



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



CHANGING NEEDS FOR SKILLS DEVELOPMENT AS A RESULT OF COVID-19





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Key Findings

The Learning and Knowledge Development Facility (LKDF) of the United Nations Industrial Development Organization (UNIDO) and the European Training Foundation (ETF) launched a global survey to collect information from industries to explore the economic impact of the coronavirus disease (COVID-19) and measures put in place by enterprises.

The survey specifically addressed the possible impacts of COVID-19 on the skills needs of enterprises and considered the adoption of measures to boost the skills and retrain workers to better face emergency needs and future prospects.

The survey was conducted in order to generate original information and explore the completely new situation that COVID-19 has produced, in particular where skills development is concerned. The special circumstances that the pandemic has created were evident in some original insights, but it was also a situation with exceptional challenges. This was a period in which more surveys, possibly, than ever before were conducted at the same time. Through the networks of UNIDO and ETF, many messages were submitted confirming clear signs of what might be termed “survey fatigue”. While we will present some original observations, the data have distinct limitations and the results should be read as a basis for further discussion and exchange of ideas¹.

The online survey was launched on 19 May and concluded on 19 July 2020. It was made available in 10 languages² and was distributed through UNIDO offices and to key country stakeholders of ETF. The methodology was to focus attention on three dimensions, namely: first, the economic impact of COVID-19 on industrial enterprises; second, the impact on skills and measures adopted by enterprises; and, third, safety at work and measures adopted by enterprises. The present report describes the results of the survey and outlines discussion points supporting dialogue for future international and national reflection and action.

A total of 334 companies responded to the survey, the majority of which are from the manufacturing, utilities, trade and transportation sectors (more than 50 per cent of respondents are from these sectors). Most companies (32 per cent of respondents) were

large enterprises with more than 249 employees, followed by small companies (28 per cent) with 10 to 49 employees and medium size (23 per cent) companies.

The survey made it possible to observe for one point in time common trends and differences across the globe, independent of the size, sector and geographical location of the company³. Geographically, respondents are based mostly in Asia (47 per cent) and Africa (33 per cent), with two countries (Japan and Zambia) accounting for 51.3 per cent of companies that responded to the survey⁴.

The economic impact of COVID-19 is substantial and visible in several dimensions. A large proportion of companies (58 per cent) stated that they expect major change in their production processes or in the way they perform their main business. The impact on how companies utilize their capacity⁵ is greater for companies in developed economies. However, impacts on capacity utilization is different in different regions, for companies of different sizes or ages, and in different sectors. As expected, we see that the impact on a company’s capacity utilization level is greater in countries that were in full lockdown during the observation period. The most common difficulties reported by the companies in our sample are that business activities are suspended by authorities. Other frequently mentioned challenges include the difficulty of importing raw material and the cancellation of orders. These challenges vary between regions. Most responding companies do not expect layoffs (or very few) because of COVID-19. In this regard, however, companies from developed economies were much more likely than those from developing countries to report no expectation at all that staff would have to be laid off

¹ Because the distribution of the response rates was low and uneven (334 firms, 51.9 per cent from only two countries, Japan and Zambia) the outcome should be read as it was intended: to explore the new situation and to provide basis for discussion.

² English, French, Arabic, Russian, Chinese, Spanish, Japanese, Korean, German and Italian.

³ The pandemic affected world regions still differently at that point in time.

⁴ It should be noted, that although it was not possible to make country comparisons because of the concentration of respondents from Japan and Zambia, when data are analysed by region and sector, there is no change in the general trends observed.

⁵ By business capacity, we mean the extent to which the productive capacity of a business is being used.

(i.e. zero per cent workforce reduction)⁶ Interestingly, the overall perception of what the future effect of COVID-19 will be is more optimistic than might have been expected. In fact, 26 per cent of the companies stated that their belief that the COVID-19 crisis could be turned into an opportunity for their business (37 per cent responded “No” and 37 per cent gave no response on this point).

Economic activity and workforce-related decisions were affected by COVID-19 through four channels. Primary among these was the regulatory decision by public authorities to suspend business activities, followed by the frequent cancellation of orders and declining market demand. Difficulties in obtaining raw materials and shortages in financial liquidity were also cited as hurdles.

COVID-19 is pushing companies to explore future skills needs. Respondents identified and clearly expressed the need for a workforce with different skills in order to cope with the COVID-19 challenges. In all, 41.6 per cent of the companies stated that they expect to need different skills to cope with the COVID-19 challenges and, of these, 60 per cent also expect to changes to their production processes or delivery of main business. The emphasis placed on the need for new skills is also significantly linked to expectations that staff will have to be laid off (this skills need is particularly acute for companies expecting to lay off between 21 and 30 per cent of their staff). This result confirms that skills are seen as a major factor for resilience and change management by companies.

COVID-19 has not changed the perception of what core skills are needed, but strengthened the trend toward digitalization. The skills that companies identified as needing in the future do not differ from those they required before COVID-19. Information and communications technology (ICT) skills and their application, in particular in e-commerce and marketing, and also transversal skills such as design thinking, creativity, analytical capabilities and potential to multitask, remain the highest concerns of companies looking towards the future. The survey confirms that companies now see these skills as more necessary than ever for their future work.

Different strategies require different policies. When it comes to teaching additional skills and retraining staff, enterprises’ choices differ. Just as it was before the COVID-19 pandemic, large and medium enterprises prefer in-company training and open source, web-based training programmes. Small and

micro enterprises instead count on the support of sector associations and their readiness to support retraining and further skills development. It is hence important that policies support different strategies for allowing companies to engage in retraining and skills development of their personnel.

Public support measures for re-training need to be complemented by adequate communication efforts. Only 86 out of the 334 companies that took part in the survey have any knowledge of public funds and programmes supporting retraining. Even when these public funds are well known, they only partially match the needs declared by companies for the retraining and skills development of their staff. These results underline the importance of communication as a key asset of public sector strategies to support enterprise development. Strengthening communication with companies is important both to the alignment of demand and supply for retraining and skills development and also to ensuring that companies have adequate knowledge and access to information to face both urgent needs and pressures deriving from the impact of COVID-19.

The following points may be identified for discussion and further investigation. Major issues at stake for the future that should be further explored and discussed with both enterprises and public authorities are to be found in the following areas:

- **Enhanced role of skills and skills development:** Overall, it is important to ensure more advocacy and awareness-raising on the role of skills for enterprise development, and to bring forward more evidence on how investment in skills, retraining and skills development are key for the competitiveness and development of enterprises.
- **Diversity of public measures:** Public programmes and incentive measures need to be sufficiently diverse with appropriate targets in place to support skills for the development of enterprises.
- **Communication strategies:** Communication strategies, tools and methods need to be in place and available for monitoring access to information and use of programmes and identified good practices that could be disseminated.
- **Learning from innovators:** Taking into account that, across the globe, a substantial percentage of companies are not laying off their staff or are even recruiting, public authorities can learn from these companies to inform programmes and sector-related action.

⁶ It could be that companies in serious economic difficulties are underrepresented in the survey, as they simply might not have the time to respond.

Introduction

THE SCOPE OF THE SURVEY

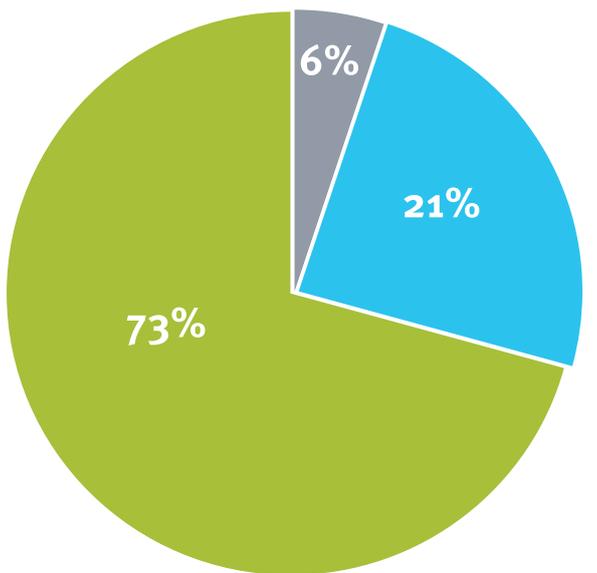
The COVID-19 pandemic brought about unprecedented and very different conditions for businesses across the globe in a very short time span. This survey was conducted as a quick response to the emerging need for information that the onset of the COVID-19 pandemic created. Its objective was to provide an image of how businesses were currently affected and how they are responding, with specific attention to the skills development dimension. It was carried out through the networks of UNIDO and ETF and in a time when particularly many surveys were conducted. We received indications that there was an issue of “survey fatigue” as other issues often required more urgent attention.

For the final dataset used in this report, several datasets were combined into one, namely:

- two pilot studies
- complementary questions
- the final study

The pilot studies operated with a smaller question set, which resulted in substantial numbers of missing data for certain questions.

COVID-19 vs New Industrial Skills: Survey Data Sources



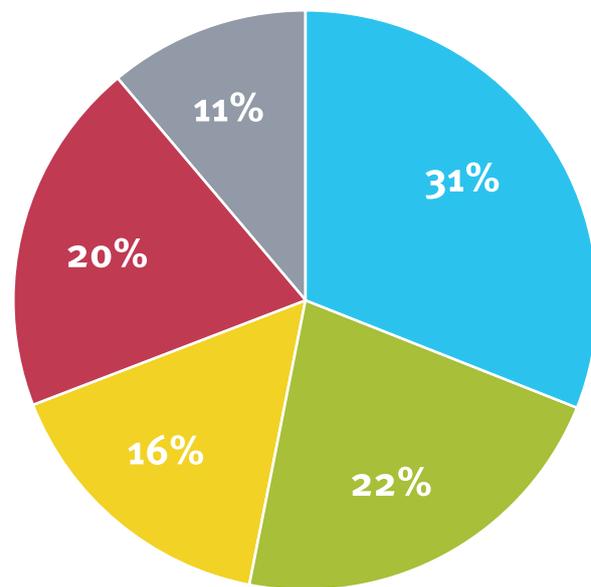
■ study ■ pilot English ■ pilot French

In the following, we give a description of the data by company size, age, region of origin and industry sector.

Company size

The below graph shows that most of the companies responding were large (>250 full-time employees), but that respondents are spread evenly across the six categories of company size⁷.

COVID-19 vs New Industrial Skills: Company Size



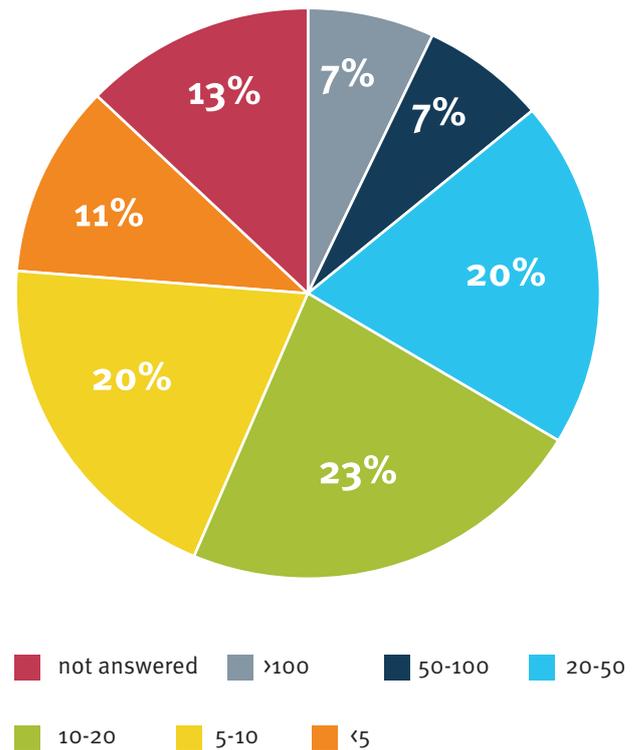
■ not answered ■ >250 ■ 50-249
 ■ 10-49 ■ 1-9

⁷The company size reported here was calculated as follows:
 Company size=employees _(full-time) + 1/2 employee _(part-time)
 The resulting number then was grouped into the six categories of the graph.

