive and significant coefficients for the loan-related support needs dummy in these columns suggest that those who needed loan-related support also received tax-related support. Similarly, columns (3) and (4) report the estimates for the receipt of any loan-related support in the respective periods. The loan-related support needs dummy has a positive and highly significant coefficient in these columns, which is consistent with the view that the loan-related support provision matched the needs. Moreover, the coefficient is greater in magnitude for the May–June period than the March–April period, without becoming lower in statistical significance despite the reduction in the sample size, which suggests that the support became more demand driven. This type of support provision turned out not to have an association with the tax-related support needs.

Table 8: Estimated Functions Explaining Received Support and Need for Support: Logit Regressions

	(1) Tax Support (Mar.–Apr.)	(2) Tax Support (May–June)	(3) Loan Support (Mar.–Apr.)	(4) Loan Support (May–June)
Tax support needs	1.116*** (0.128)	1.226*** (0.162)	0.225 (0.151)	0.281 (0.189)
Loan support needs	0.320*** (0.117)	0.315** (0.156)	1.440*** (0.139)	1.746*** (0.166)
Cash shortage	0.173 (0.121)	0.281* (0.166)	0.543*** (0.140)	0.196 (0.173)
> 60% decrease in permanent employment	0.192 (0.215)	0.210 (0.311)	–0.261 (0.254)	0.0532 (0.317)
41–60% decrease in permanent employment	–0.0294 (0.238)	–0.340 (0.311)	–0.751*** (0.277)	–0.399 (0.321)
21–40% decrease in permanent employment	–0.105 (0.196)	–0.415 (0.280)	–0.351 (0.233)	–0.367 (0.311)
Up to 20% decrease in permanent employment	–0.288* (0.151)	–0.244 (0.212)	–0.107 (0.173)	0.293 (0.227)
Increase in permanent employment	0.0386 (0.246)	0.258 (0.369)	–0.285 (0.300)	–0.0245 (0.461)
Agri-business	–0.165 (0.333)	–0.561 (0.377)	–0.458 (0.400)	–0.139 (0.390)
Hard-hit manufacturing	0.0644 (0.170)	0.218 (0.234)	–0.220 (0.182)	–0.0533 (0.233)
Hard-hit service	–0.164 (0.224)	–0.479 (0.295)	0.181 (0.268)	0.137 (0.351)
Other service	0.0771 (0.138)	0.206 (0.201)	–0.147 (0.167)	–0.180 (0.235)
Female-headed	0.289** (0.127)	0.081 (0.172)	–0.201 (0.156)	–0.259 (0.197)
Firm age (years)	0.009* (0.005)	0.019*** (0.006)	0.005 (0.005)	0.007 (0.006)
Small enterprise	0.333** (0.146)	0.357* (0.199)	0.616*** (0.160)	0.291 (0.198)
Medium enterprise	0.233 (0.161)	0.0710 (0.236)	0.794*** (0.179)	0.590*** (0.226)
Export-oriented	0.205 (0.149)	0.409** (0.207)	0.0253 (0.172)	0.216 (0.214)
Online sales 2019	0.877 (0.665)	–0.0231 (0.950)	–0.270 (0.775)	1.089 (0.989)
Online sales 2019 squared	–0.736 (0.747)	0.0804 (1.067)	0.0889 (0.886)	–0.820 (1.117)
Constant	–3.712*** (0.330)	–3.492*** (0.338)	–0.565** (0.243)	–1.976*** (0.288)
Observations	2,051	1,344	2,051	1,344
Pseudo R2	0.217	0.315	0.311	0.207
Log-likelihood	–995.2	–575.7	–809.1	–539.3

Notes: The numbers in parentheses are standard errors. ***, **, and * indicate the 1%, 5%, and 10% significance levels, respectively. The notes to Table 1 and the text in Section 3 define the explanatory variables. The coefficients for the sector dummies, agri-business, hard-hit service, hard-hit manufacturing, and other service indicate the differences from the other manufacturing sector. The coefficients for the country dummies indicate the differences from Bangladesh. Although we do not report their coefficients here, we include the complete set of country dummies in all the regressions.

Interestingly, neither tax- nor loan-related support provision has a close association with the variables that we included in the analysis as proxies for damage to business. The cash shortage dummy has a highly significant coefficient in column (3) but not in the other columns. Among the five dummy variables capturing permanent employment reduction, only one has a significant coefficient estimate in only one column. The two hard-hit sector dummies may also capture an aspect of the severity of the damage. No estimates of the coefficients for these variables are significant. Thus, we have no evidence supporting the view that governments provided support especially for firms that had to reduce their employment, experienced a cash shortage, or belonged to a hard-hit sector. A few other variables have coefficients that are statistically significant. The coefficient for firm age is marginally and highly significant in the model for tax-related support in the early and later periods, respectively. These results have at least two possible interpretations: one is that long-established firms tend to be keen to receive government support, and the other is that those firms that are keen to receive government support tend to enjoy longevity. The small and medium enterprise dummies have positive coefficient estimates, some of which are significant. These results indicate that small and medium enterprises received tax- or loan-related support more than microenterprises.

6. CONCLUSIONS

It is possible to summarize the major findings from this study as follows. First, MSMEs in developing Asia experienced considerably reduced employment and sales revenues in the first few months after the outbreak of the COVID-19 pandemic. The reduction in employment was, of course, more severe for the employment of non-permanent employees, but the employment of permanent or regular employees was also significant. Although there are considerable differences among countries, one-fourth to one-half of the sample MSMEs experienced a temporary closedown during this period and one-third to two-thirds were facing a cash shortage at the time of the survey. Thus, the impacts of the pandemic on the employment and the sustainability of business were quite severe.

Second, interestingly, the severity of these impacts, if compared among the countries in question, is not consistent with the impression that one would have from the GDP growth rate forecasts of these countries. For example, the employment reduction was relatively large in Viet Nam, which was experiencing positive GDP growth, and the highest percentage of firms experiencing a cash shortage occurred in Bangladesh, which was experiencing a higher GDP growth rate than any other country in the sample. Presumably, this inconsistency arises from the vulnerability of MSMEs, which is acute, especially in lower-income economies. MSMEs in such economies are prone to using up liquid assets and to cutting employment as a precaution.

Third, scores of sample enterprises earned revenues from online sales before the pandemic, and many of them, especially young firms, export-oriented firms, firms facing a cash shortage, and those having used online sales, plan to increase the share of online sales in the midst of the pandemic. Fourth, the share of online sales has a non-linear relationship with employment. As the share increases until it reaches about 40% of the total sales, its relationship with employment is negative, suggesting that the use of online sales displaces labor input. As the share increases further, however, the relationship becomes positive, suggesting that larger-scale use of online sales creates jobs. Our data do not provide evidence that sales revenue increases or decreases as the share of online sales increases or that the likelihood of facing a cash shortage is related to this share.

Fifth, MSMEs tend to prefer tax payment deferral, tax rate reduction, and loan repayment deferral to many other possible forms of government support for MSMEs, even though considerable differences exist among countries and among firms regarding which type of support they prefer. Our data suggest that those MSMEs that prefer tax-related support were more likely to receive such support and that those that prefer loan-related support were more likely to receive such support. In this sense, the demand and the supply of support seem to match to some extent. Interestingly, however, we did not find any evidence supporting the hypothesis that those firms that had to reduce their employment more or were facing a cash shortage would be more likely to receive government support.