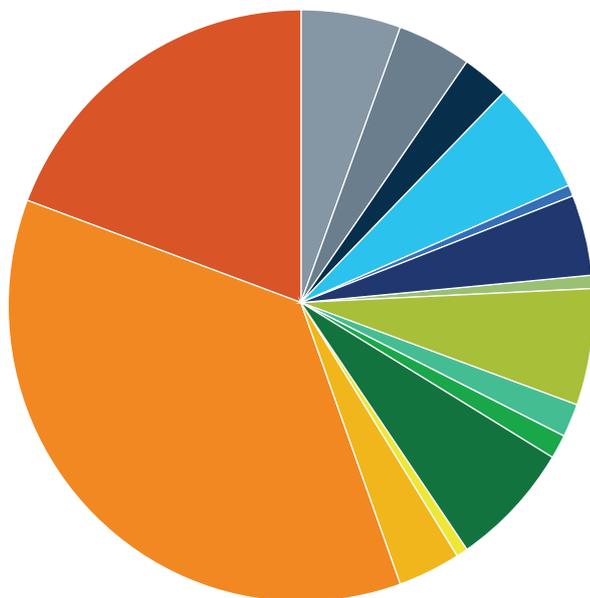
**COVID-19 vs New Industrial Skills:
Company Age**

Company age

Respondents were asked when their company was founded. From this, the age of a company was computed. The answers were grouped into six classes with the distribution as seen in the below graph.



**COVID-19 vs New Industrial Skills:
Regions of origin for respondents**



Region of origin

The region of origin for each respondent was included by matching data drawn from the United Nations Conference on Trade and Development (UNCTAD)⁸ to the country codes. This revealed a limited number of observations from North and South America and a general imbalance in favour of Asia and Africa).⁹



⁸ See <https://unctadstat.unctad.org/en/classifications.html>.

⁹ Participants from Japan and Zambia outnumbered those from any other country of origin (31.8 per cent of the companies present in this sample are in Japan and 19.5 per cent in Zambia).

INDUSTRY SECTORS IN SURVEY

The survey’s question on industry sector asked participants to select one or more sectors of industry in which their business operate. With an objective of being exploratory, the answer options in the survey are even more granular than the United Nations’ own ISIC (International Standard Industrial Classification, 21 major categories), with 26 possible options and a text answer field.

An important caveat is that this question allowed multiple selections, which added noise to the inference that can be drawn from it. For example, there were two respondents who reportedly do business in 12 sectors. Also, as many as 95 of 334 respondents reported no sector of business at all. The 27 answer options and the corresponding low frequency counts per category made it difficult to cross-tabulate and run meaningful statistical tests.

An alternative way of categorizing, inspired by NAICS, the North American Industry Classification System, was therefore used. This way, the 27 categories were “distilled” down to 10. The below graph shows the distribution of the data along these sectors.

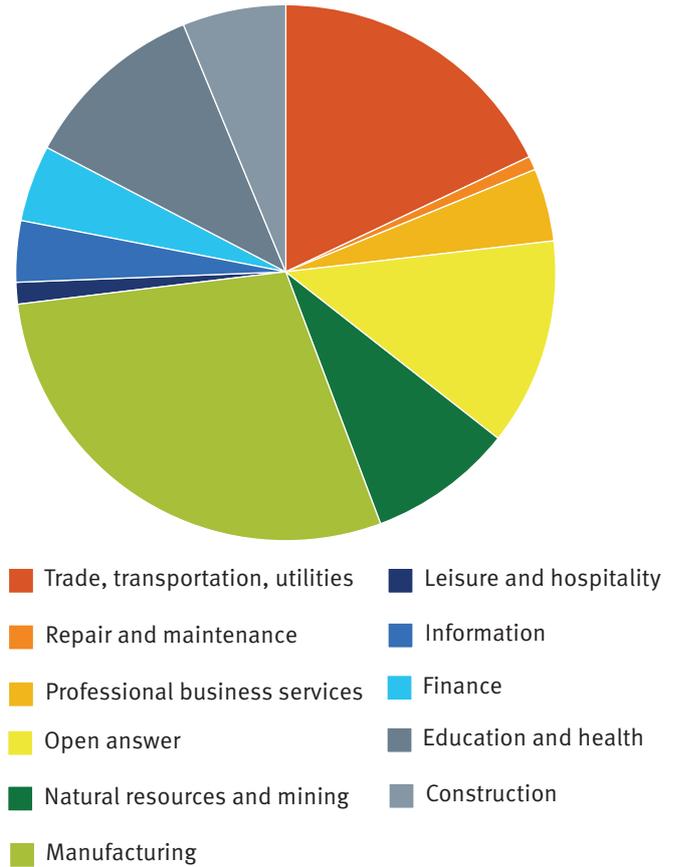
DEVELOPMENT CATEGORIES

The figure below groups the participants into the region their country is in and the development category assigned to this country by UNCTAD . To better compare the various regions, the counts for each industry sector were weighed by the total number of respondents from each region.

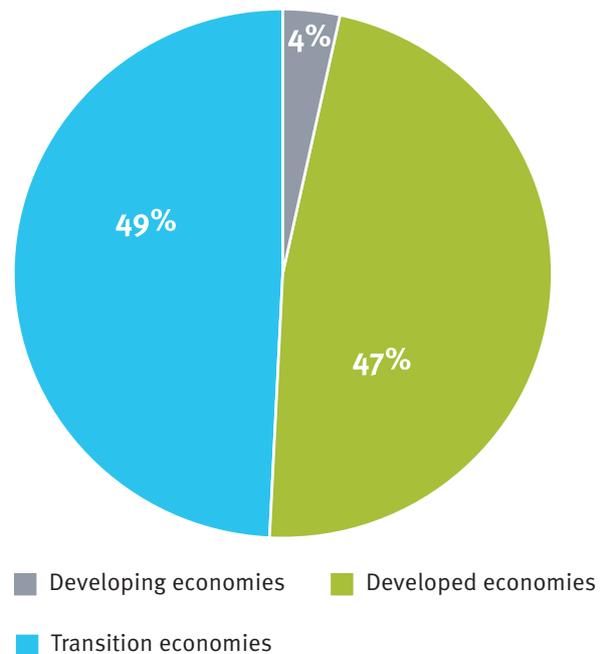
We use data drawn from UNCTAD¹⁰ to add information on the development status of the different countries of origin. This aggregates the data into the three categories seen in the below graph¹¹ . For example, there were 106 participants from “Developed economies: Asia”. The respective counts for each industry for this category were therefore weighed by 106.¹²

This categorization by development classification can again be subdivided by region, providing a description of the data from another angle. The developed economies in particular show a more diverse set of sectors, although no company working in the category “Finance” is reported for developed economies in Asia.

COVID-19 vs New Industrial Skills: Industry Sectors by NAICS



COVID-19 vs New Industrial Skills: Development Status

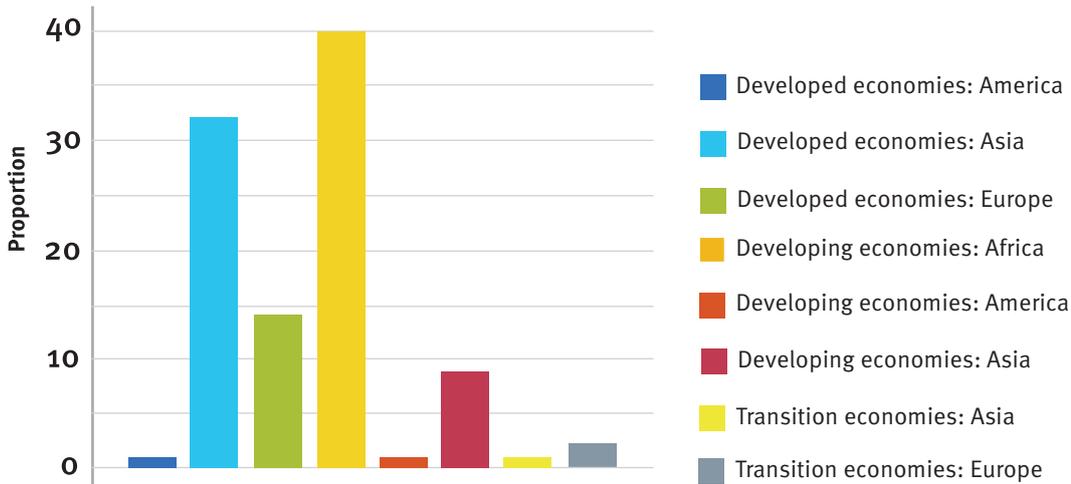


¹⁰ See <https://unctadstat.unctad.org/en/classifications.html>.

¹¹ Countries listed as “Transition economies” are: Albania, Azerbaijan, Georgia, Republic of Moldova and Russian Federation.

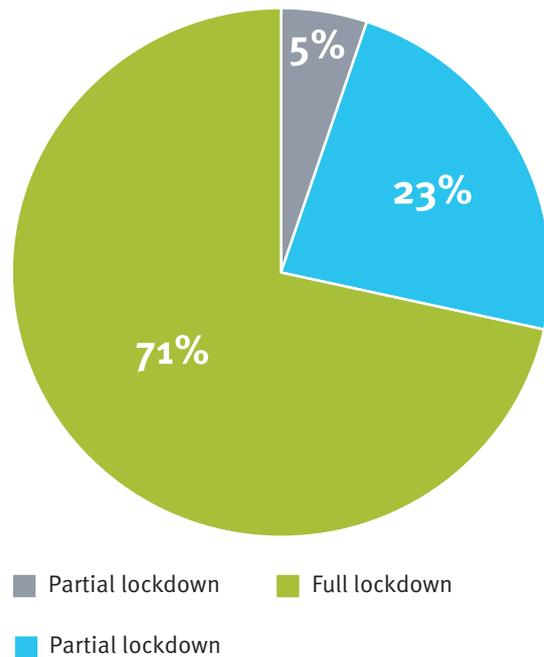
¹² Even though this allows for better comparison, it should still be noted that, for American developing economies, only two observations were available

**COVID-19 vs new industrial skills:
development status by region**



LOCKDOWN RESTRICTIONS

The companies were also experiencing a range of different lockdown restrictions. The survey sample was enriched using data on the starting date and the type of lockdown measures in the respective countries.¹³ At the time of the survey, 71 per cent of the companies were in full lockdown, 5 per cent in partial lockdown and 23 per cent in no lockdown. As expected, and will be evident, this influences how companies' business operations are affected.



¹³ The source for this was <https://www.kaggle.com/jcyzag/COVID-19-lockdown-dates-by-country>

PART 1: ECONOMIC IMPACT

The survey looked at various dimensions of the economic impact which COVID-19 is having on companies and their business. The table below lists the questions included. In our statistical analysis we tested for possible significant differences in responses to them for, first, different regions of the world; second, countries with different development status; third, companies of different sizes; fourth, companies of different ages; fifth, companies working in different industry sectors; and, sixth, companies operating in countries with full, partial or no lockdown measures.

Q1 Compared to December 2019 to what capacity is your business currently operating?

Q2 Which difficulties directly related to the COVID 19 outbreak are you experiencing?

Q3 What is the percentage of your company s employees who are unable to work at present compared to before the start of the COVID 19 crisis?

Q4 What percentage of staff are you expecting to or have already cut compared to before the start of the COVID 19 crisis?

Q5 Do you expect any major change in your production processes or in the way you perform your main business?

Q14 Do you believe that the COVID 19 crisis could be turned into an opportunity for your business?

Methodology:

In the following sections we pose several hypotheses and conduct statistical tests to assess whether the patterns observed in the answers to the questions are significantly different for the categorization dimensions mentioned above. All analyses omitted missing values for unanswered questions.

The testing procedure and the visualization of its results was chosen to fit the specific structure of the data resulting from the survey. On the one hand, the overall sample size of $n=334$ observations is large enough for the Central Limit Theorem to apply and would thus allow the application of Pearson's χ^2 test for stochastic independence. On the other hand, most contingency tables upon which the results are based include cell counts lower than 5, in which case it is commonly recommended to use the Fisher exact test.

This report follows this recommendation, but uses an extension of the Fisher exact test that uses Monte-Carlo simulations since the contingency tables here are almost always larger than 2×2 for which the original test was proposed.

It must be noted that the Fisher tests, conducted where the influence of each category is investigated, could theoretically be conceived as a multiple

comparisons problem, which would require a correction of the p-values. As the high number of non-responses and missing values already poses some limits on the amount of inference that can be drawn from the survey, no correction was applied to the results from the Fisher tests.

In case a significant relationship is found, a (χ^2 -based) post hoc analysis investigating the residuals between the "expected" and the "observed" cell count is conducted and a plot is provided. This post hoc analysis does apply a multiple-comparisons correction, namely the Benjamini-Hochberg-procedure.

The plots can be interpreted as follows:

- the size of the circle gives the strength of association between response in the row and the category in the column
- the colour of the circle indicates the direction of association, with red meaning "negative" and blue meaning "positive" attraction

It is important to note that a strong association between two features does not automatically mean that the post hoc test must be significant. Still, it might be indicative of a relationship that might prove relevant given a larger sample size.

The economic crisis unleashed by the outbreak of COVID-19 is hurting economies, regardless of income level. The most recent data from UNIDO’s seasonally adjusted Index of Industrial Production (April 2020 vs December 2019) indicate that both lower- and upper middle-income countries have been significantly impacted by COVID-19.

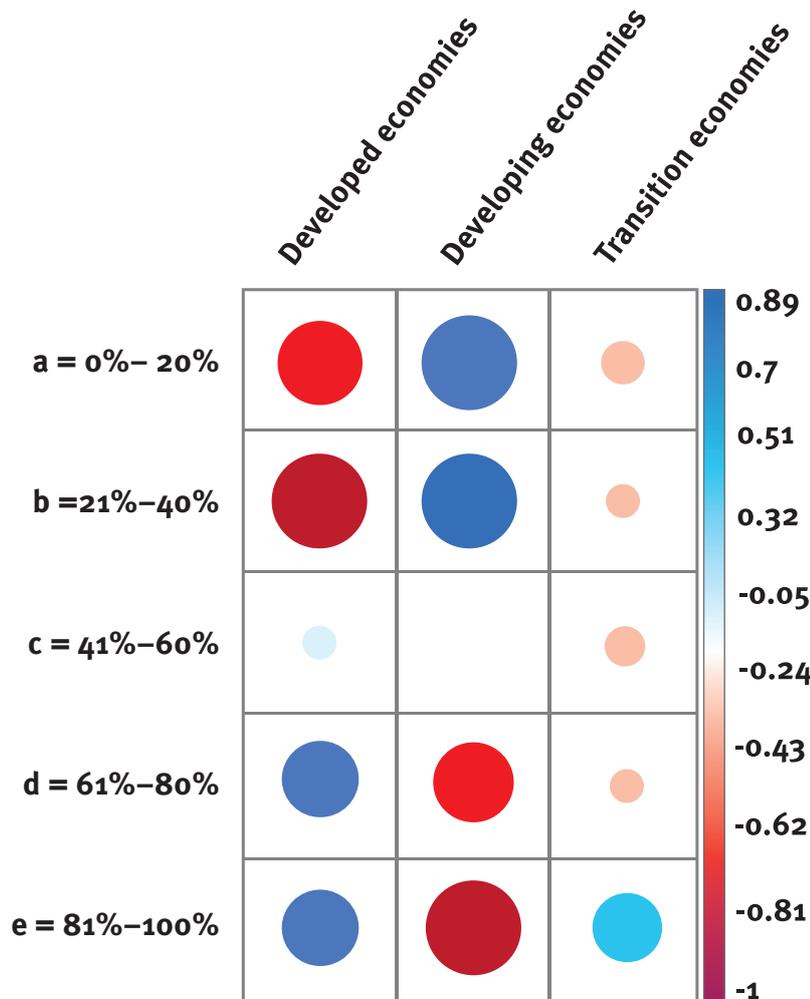
The impact on business capacity utilization is greater for companies in developing economies. No significant relationship in terms of impact on business capacity is found for different regions, for companies of different sizes or ages, or in different sectors. At the same time, however, testing the pattern of answers to this question against the development category of the country shows a significant relationship ($p < 0.05$) in the effect of COVID-19 effect on the capacity at which the respondents’ companies are working.

COVID-19 has severely affected manufacturing

production in developing countries because of, first, the decrease in demand from high-income countries for manufacturing goods and raw materials; second, the disruption of value chains because of delays in the delivery of necessary components and supplies from more technologically advanced countries; and, third, other factors, including policies (such as the restriction of movement of goods and people), the inability of employees to reach the workplace or financial constraints, which affect the normal production process.

The analyses show that companies from developed economies reported operating at 21–40 per cent capacity (compared to December 2019) less often and at 61–80 per cent capacity more often.

Respondents from developing economies reported operating at 0–20 per cent and at 21–40 per cent more often. They also reported operating at 81–100 per cent less often.



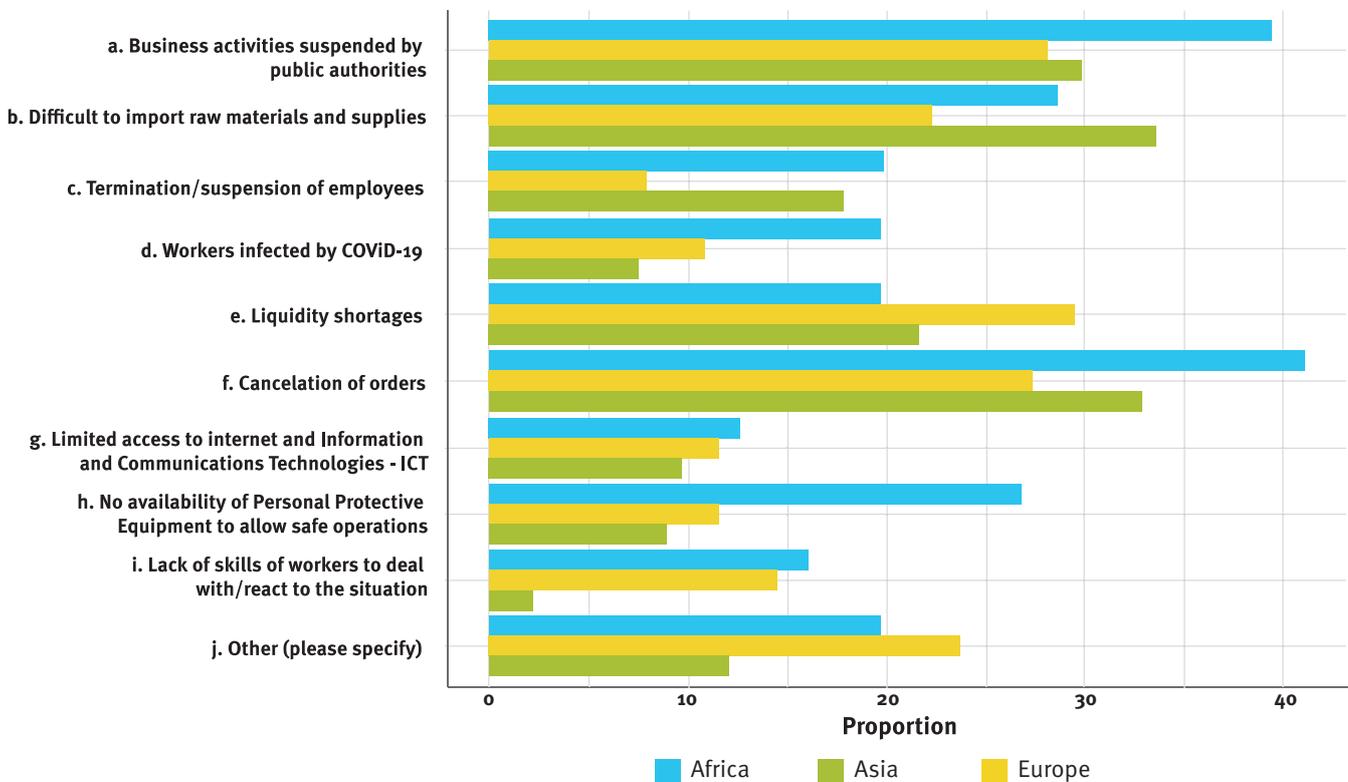
If we explore this relationship further and relax the p-value level (to $p < 0.1$), we also see a further confirmation of the same pattern; an indication of developed economies gravitating away from answer option “0%–20%” and towards “61%–80%” and “81%–100%”.

Difficulties experienced by companies

To explore the kind of difficulties that companies are experiencing, respondents could choose among the following options:

- a. Business activities suspended by public authorities
- b. Difficult to import raw materials and supplies
- c. Termination/Suspension of employees
- d. Workers infected by COVID-19
- e. Liquidity shortages
- f. Cancellation of orders
- g. Limited access to internet and Information and Communications technologies – ICT
- h. No availability of personal protective equipment to allow safe operations
- i. Lack of skills of workers to deal/react to the situation
- j. Other (please specify)

The graph below shows the distribution of responses by continent¹⁴. The most common difficulties faced by companies in our sample are the suspension of business activities by authorities, difficulty importing raw material, and cancellation of orders. These are difficulties reported in many studies. Due to curfews and social distancing measures, industries closed their doors or could not operate at full scale. This is especially true where the physical presence of workers in production is necessary. For example, factory activity in East Asia, Europe and the U.S. decreased significantly as a result of COVID-19. Another effect widely seen has been that industry cannot operate properly if businesses do not receive the supplies they need for production. As suppliers were also subject to restrictions, their output dropped as well. This became evident, for example, when Chinese suppliers ceased deliveries due to the COVID-19 lockdown of Wuhan. In addition, both consumer demand for industrial products and demand from industry—domestically and abroad—has fallen due to reductions in consumption, decreasing purchasing power and a decrease in demand for businesses products as buyers of intermediate products also faced restrictions in production and falling consumer demand for their products.



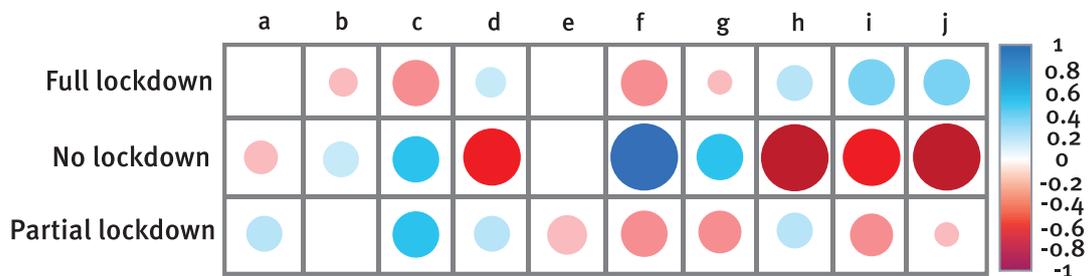
¹⁴ The figure omits responses from the Americas and missing responses. The proportions reported are calculated by weighting the remainder with the total number of respondents from Africa, Asia and Europe.