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APPENDIX

Appendix Table A1: Estimated Functions Explaining Employment: Ordered Logit Regression Results for Permanent Employees (Marginal Effects)

	More than 60% Decrease	Between 41% and 60% Decrease	Between 21% and 40% Decrease	Up to 20% Decrease	No Change	Increase
Agri-business	0.009 (0.019)	0.006 (0.013)	0.007 (0.014)	0.006 (0.013)	-0.022 (0.047)	-0.006 (0.012)
Hard-hit manufacturing	0.030*** (0.009)	0.021*** (0.006)	0.022*** (0.007)	0.021*** (0.006)	-0.076*** (0.022)	-0.019*** (0.006)
Hard-hit service	0.060*** (0.013)	0.042*** (0.009)	0.044*** (0.010)	0.042*** (0.009)	-0.150*** (0.032)	-0.038*** (0.009)
Other service	0.005 (0.008)	0.003 (0.006)	0.004 (0.006)	0.003 (0.006)	-0.012 (0.020)	-0.003 (0.005)
Female-headed	-0.014* (0.007)	-0.010* (0.005)	-0.011* (0.005)	-0.010* (0.005)	0.036* (0.018)	0.009* (0.005)
Firm age	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.001 (0.001)	0.000 (0.000)
Small enterprise	-0.023*** (0.008)	-0.016*** (0.006)	-0.017*** (0.006)	-0.017*** (0.006)	0.059*** (0.019)	0.015*** (0.005)
Medium enterprise	-0.022*** (0.009)	-0.016*** (0.006)	-0.017** (0.006)	-0.016** (0.006)	0.056*** (0.021)	0.014** (0.006)
Export-oriented	0.020** (0.008)	0.014** (0.006)	0.015** (0.006)	0.014** (0.006)	-0.051** (0.020)	-0.013** (0.005)
Online sales 2019	0.058*** (0.017)	0.045*** (0.013)	0.051*** (0.016)	0.058*** (0.019)	-0.164*** (0.049)	-0.048*** (0.016)
India	0.052*** (0.015)	0.040*** (0.011)	0.046*** (0.011)	0.050*** (0.012)	-0.151*** (0.037)	-0.038*** (0.010)
Indonesia	0.023** (0.012)	0.019** (0.010)	0.024** (0.012)	0.031** (0.015)	-0.073** (0.036)	-0.023** (0.012)
Lao PDR	0.036*** (0.012)	0.029*** (0.009)	0.035*** (0.011)	0.042*** (0.014)	-0.111*** (0.035)	-0.031*** (0.011)
Malaysia	0.020** (0.009)	0.017** (0.007)	0.021** (0.009)	0.028** (0.013)	-0.065** (0.028)	-0.021** (0.010)
Mongolia	-0.004 (0.008)	-0.004 (0.007)	-0.005 (0.009)	-0.008 (0.014)	0.014 (0.026)	0.007 (0.013)
Pakistan	0.066*** (0.015)	0.049*** (0.011)	0.054*** (0.011)	0.055*** (0.012)	-0.182*** (0.037)	-0.042*** (0.010)
Viet Nam	0.086*** (0.015)	0.061*** (0.010)	0.065*** (0.010)	0.058*** (0.012)	-0.223*** (0.033)	-0.047*** (0.010)

Notes: We obtained the marginal effects from the results of model (2), Table 2. The same notes as in Table 3 apply to this table.

Appendix Table A2: Estimated Functions Explaining Employment: Ordered Logit Regression Results for Non-permanent Employees (Marginal Effects)