This reflects the general changes brought about by the pandemic. Manufacturers in developed countries have implemented business strategies with the aim of reducing the risks of sourcing from distant and unreliable suppliers such as those located in developing countries. Because of the pandemic, traditional manufacturing companies are seriously questioning existing supply chain models. Planned production plants in countries with low-labour-cost are stalling and supply chains are being restructured in order to mitigate risks and make them shorter. By the end of this process inter- and intra-company value chains might look significantly different. As a consequence of COVID-19, industries in developing countries risk being less engaged in Global value Chains (GVCs).

That means that the competitiveness of low labour costs is falling and the old logic of economies of

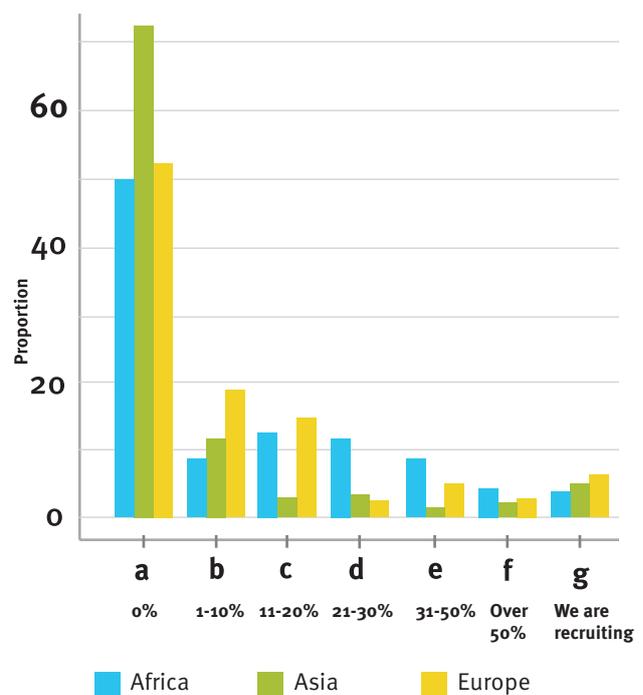
scale is shifting toward flexible manufacturing systems that enable small production runs, allowing for individualized products. The new era of advanced or smart manufacturing, based on a convergence of automation, robotics, and big data analytics generated from the Industrial Internet of things, is likely to result in a significant demand for skilled labour along two dimensions: the number of skilled workers and the level of skills.

The extent of lockdown restrictions has considerable influence: respondents from countries with only partial lockdown measures reported cancellation of orders as a difficulty significantly more often. As expected, and as may be seen in the graph below, there are additional indications that they less often reported lack of availability of PPE to allow safe operations and lack of skills of workers to deal with or respond to the situation.



STAFF LAYOFFS DUE TO COVID-19 CHALLENGES

Most responding companies do not expect (or have not already been forced) to lay off staff.¹⁵ At the time of the survey, 64 per cent responded not expecting to lay off staff. In fact, 4 per cent are even recruiting. The graph below shows this by region. There is an economic dimension to this, with companies from developed economies significantly more often reporting that they do not expect to have to lay off staff (i.e. zero per cent) and developing countries significantly less often. The age of companies plays a role. Younger companies, aged between five and ten years, reported significantly less often “no expectation to have to lay off staff” (i.e. zero per cent).



¹⁵ The figure omits responses from the Americas and missing responses. The proportions reported are calculated by weighting the remainder with the total number of respondents from Africa, Asia and Europe.

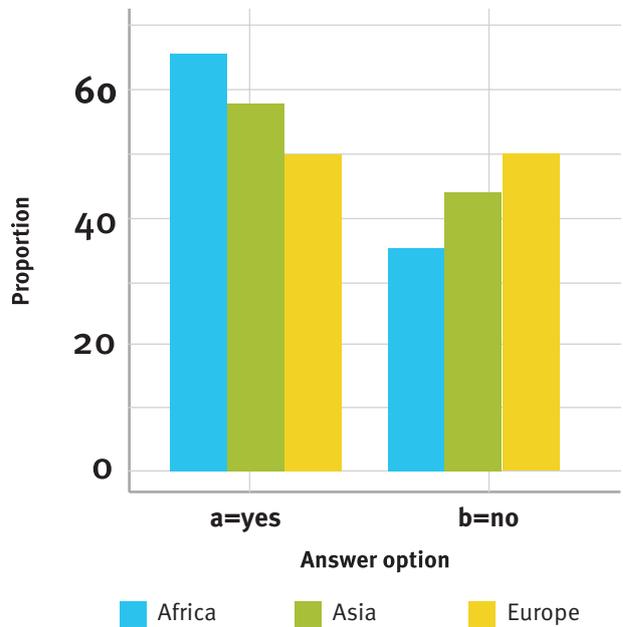
They also reported significantly more often the possible need to lay off even up to 21–30 per cent of staff. There are several possible reasons for this: for example, that newer companies are less rooted and have made more investments that are recent and are therefore less well equipped to face a crisis. This can be seen in relation to a recent UNIDO survey¹⁶ across manufacturing firms in several emerging economies in Asia, which showed that 20 per cent of firms stated that they had to lay off employees or are planning to cut one quarter or more of their staff.

This could at least be partially explained by the fact that the companies that answered the survey are probably formal, which means that the survey is more likely to reach them than informal companies. Formal companies can benefit from government economic support measures and can afford not to lay off workers. The situation is likely to be very different for informal companies that do not have access to the same support and which are likely to be forced to lay off staff much sooner. This is particularly relevant when analysing the situation in countries with high levels of informality.

Impact on how companies do their business (production processes)

A large proportion of companies (58 per cent) stated that they expect major change in their production processes or in the way they perform their primary business. The graphs below show this response by region.¹⁷ No statistical difference may be seen, however, in responses to this question between regions, different development levels, companies of different sizes, companies of different ages, companies working in different industry sectors, or for companies operating in countries with full, partial or no lockdown measures.¹⁸ Data derived from UNIDO’s Index of Industrial Production (IIP) show that countries with a similar number of COVID-19-related deaths may experience different levels of economic loss, depending on the severity of the containment measures implemented or their indirect effects.¹⁹ The economic impact of COVID-19 on the industrial sector ultimately depends on how the continued containment measures and related restrictions affect manufacturing firms. The extent of firms’ productive capacities, their degree of integration in domestic

and global production networks and the type of market they serve are important factors determining the extent of the crisis’ impact on firms. Accordingly, some firms (and countries) are better suited to quickly respond and adapt their operations, thus reducing the shock’s overall impact on their profits, cash flow and staff.



¹⁶ The first round of the survey included seven countries and collected a total of 1,040 valid responses. It was implemented online between mid-April and early June 2020 in collaboration with governments, business chambers and other agencies operating in the participating countries.

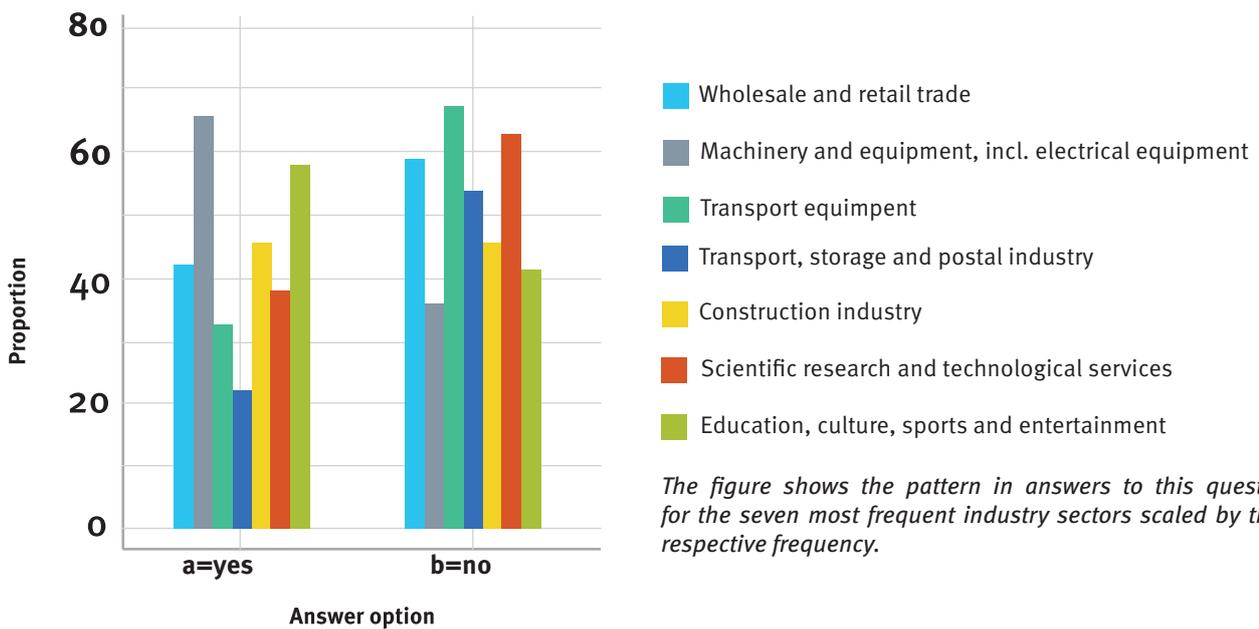
¹⁷ The figure omits responses from the Americas and missing responses. The proportions reported are calculated by weighting the remainder with the total amount of the respondents from Africa, Asia and Europe.

¹⁸ The Fisher test resulted in a significant difference between countries with different development status and lockdown status, but the post hoc procedure found no specific indication as to the origins of this difference.

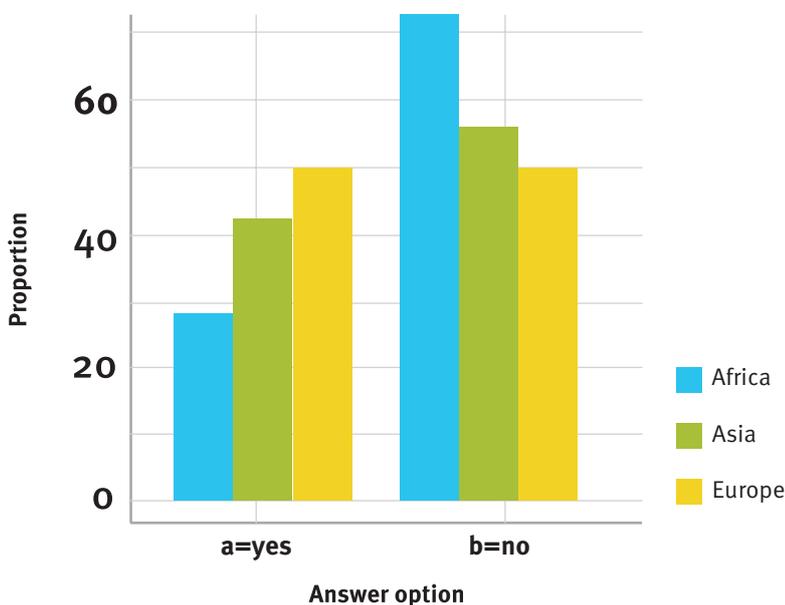
¹⁹ <https://www.unido.org/stories/coronavirus-economic-impact-10-july-2020>

Interestingly, 26 per cent of the companies also stated their belief that the COVID-19 crisis could be turned into an opportunity for their business (37 per cent responded “No” and 37 per cent did not respond on this point). The graphs below show this by each sector. No statistical relationship was found, however, regarding differences in the valid answers to this question for the different categorization options. This may be because the question has a large subjective component that may not be related to the objective situation.