	More than 60% Decrease	Between 41% and 60% Decrease	Between 21% and 40% Decrease	Up to 20% Decrease	No Change	Increase
Agri-business	0.027 (0.037)	0.004 (0.005)	0.003 (0.004)	0.001 (0.002)	-0.029 (0.039)	-0.006 (0.008)
Hard-hit manufacturing	0.051*** (0.019)	0.008*** (0.003)	0.006*** (0.002)	0.002** (0.001)	-0.055*** (0.020)	-0.012*** (0.004)
Hard-hit service	0.101*** (0.028)	0.015*** (0.004)	0.012*** (0.003)	0.004** (0.002)	-0.109*** (0.030)	-0.023*** (0.007)
Other service	-0.006 (0.017)	-0.001 (0.002)	-0.001 (0.002)	-0.000 (0.001)	0.007 (0.018)	0.001 (0.004)
Female-headed	-0.025 (0.016)	-0.004 (0.002)	-0.003 (0.002)	-0.001 (0.001)	0.027 (0.017)	0.006 (0.004)
Firm age	-0.000 (0.001)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.001)	0.000 (0.000)
Small enterprise	-0.007 (0.016)	-0.001 (0.002)	-0.001 (0.002)	-0.000 (0.001)	0.007 (0.018)	0.002 (0.004)
Medium enterprise	0.004 (0.019)	0.001 (0.003)	0.000 (0.002)	0.000 (0.001)	-0.004 (0.020)	-0.001 (0.004)
Export-oriented	0.028 (0.017)	0.004 (0.003)	0.003 (0.002)	0.001 (0.001)	-0.030 (0.019)	-0.006 (0.004)
Online sales 2019	0.084** (0.039)	0.015** (0.007)	0.013** (0.006)	0.012** (0.005)	-0.097** (0.045)	-0.026** (0.012)
India	0.091*** (0.024)	0.031*** (0.008)	0.034*** (0.008)	0.034*** (0.009)	-0.156*** (0.038)	-0.033*** (0.009)
Indonesia	0.023 (0.019)	0.009 (0.007)	0.011 (0.009)	0.014 (0.012)	-0.044 (0.037)	-0.013 (0.011)
Lao PDR	0.045** (0.020)	0.017** (0.007)	0.020** (0.009)	0.024** (0.011)	-0.084** (0.036)	-0.021** (0.010)
Malaysia	0.401*** (0.028)	0.063*** (0.007)	0.039*** (0.008)	-0.022* (0.012)	-0.425*** (0.028)	-0.056*** (0.009)
Mongolia	-0.015 (0.014)	-0.006 (0.006)	-0.008 (0.008)	-0.013 (0.012)	0.030 (0.028)	0.012 (0.011)
Pakistan	0.111*** (0.024)	0.036*** (0.008)	0.039*** (0.008)	0.035*** (0.009)	-0.184*** (0.037)	-0.036*** (0.009)
Viet Nam	0.307*** (0.029)	0.063*** (0.007)	0.049*** (0.007)	0.004 (0.011)	-0.370*** (0.031)	-0.052*** (0.009)

Notes: We obtained the marginal effects from the results of model (4), Table 2. The same notes as in Table 3 apply to this table.

Appendix Table A3: Estimated Functions Explaining Sales in the First Half of 2020: Ordered Logit Regression (Marginal Effects)