COVID 19 crisis could be turned into opportunity for business by sector



COVID 19 crisis could be turned into opportunity for business by region



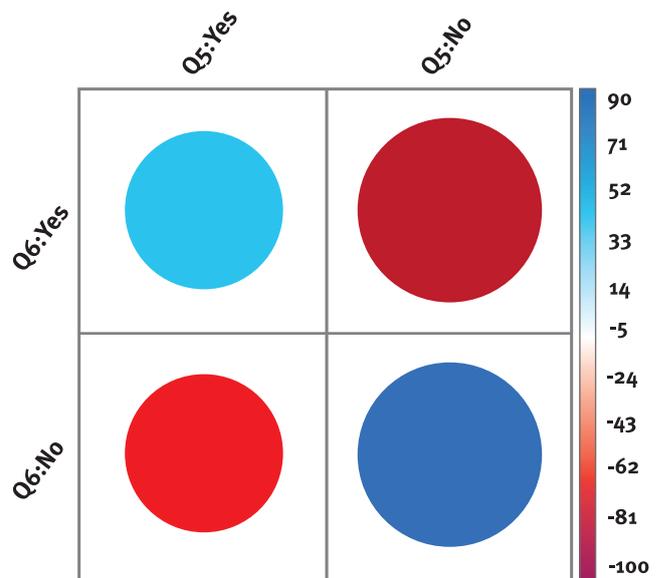
PART 2: IMPACT ON FUTURE SKILLS NEEDS

COVID-19 is pushing companies to look into their future skills needs. There is a high level of diversity between responding companies and this heterogeneity is clearly reflected when several characteristics are taken into account, such as the size, development status of the country, where the company is located, and the age of the company.

The impact of COVID-19 on most companies is reflected by expectations regarding change in production processes or in the delivery of the main business. COVID-19 has acted as an accelerating force for possible business model adaptations and developments. A substantial proportion of the companies (58 per cent) responded that they expect major change in their production processes or in the way in which they perform their main business.

Our analyses strongly indicate that the answer to this question affected the answer given to the question on a perceived need for different skills to cope with the crisis.²⁰ The figure below illustrates this finding. Respondents who stated that they expect major changes to their production processes or to the way in which they perform their main business gravitated strongly towards also expecting to have a different need for skills.

In all, 41.6 per cent of the companies stated that they expect to need different skills to cope with the challenges of COVID-19,²¹ whereas 60 per cent expect production changes and business model change as a consequence of the impact of the pandemic. A total of 42.5 per cent of companies stated that they do not need new skills for the future as a result of COVID-19; out of these, 60 per cent do not expect any change in their business. The fact that 26 per cent of the companies also stated their belief that the COVID-19 crisis could be turned into an opportunity for their business shows that the impact of COVID-19 on the needs of companies is varied.



Note: Q5 asked: “Do you expect any major change in your production processes or in the way you perform your main business?” Q6 asked: “Do you expect your company to need a workforce with different skills in order to cope with the COVID-19 challenges?”

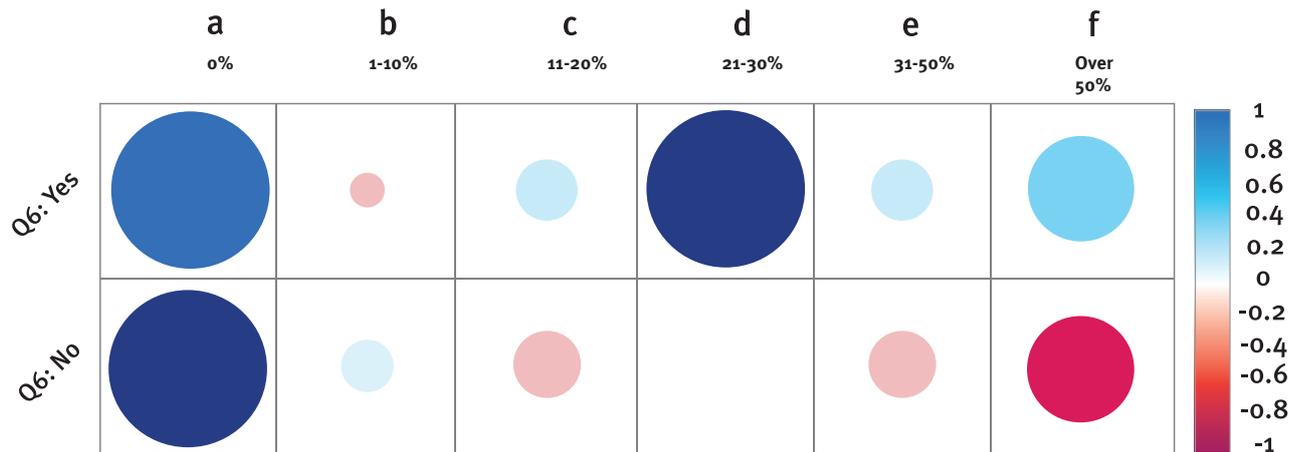
Layoff of staff linked to need for new skills:

As reported above, respondents were also asked what percentage of staff they are expecting to cut or have already cut compared to December 2019. The analysis strongly indicates that the answer to this question also affected the answer given to the question on expected need for different skills in the workforce. Respondents answering that they were going to lay off zero per cent of their staff gravitated towards not expecting to need different skills for their workforce. Respondents answering that they were going to lay off 21–30 per cent of their staff gravitated towards expecting to need a different workforce.

²⁰ The assessment of whether new skills are required is stochastically dependent (given the sample) on whether the company expects major changes in the way in which they conduct business.

²¹ The question asked was: “Do you expect your company to need a workforce with different skills in order to cope with the COVID-19 challenges?”

The figure below shows this in graphic form.



Q6 asks: “Do you expect your company to need a workforce with different skills in order to cope with the COVID 19 challenges?”

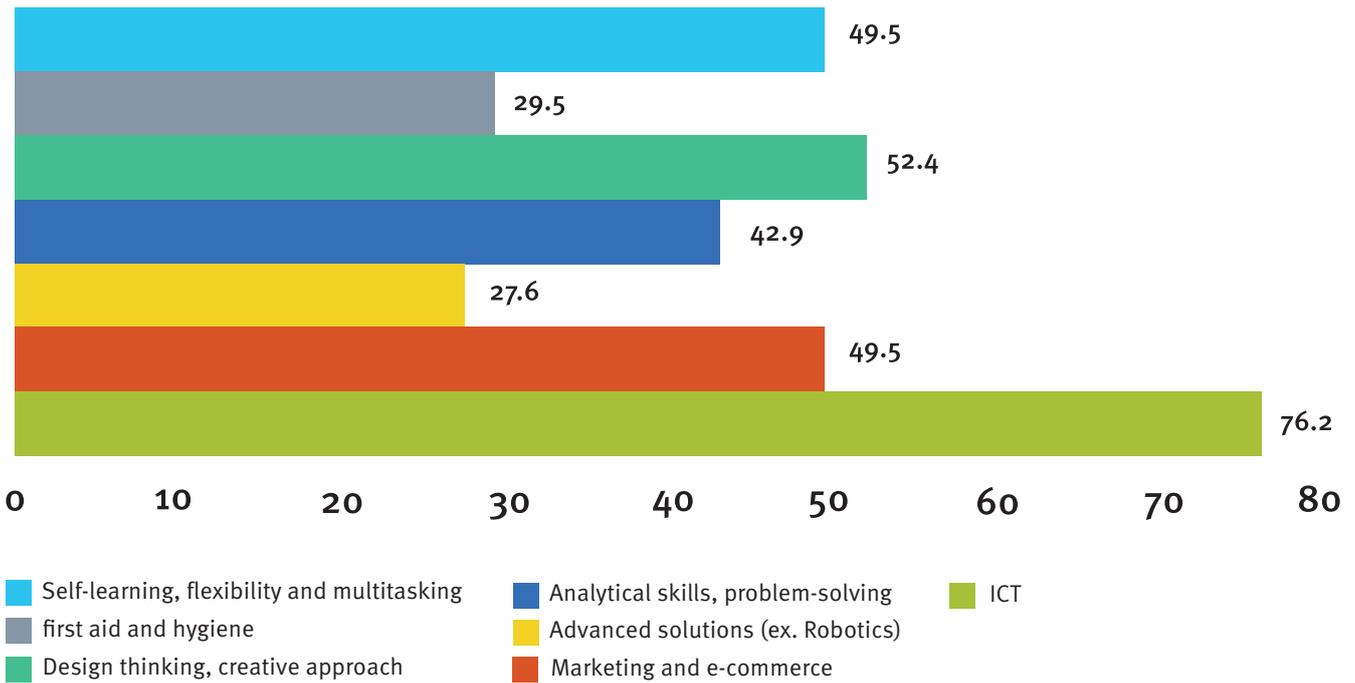
The pandemic has an effect on health across businesses and the lockdown measures taken by governments are the same across businesses in the same country. At the same time, whereas some sectors are strongly affected, others are doing exceptionally well. We therefore expected also to see a variation in terms of the expected needs for new skills, but our analyses of the data show no significant relationship between respondents’ expectations of different skill requirements due to COVID-19 for: first, different regions of the world; second, countries with different development status; third, companies of different sizes; fourth, companies of different ages; fifth, companies working in different industry sectors: or, sixth, companies operating in countries with full, partial or no lockdown measures.

From the group of companies that recognizes the need to work with different skills (139 companies), apart from whether or not they expected major changes in their production and business model, and whether or not they considered COVID-19 to be an opportunity, 105 companies explained that their need for improvement is mainly in ICT skills, followed by design thinking and creative approaches, marketing and e-commerce, self-learning and multitasking, analytical skills and problem solving. It may be concluded that these items, with ICT as the first important area for skills development, skills upgrading retraining, together with the application of ICT to sales and distribution (marketing and

e-commerce), are considered key for enterprises. The focus on advanced solutions is instead less of a concern for companies, highlighting the extensive gap between the needs of companies and the basic skills (including ICT) which are missing at the enterprise level. ICT therefore does not come as a stand-alone area, but is always seen as critical for some other cluster or in association with other skills.

From the subsample of 105 enterprises (companies that recognize the need for a workforce with new skills to cope with COVID-19 challenges and are able to identify the specific skills that they need to develop in their workforce), 40 per cent reported ICT together with marketing and e-commerce, 42 per cent need ICT together and design thinking, creative approach and self-learning, 43 per cent combine ICT with flexibility and multitasking, and so forth. Moreover, only 12.4 per cent of the companies selected one single option (ICT or marketing and e-commerce or analytical skills and problem-solving) and the remaining enterprises selected a combination of at least two options.

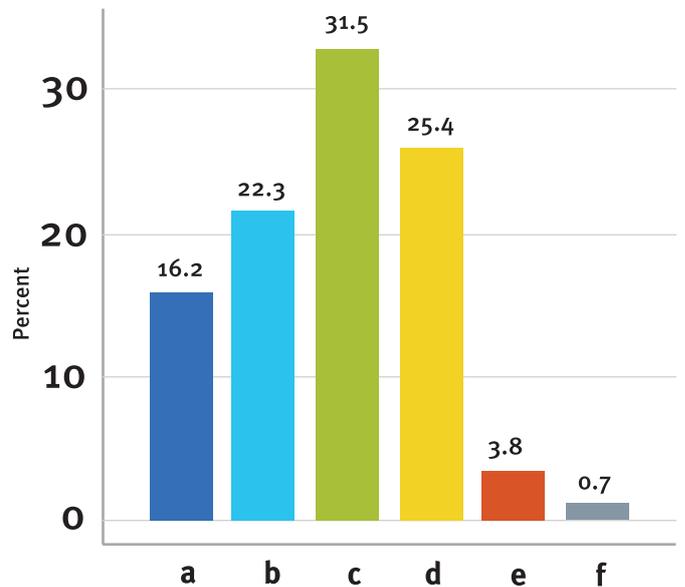
Type of skills companies reported to need to cope with COVID-19 challenges (%)



Note: The graph refers to 105 companies that express the need for new skills to cope with COVID-19 challenge and have provided an answer about the type of skills that the company would supply for its staff.