Variables	Decrease by More than 40%	Decrease by More than 20% to 40%	Decrease by Less than or Equal to 20%	About the Same	Increase by Less than or Equal to 10%	Increase by More than 10%
Agri-business	-0.026 (0.053)	-0.004 (0.008)	0.009 (0.018)	0.011 (0.023)	0.004 (0.009)	0.006 (0.012)
Hard-hit manufacturing	0.051 (0.031)	0.008 (0.005)	-0.018 (0.011)	-0.022 (0.013)	-0.008 (0.005)	-0.011 (0.007)
Hard-hit service	0.241*** (0.045)	0.039*** (0.010)	-0.084*** (0.016)	-0.104*** (0.021)	-0.039*** (0.009)	-0.053*** (0.012)
Other service	-0.025 (0.029)	-0.004 (0.005)	0.009 (0.010)	0.011 (0.012)	0.004 (0.005)	0.006 (0.006)
Female-headed	0.028 (0.025)	0.004 (0.004)	-0.010 (0.009)	-0.012 (0.011)	-0.004 (0.004)	-0.006 (0.006)
Firm age	0.001 (0.001)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Small enterprise	-0.066*** (0.025)	-0.012** (0.006)	0.022*** (0.008)	0.029** (0.012)	0.011** (0.005)	0.016** (0.007)
Medium enterprise	-0.038 (0.031)	-0.006 (0.005)	0.013 (0.011)	0.016 (0.014)	0.006 (0.005)	0.008 (0.007)
Export-oriented	-0.054* (0.028)	-0.009* (0.005)	0.019* (0.010)	0.023* (0.012)	0.009* (0.005)	0.012* (0.006)
Online sales 2019	0.011 (0.079)	0.001 (0.015)	-0.004 (0.027)	-0.004 (0.035)	-0.001 (0.013)	-0.002 (0.018)
India	0.005 (0.043)	0.000 (0.002)	-0.002 (0.017)	-0.002 (0.016)	-0.001 (0.005)	-0.001 (0.007)
Indonesia	-0.016 (0.045)	-0.001 (0.003)	0.006 (0.018)	0.006 (0.017)	0.002 (0.006)	0.003 (0.008)
Lao PDR	-0.136*** (0.038)	-0.030*** (0.009)	0.043*** (0.013)	0.063*** (0.018)	0.025*** (0.008)	0.035*** (0.011)
Mongolia	-0.091** (0.037)	-0.014** (0.006)	0.032** (0.013)	0.039** (0.016)	0.014** (0.006)	0.019** (0.008)
Pakistan	-0.004 (0.042)	-0.000 (0.002)	0.002 (0.017)	0.002 (0.016)	0.001 (0.005)	0.001 (0.007)

Notes: We obtained the marginal effects from the results of model (2), Table 3. The same notes as in Table 4 apply to this table.

Appendix Table A4: Estimated Functions Explaining the Expected Sales Growth in 2020: Ordered Logit Regression (Marginal Effects)

Variables	Decrease by More than 40%	Decrease by More than 20% to 40%	Decrease by Less than or Equal to 20%	About the Same	Increase by Less than or Equal to 10%	Increase by More than 10%
Agri-business	-0.058 (0.036)	-0.016 (0.010)	0.004 (0.003)	0.014 (0.009)	0.008 (0.005)	0.048 (0.030)
Hard-hit manufacturing	0.004 (0.018)	0.001 (0.005)	-0.000 (0.001)	-0.001 (0.004)	-0.000 (0.002)	-0.003 (0.015)
Hard-hit service	0.161*** (0.026)	0.043*** (0.008)	-0.010*** (0.003)	-0.038*** (0.007)	-0.021*** (0.004)	-0.134*** (0.022)
Other service	-0.021 (0.015)	-0.006 (0.004)	0.001 (0.001)	0.005 (0.004)	0.003 (0.002)	0.018 (0.012)
Female-headed	-0.012 (0.014)	-0.003 (0.004)	0.001 (0.001)	0.003 (0.003)	0.002 (0.002)	0.010 (0.012)
Firm age	0.000 (0.001)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Small enterprise	-0.026* (0.015)	-0.007* (0.004)	0.002* (0.001)	0.006* (0.003)	0.004* (0.002)	0.022* (0.013)
Medium enterprise	-0.028* (0.017)	-0.007 (0.004)	0.002* (0.001)	0.006* (0.004)	0.004 (0.002)	0.023 (0.014)
Export-oriented	-0.004 (0.016)	-0.001 (0.004)	0.000 (0.001)	0.001 (0.004)	0.001 (0.002)	0.004 (0.013)
Online sales 2019	-0.019 (0.046)	-0.006 (0.009)	-0.000 (0.008)	0.004 (0.014)	0.002 (0.007)	0.020 (0.028)
India	-0.260*** (0.039)	-0.017 (0.013)	0.085*** (0.013)	0.093*** (0.015)	0.032*** (0.006)	0.067*** (0.014)
Indonesia	-0.473*** (0.032)	-0.219*** (0.013)	-0.090*** (0.014)	0.048*** (0.015)	0.068*** (0.009)	0.667*** (0.034)
Lao PDR	-0.389*** (0.034)	-0.106*** (0.014)	0.063*** (0.015)	0.158*** (0.013)	0.073*** (0.008)	0.200*** (0.024)
Malaysia	-0.097*** (0.038)	0.012* (0.006)	0.035*** (0.014)	0.027*** (0.010)	0.008*** (0.003)	0.015*** (0.006)
Mongolia	-0.303*** (0.035)	-0.038*** (0.011)	0.089*** (0.013)	0.115*** (0.013)	0.042*** (0.006)	0.094*** (0.013)
Pakistan	-0.248*** (0.039)	-0.012 (0.011)	0.082*** (0.013)	0.087*** (0.015)	0.029*** (0.006)	0.061*** (0.012)
Viet Nam	-0.443*** (0.032)	-0.172*** (0.013)	-0.007 (0.015)	0.143*** (0.013)	0.095*** (0.009)	0.384*** (0.027)