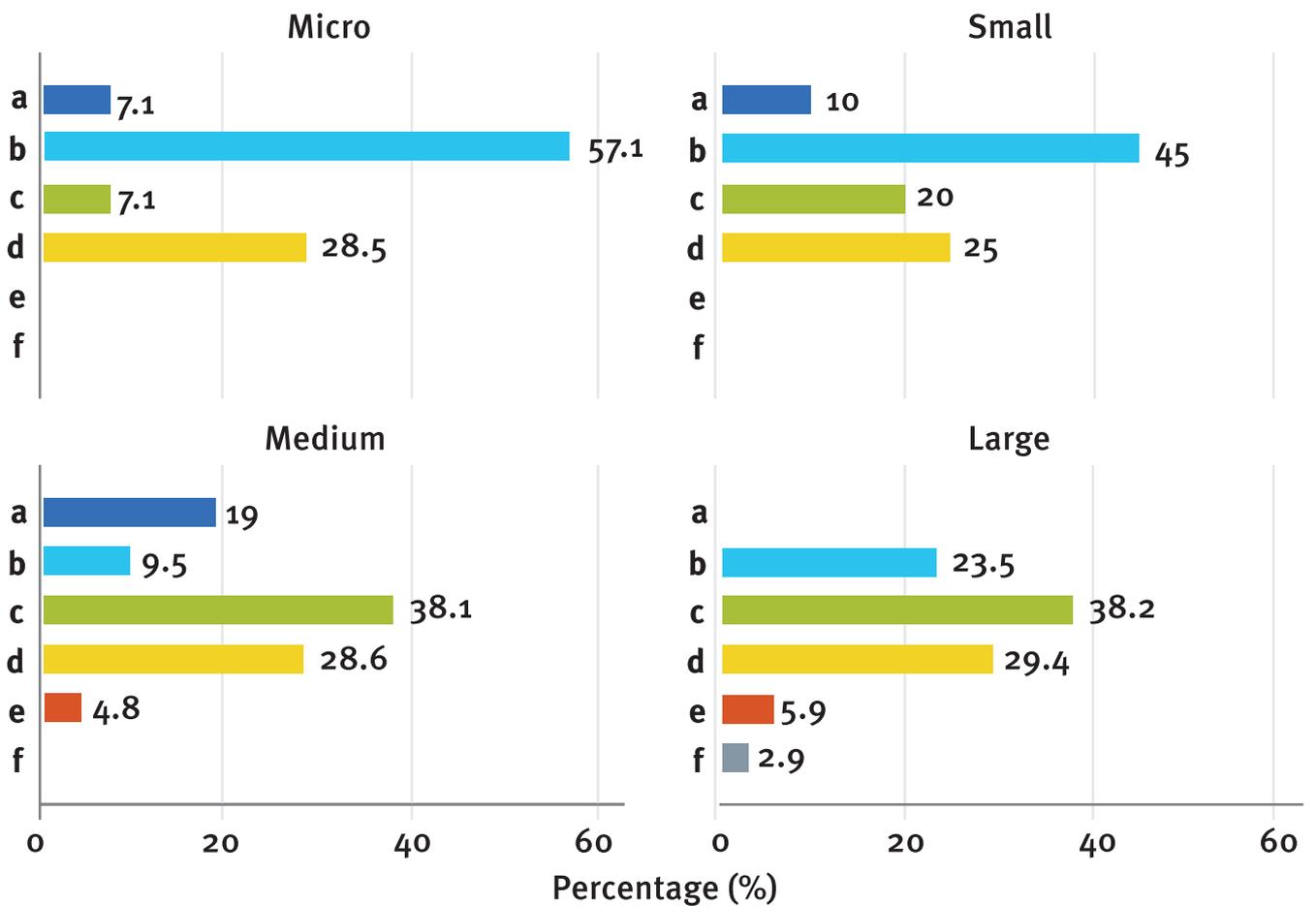
Different strategies for skills development, skills upgrading and retraining:

While it was explained above that the impact of COVID-19 on skills needs for the future is significantly related to expectations regarding change in production and main business delivery, but not significantly related to the size of the company, the sector or the geographical area, a different situation obtains in respect of the strategies that companies adopt to ensure skills development, skills upgrading and retraining of employees. When we consider strategies companies adopt, we see that, together with expectations of change, the company’s size plays a significant role in determining how the company is responding to the skills needs. This group of answers takes into account 130 companies, namely, those that provided an answer about their plan to supply skills for their employees in the event that they need new or stronger skills. The majority of companies (31.5 per cent) indicate that their supply will rely on training employees internally through short-term training programmes; these are followed (25.4 per cent) by those that use open-source, web-based training opportunities; 22.3 per cent that use training opportunities provided by sectorial association; and, lastly, 16.2 per cent that use public programmes for retraining. A mere 3.8 per cent of companies declare they do not invest in retraining but instead replace such employees with others that have more adequate skills.



- a. Use public programmes for retraining
- b. Use training opportunities provided by sectorial associations
- c. Train them internally in the company with short training
- d. Use open source training opportunities (web based)
- e. we don't plan to reskill workers, but to replace them with new employees with more adequate skills
- f. Other (please describe)

Company size has an impact on the selection of strategies for retraining. Medium-sized and large enterprises of the sample are those that prefer to invest either in company training programmes or in open-source, web-based training opportunities. Most small and micro companies instead rely on sectoral associations for supporting retraining strategies. Very few companies (including no large companies) identify the use of public programmes for retraining. It may therefore be concluded that it is vital to apply a diverse package of incentives to enable companies to support, through different strategies, the retraining and skills upgrading of their workers.



Note:

- a. Use public programmes for retraining;
- b. Use training opportunities provided by sectorial associations;
- c. Train them internally in the company with short training;
- d. Use open source training opportunities (web based);
- e. we don't plan to reskill workers, but to replace them with new employees with more adequate skills;
- f. Other (please describe)

Public funding – need to communicate funding opportunities and to match them to company requirements:

Companies that specified their needs for new or stronger skills and the way they plan to supply those skills, of which there were 92 in total, were asked about the availability of public funds for the retraining of employees. In all, 44 companies do not have funds or do not know about the existence of public funds for reskilling of employees. The other 48 companies selected at least one option.

Overall, the knowledge of companies regarding public funding is directly correlated with the needs that they express. Out of the 105 companies aware of the type of skill that they need to develop in their daily business (selected from those companies that need a new workforce to cope with COVID-19) 45 per cent are informed about the presence of public funds.

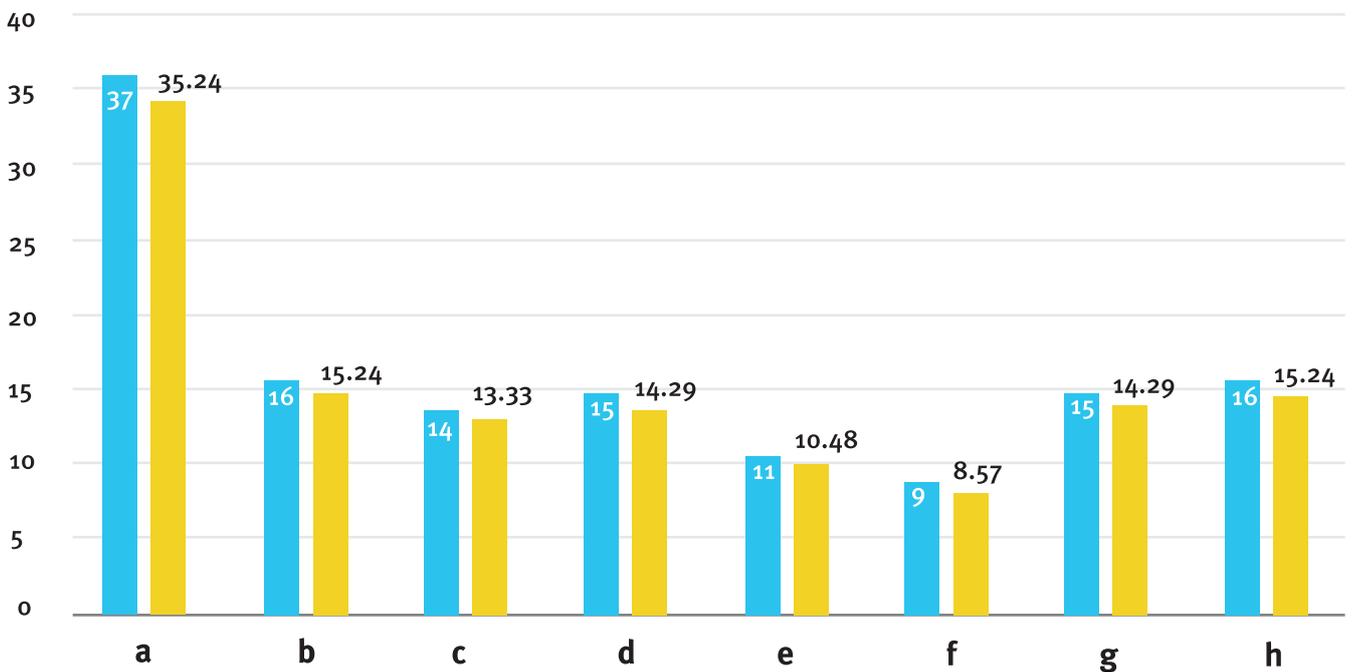
Accordingly, it may be concluded from the survey that, when available, public funds and the awareness by enterprises of programmes for retraining are aligned, but only few companies know about these

opportunities (this is also connected with the large size of most respondent companies, which, as seen above, do not use public programmes for retraining).

While the survey does not go into detail regarding communication and dialogue between public and private sector entities, it would be worth further exploring what mechanisms are in place to ensure that companies know about public programmes, how they are supported and incentivized to participate in these programmes and how public agencies managing training, skills upgrading and retraining programmes and funding keep the issues of communication and access to information under constant review to ensure that they are familiar to all enterprises. As seen above, since public funding and, in particular, sectoral association opportunities are mainly targeted at micro and small companies, which constitute the majority of companies across the world, there is clearly a high risk that the companies most inclined to use public programmes and funding are likely to have limited knowledge of the available opportunities and, as a consequence, will make limited investment in skills upgrading and retraining.

| Skills | Number of companies indicating needs in these types of skills | Companies in need of these skills and aware of the availability of public funds (percentage) |
|---|---|--|
| ICT | 80 | 42.50 |
| Marketing and e-commerce | 52 | 25.00 |
| Advanced solutions, such as robotics | 29 | 41.38 |
| Analytical skills and problem-solving | 45 | 20.00 |
| Design thinking and creative approach | 55 | 16.36 |
| First aid and hygiene | 31 | 22.58 |
| Self-learning, flexibility and multitasking | 52 | 23.08 |
| Technical skills linked to the specific business. | N.A. | |

Awareness of the public funds from companies in need of new skills



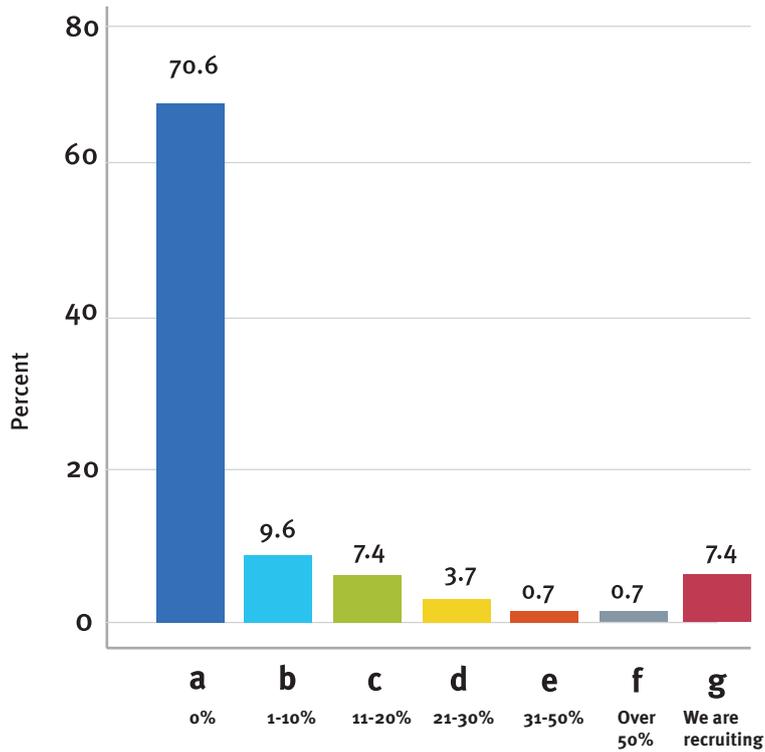
Note: frequency is in blue bars and percentage is provided by the yellow bars.

- a. ICT
- b. Marketing and e-commerce
- c. Advanced solutions such as remote sensing, automation, robotics, 3D printing
- d. Analytical skills and problem solving
- e. Design thinking and creative approach
- f. First aid and hygiene
- g. Self-learning, flexibility and multitasking
- h. Technical skills linked to the specific business

With regard to the geographical distribution of awareness about public funds in companies' hands, it may be observed that 55 per cent of companies that have knowledge of public funds are located in developed countries in Asia and Europe, as are 43 per cent of companies that have no knowledge of public funds. It is worth noting, therefore, that the communication issue is not directly correlated with the geographical factor. Neither, for that matter, is the industrial development index. In fact, applying the distribution of responses in correlation to the competitive industrial performance (CIP) of the economies around the world, while the majority of companies that indicated knowledge of public funds

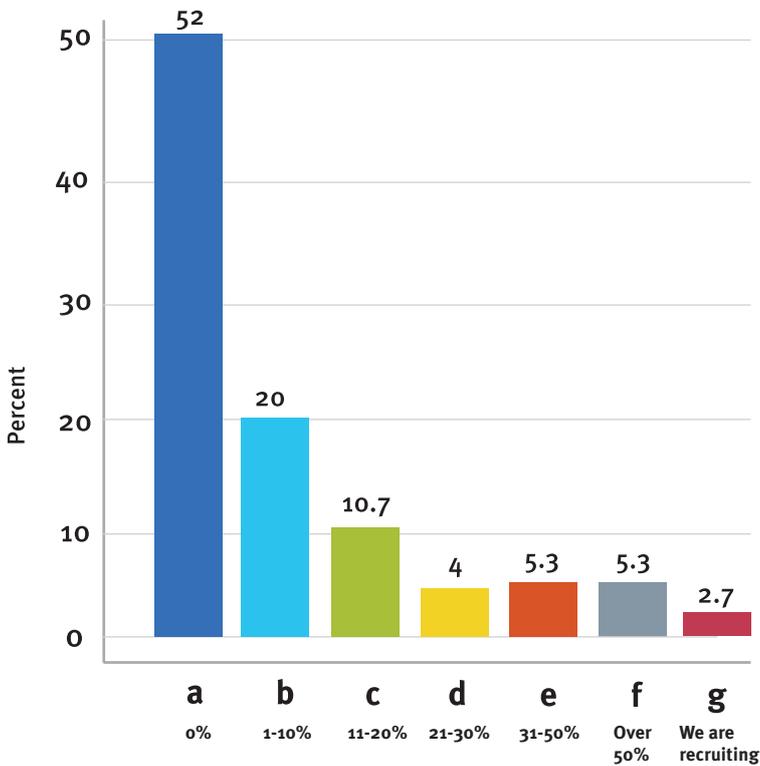
are in the top percentile of the CIP index, the same holds true for companies that have no knowledge of public funds. It may therefore be concluded that the issue of communication should be further explored and remains critical to the shaping of support for enterprise development.

The question may be asked: Is there a correlation between knowledge and access to public funds and personnel strategies? Survey data demonstrate a trend for companies to ensure the continuity of their employees' jobs, and also to recruit for the future, rather than to lay off staff (answers a and g in the figure below). In all, 78 per cent of companies not informed about the presence of public funds are hiring or not intending to cut staff in the post-COVID-19 phase. Of the group of companies placing most emphasis on the need for new skills (those laying off between 21 and 30 per cent of staff), only 3.7 per cent do not have a knowledge of public funds. It may therefore be concluded that companies laying off staff are more likely to know about public funds for skills development, upgrading and retraining than companies that do not expect to lay off staff. The graph below shows the distribution of companies not informed about the availability of public funds based on their future decision about the hiring or firing of staff.



Note: Question was: What percentage of staff are you expecting to or have already cut compared to before the start of the COVID-19 crisis?

This observation suggests that companies that are not in need of external resources – and therefore less likely to seek information about public funds – are likely to be more entrepreneurial and invest in future developments internally, including retraining and hiring. Companies that are instead less forward-looking are those that count the most on external resources for supporting their investment in people.



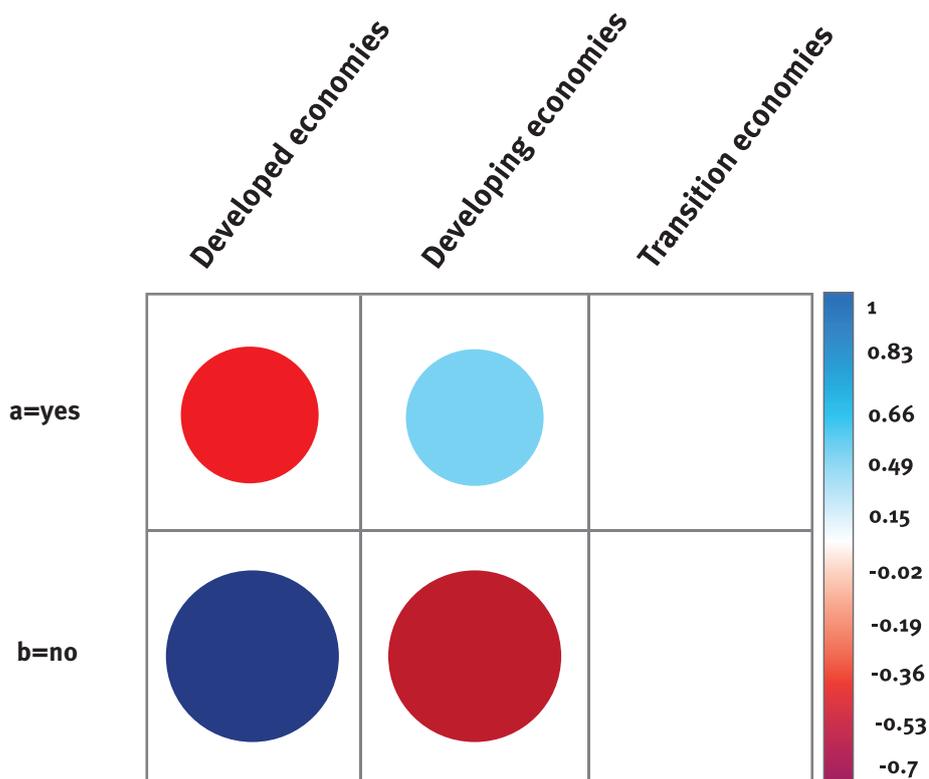
Note: This graph is the same as the previous one but with a focus on companies aware of at least one public fund.

PART 3: EFFICACY OF COVID-19 SAFETY MEASURES

Companies have actively implemented safety measures to protect their employees and their business. Only 8 per cent of the responding companies reported that they had implemented no enhanced safety measures in response to the COVID 19 crisis (such as handwashing facilities, masks and PPE, temperature checking, distancing and so forth). By contrast, most respondents (69 per cent) said they had installed such measures.²² In addition, only 12 per cent reported not having sufficient knowledge, while 60 per cent said that they had enough knowledge.²³ A considerable proportion of companies – 25 per cent of respondents – felt that their measures were not adequate, while 48 per cent stated that they feel their measures were adequate.²⁴

The perception of the efficacy of COVID-19 safety measures depends on both region of origin and the country’s development status. Respondents from

eastern Asia gravitated towards significantly less often felt that their measures were adequate, and significantly more often perceived that the measures were inadequate, compared to other respondents. Somewhat counterintuitively, however, as the graph below illustrates, the resulting statistical configuration is that respondents from developed economies tended to perceive significantly less often that their measures were adequate, and significantly more often answered “No” (measures are not adequate) than other respondents. Similarly, respondents from developing economies gravitated towards answering “Yes” significantly more often, and significantly less often “No” than other respondents. Further information is needed to explain these trends, but it is plausible that there are differences between groups of countries where expectations about safety precautions are concerned and that both expectations and awareness are higher in developed economies.

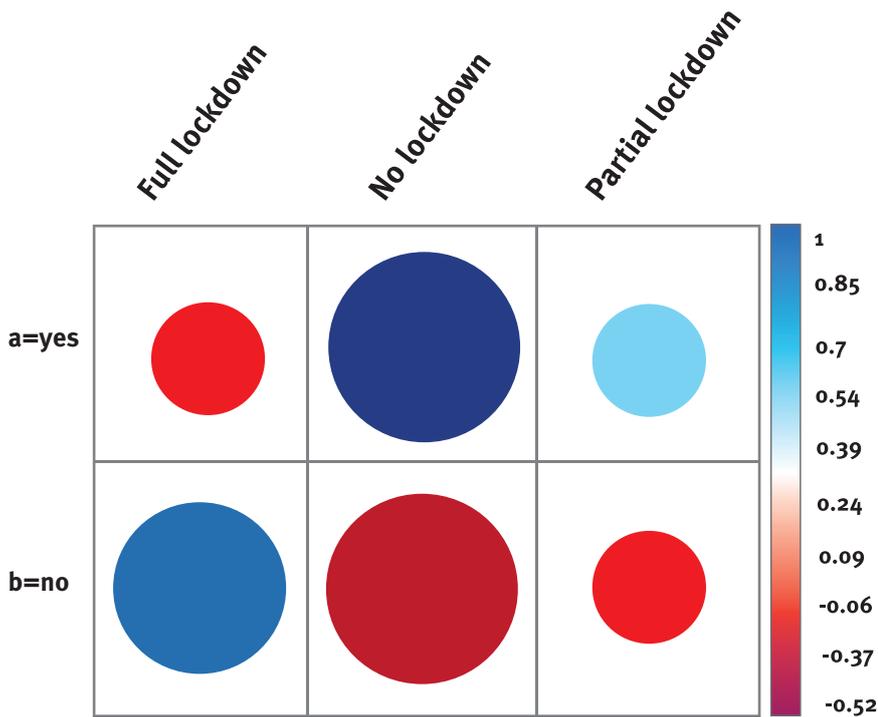


²² 26% did not respond.

²³ 28% did not respond.

²⁴ 26% did not respond.

The stricter the lockdown restrictions, the less likely companies were to consider their safety measures adequate. As the graph below shows, respondents from countries with full lockdown measures were significantly less likely to feel that their safety measures were adequate and more likely to answer “No”, whereas respondents from countries with no lockdown measures in place were significantly more likely to answer “Yes” and significantly less likely to answer “No”. This suggests that both awareness and expectations on safety measures were raised when lockdown restrictions were stiffer.