Notes: We obtained the marginal effects from the results of model (4), Table 3. The number of observations is 1,344. The same notes as in Table 4 apply to this table.

Appendix Table A5: Estimated Functions Explaining Received Support and Need for Support: Logit Regression (Marginal Effects)

Variables	(1) Tax Support (Mar.–Apr.)	(2) Tax Support (May–June)	(3) Loan Support (Mar.–Apr.)	(4) Loan Support (May–June)
Agri-business	–0.027 (0.054)	–0.077 (0.052)	–0.057 (0.050)	–0.018 (0.049)
Hard-hit manufacturing	0.010 (0.028)	0.030 (0.032)	–0.027 (0.023)	–0.007 (0.030)
Hard-hit service	–0.027 (0.036)	–0.066 (0.040)	0.023 (0.033)	0.017 (0.044)
Other service	0.012 (0.022)	0.028 (0.028)	–0.018 (0.021)	–0.023 (0.030)
Female-headed	0.047** (0.020)	0.011 (0.024)	–0.025 (0.019)	–0.033 (0.025)
Firm age (years)	0.001* (0.001)	0.003*** (0.001)	0.001 (0.001)	0.001 (0.001)
Small enterprise	0.054** (0.023)	0.049* (0.027)	0.077*** (0.021)	0.037 (0.026)
Medium	0.037 (0.026)	0.010 (0.032)	0.102*** (0.024)	0.079** (0.032)
Export-oriented	0.033 (0.024)	0.056** (0.028)	0.003 (0.021)	0.027 (0.027)
Online sales 2019	0.088 (0.057)	0.001 (0.079)	–0.029 (0.056)	0.100 (0.076)
Online sales 2019 squared				
> 60% decrease in permanent employment	0.032 (0.036)	0.030 (0.044)	–0.033 (0.031)	0.007 (0.041)
41–60% decrease in permanent employment	–0.005 (0.039)	–0.046 (0.042)	–0.088*** (0.030)	–0.047 (0.035)
21–40% decrease in permanent employment	–0.017 (0.032)	–0.056 (0.037)	–0.044 (0.028)	–0.044 (0.035)
Up to 20% decrease in permanent employment	–0.046* (0.024)	–0.033 (0.029)	–0.014 (0.022)	0.039 (0.031)
Increase in permanent employment	0.006 (0.041)	0.037 (0.053)	–0.036 (0.037)	–0.003 (0.058)
Tax support needs	0.181*** (0.019)	0.168*** (0.020)	0.028 (0.019)	0.036 (0.024)
Loan support needs	0.052*** (0.019)	0.043** (0.021)	0.179*** (0.016)	0.222*** (0.018)
Cash shortage	0.028 (0.019)	0.039* (0.023)	0.068*** (0.017)	0.025 (0.022)
Observations	2,051	1,344	2,051	1,344

Notes: We obtained the marginal effects from the results in Table 8. The number of observations is 2,051. The same notes as in Table 8 apply to this table.