CONCLUSIONS: POLICY DISCUSSION FOR THE FUTURE – WHAT IS AT STAKE

Companies have been forced to slow down their production below their capacity and this impact is greater in developing countries. This reflects the general changes brought about by the pandemic and the shifts in Global Value Chains that have resulted. The majority of the companies expect major change in their production processes or in the way they perform their main business. Interestingly, most companies do not expect to- (or have not already been forced to) lay off staff. The companies that do expect to have to take such drastic measures are companies that would be less equipped to face a crisis; companies from developing countries and younger companies. Some firms are better suited to quickly respond and adapt their operations to reduce the overall impact on their profits, cash flow and staff.

In terms of safety measures, companies have been actively protecting their employees and their business. What we have seen is that the stricter the lockdown restrictions, the less likely companies were to consider their safety measures adequate. This suggests that both awareness and expectations on safety measures were raised when lockdown restrictions were stiffer. In addition, companies in developed countries are less confident that the safety measures they are taking are adequate. These differences between countries need to be better understood.

COVID-19 is pushing companies to look into future skills needs. Companies who expect major changes to their production processes or expect to have to lay-off staff also see a need for different skills in their workforce to cope with the crisis.

Where the impact of the COVID-19 pandemic on skills needs is concerned, these trends are comparable to those before the pandemic, with ICT skills and ICT applications, followed by transversal skills as the most in need for companies that report needing a new set of skills for their workforce.

The strategies followed by companies for retraining and skills upgrading are related to their size. This appears to be in line with trends before the COVID-19 pandemic, suggesting the conclusion that COVID-19 has not drastically changed companies' needs, relating both to trends in their access to information and to their strategies for skills development, retraining and skills upgrading.

Based on these observations it may be concluded that major issues at stake for the future are to be found in the following four dimensions, that would be worth exploring further and discussing with both enterprises and public authorities:

1. Enhancing the role of skills and skills development: the need for more advocacy and awareness of the role of skills for enterprise development, and more evidence of how investment in skills, retraining and skills upgrading are key to the competitiveness and development of enterprises and their ability to make needed changes to their production processes and delivery of their main business.

It was clear from the survey that a high number of companies are calling for support for skills as a consequence of the changes that they anticipate, while a significant number of companies do not regard skills as an asset for their future and for their response to change. Based on evidence from ETF partner countries,²⁵ this correlates with the low investment in the emergency and post-emergency phase of skills development as part of the support measures developed to support enterprises. It is therefore vital to step up advocacy at all levels and to make more evidence available for efforts at both the policy level and the enterprise level to meet the need for heightened awareness, understanding of added value, and action for skills development, skills upgrading and retraining, not only to tackle crisis demands and recovery issues, but also to assist companies in moving towards a wider transformation where greening and inclusion are part of the aspiration of societies for a more sustainable, fair and resilient world.

2. Diversity of public measures: the level of diversity and the aim of public programmes and incentive measures to support skills for enterprise development.

From the survey it was evident that companies have different strategies in place, and also different perceptions regarding the role of skills for enterprise development. It is therefore vital that public support measures for enterprise development should be correctly designed, to ensure that this diversity is taken into account and addressed by proper measures. This includes support for micro and small companies in particular, as key users of public funds, but also increasing the relevance of public support for medium and large companies, including, on the one side, those that expect changes and facing pressure to lay off staff in response to new needs, and, on the

²⁵ See www.etf.europa.eu/en/news-and-events/news/seeds-renewal-covid-19-crisis.

other, those that do not regard skills as an asset or an area in need of investment and that might therefore be at risk for the future. This is of particular importance in relation to public goals such as greening and social inclusion, where skills are a key pillar for the success and sustainability of actions. In this dimension it would be worth discussing with enterprises, social partners and public sector authorities how public measures and funds should be shaped and directed to support enterprise development, resilience and public development goals.

3. Communication strategies: the presence of communication strategies, tools and methods for monitoring access to information, the use of programmes and good practices that could be disseminated.

The survey demonstrated the limited number of companies that are aware of public funds. This revelation is cause for concern and requires further attention and discussion. In particular, it would be important to bring communication and outreach strategies forward as areas for discussion with enterprises, social partners and public sector authorities. This would shed more light on how communication could be integrated into public support measures, how access to information is monitored, and what conversion rate there is from enterprises that have access to information and that make use of such information. Increased monitoring of communication and the use of information would enable the better targeting of support measures, including investing in partner companies to capitalize on these opportunities, and of the support services provided by sector associations, chambers and other entities involved in delivering public funds-based programmes.

4. Learning from innovators: given that, across the globe, a substantial percentage of companies are not laying off personnel or are even recruiting, lessons that public authorities could learn from these companies to inform programmes and sector-related action.

It was evident from the survey that a considerable number of companies are actively engaging with retraining and skills upgrading, see skills as an asset supporting change, and are making efforts to avoid workforce reduction, or are even actively recruiting. These companies represent the uppermost group of companies that are resilient and investment-oriented and that recognize skills as a pillar of their success. It is important to know more about these companies and to identify and decode their strategies, methods and tools, so that this success can be replicated to support others. For this reason, it is key that public

players increase their knowledge and learning capability, thereby investing in a higher level of communication and exchange with innovators in the markets, from all sectors.

ANNEX 1: SURVEY QUESTIONNAIRE

Welcome to the LKDF assessment of the COVID-19 impact on demand for skills

Dear Industry Representative,

The ongoing COVID-19 pandemic is imposing unexpected and far-reaching economic, social, and political consequences, at local, national, and global levels. In particular, it is causing major disruptions in supply chains and shifts in production and consumption patterns. This is a challenging test for the resilience of individual businesses.

In the face of the unprecedented and sudden outbreak of the coronavirus, we are all concerned about impacts on the current business status and the needs of industries to be able to endure and take action. We hope that through more accurate and up to date information we can better advocate for businesses' resilience.

In response to this extraordinary challenge, the [Learning and Knowledge Development Facility \(LKDF\)](#) of the [United Nations Industrial Development Organization \(UNIDO\)](#), is reaching out to its wider stakeholders, including representatives of companies:

- who are considered potential future employers of the graduates of LKDF collaborating Vocational Training Centers; or
- with whom Vocational Training Centers have an ongoing or potential future apprenticeship or internship programs; or
- who send their employees to Vocational Training Centers to upgrade their skills; or
- who believes that external programs for skill upgrade of their workforce will be helpful to respond to COVID-19.

To this end, we would be grateful if you could dedicate approximately 7 minutes to answer the short self-assessment questionnaire. Please feel free to forward this link to other companies you may know in your networks who are related to at least one of the four above-mentioned categories.

The results of the survey will be consolidated in a report, that will be shared with respondents, and will inform ETF's and UNIDO's response to the COVID-19 crisis. Data of respondents will be kept confidential. We will publish only aggregated, anonymous results.

Your contribution is important. Thank you for your support!

1. Compared to December 2019, to what capacity is your business currently operating?

- (a) 0%-20%
- (b) 21%-40%
- (c) 41%-60%
- (d) 61%-80%
- (e) 81%-100%

2. Which difficulties directly related to the COVID-19 outbreak are you experiencing? (Multiple choices possible)

- (a) Business activities suspended by public authorities
- (b) Difficult to import raw materials and supplies
- (c) Termination/Suspension of employees
- (d) Workers infected by COVID-19
- (e) Liquidity shortages
- (f) Cancellation of orders
- (g) Limited access to internet and Information and Communications technologies – ICT
- (h) No availability of Personal Protective Equipment to allow safe operations
- (i) Lack of skills of workers to deal/react to the situation
- (j) Other _____

3. What is the percentage of your company's employees who are unable to work at present, compared to before the start of the COVID-19 crisis?

- (a) 0%
- (b) 1-20%
- (c) 21-40%
- (d) 41-60%
- (e) 61-80%
- (f) 81-100%
- (g) Unable to judge

4. **What percentage of staff are you expecting to (or have already) cut, compared to before the start of the COVID-19 crisis?**

- (a) 0%
- (b) 1-10%
- (c) 11-20%
- (d) 21-30%
- (e) 31-50%
- (f) Over 50%
- (g) We are recruiting

5. **Do you expect any major change in your production processes or in the way you perform your main business?**

- (a) Yes
- (b) No

If yes, please describe

6. **Do you expect your company to need a work force with different skills in order to cope with the COVID-19 challenges?**

- (a) Yes

Go to 7

- (b) No

Go to 9

7. What new or stronger skills do you think your company will need? (multiple choices possible)

- (a) Information and communications technology – ICT
- (b) Marketing and e-commerce
- (c) Advanced solutions such as remote sensing, automation, robotics, 3D printing
- (d) Analytical skills and problem solving
- (e) Design thinking and creative approach
- (f) First aid and hygiene
- (g) Self-learning, flexibility and multi-tasking
- (h) Technical skills linked to the specific business
- (i) Other (please list or describe) _____

8. If you think that your employees will need new or stronger skills, how do you plan to supply those skills?

- (a) Use public programmes for retraining
- (b) Use training opportunities provided by sectorial associations
- (c) Train them internally in the company with short training
- (d) Use open source training opportunities (web based)
- (e) we don't plan to reskill workers, but to replace them with new employees with more adequate skills
- (f) Other

9. Are there specific public funds for reskilling of employees?

- (a) Yes

Go to 10

- (b) No

Go to 11

- (c) Don't know

Go to 11

10. If yes, on what topics? (multiple choices possible)

- (a) Information and communications technology – ICT
- (b) Marketing and e-commerce
- (c) Advanced solutions such as remote sensing, automation, robotics, 3D printing
- (d) Analytical skills and problem solving
- (e) Design thinking and creative approach
- (f) First aid and hygiene
- (g) Self-learning, flexibility and multi-tasking
- (h) Technical skills linked to the specific business
- (i) Other (*Please list or describe*) _____

11. Do you have adequate knowledge to safeguard your workforce from becoming contaminated by the COVID-19?

- (a) Yes
- (b) No

12. Have you implemented enhanced safety measures in response to the COVID-19 crisis (e.g. hand washing facilities, masks and PPEs, temperature checking, distancing, etc.)

- (a) Yes
- (b) No

13. Do you feel these measures are adequate to protect your workforce?

- (a) Yes
- (b) No

14. Do you believe that the COVID-19 crisis could be turned into an opportunity for your business?

(a) Yes

(b) No

If yes, please describe how

15. Are you

(a) Male

(b) Female

(c) Prefer not to say

16. In which country are you based?

17. In which sector(s) does your business operate? (use the drop-down box)

Agriculture, animal husbandry, fisheries

Food and beverage

Textile, wearing apparel, leather and leather related products

Forestry, wood and paper products (incl. wood furniture)

Wholesale and retail trade

Mining industry

Production and supply of electricity, heat, gas and water

Chemicals (incl. cosmetics and other body care products)

Pharmaceutical, medicinal chemicals and botanicals products

Rubber and Plastic products

Computers, electronics and optical products

Information transmission, software and information technology services

Machinery and equipment, incl. electrical equipment

Transport equipment

Transport, storage and postal industry

Accessories (non-leather bags, jewellery etc)

Associated services (services that support manufacturing businesses)

Construction industry

Water, environment and public facilities management

Accommodation, tourism and catering

Real estate industry

Residential services, repair and other services

Scientific research and technological services

Education, Culture, sports and entertainment

Health and social work

Financial industry, Leasing and business services

Other, please specify: _____

18. How many employees did your company have at the end of 2019?

- (a) Number of full-time employed
- (b) Number working less than 30 hours per week

19. In which year was your company established?

20. Would you agree to respond to the same survey in a few months?

- (a) Yes
- (b) No

21. Please confirm your e-mail (the final report of the survey will be sent to this email)

Thank you very much for your participation. We wish you the best for your business and for your family, your loved ones, and your employees as well.



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