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ASSOCIATION OF LEBANESE
INDUSTRIALISTS



International
Labour
Organization



Norway



Global Programme
on Skills and
Lifelong Learning



SKILLS ANTICIPATION SURVEY THE MANUFACTURING SECTOR IN LEBANON

SEPT
2024





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Executive summary

As Lebanon explores its path to recovery, productivity is considered key to developing a more sustainable economy. The manufacturing sector has shown significant resilience to ongoing economic and political instability, sustaining value-added production thanks to a mix of export and input substitution strategies. However, challenges and constraints remain.

One major constraint is the significant gap in the labour market between the demand for qualified workers and their limited supply. The mismatch between the kinds of skills currently demanded by employers and the skills possessed by workers continues to hinder progress towards full and productive employment in the sector. The disparity stems largely from the lack of alignment between the education system, especially technical and vocational education and training (TVET), and the needs of the private sector. In short, the skills imparted by educational institutions have failed to adequately address employers' demand across Lebanon.

Identifying skills needs has, so far, depended on efforts driven by development agencies and GOs, which have focused on small enterprises and designed interventions to increase the participation of vulnerable groups in the labour force. Such an approach prioritizes the provision of short, accelerated technical training, but with a reduced focus on medium-sized enterprises, existing workforce development or better integration between public TVET institutions and the private sector. Without consistent communication between leading industrialists and TVET institutes, along with access to current information on skills and competencies, occupational needs and technological advancements in production processes, TVET will remain disconnected from the skills demanded by employers. This, in turn, will negatively impact productivity and growth across a range of economic sectors.

Against that background, the Association of Lebanese Industrialists (ALI) and the International Labour Organization (ILO) have jointly undertaken a series of research projects on skills anticipation and skills gaps. This partnership aims to eventually establish an industrial labour market observatory at ALI, with the objective of regularly updating changes in labour demand, and ultimately improving skills matching and networking between industrialists, TVET providers, policymakers and workers.

To this end, ALI and the ILO have jointly conducted surveys to: (a) better understand the skills supply and demand gaps in specific subsectors; (b) ensure that learners can develop appropriate skills for the future; and (c) inform lifelong learning policies and programmes. In 2022, the plastics subsector was the first to be surveyed as a pilot study, with subsequent surveys in 2023 and 2024 undertaken in other manufacturing subsectors.

The present report presents the results of a 2024 online survey of 140 manufacturing enterprises, all of them members of ALI. The survey tool was structured around four main sections:

- (1) enterprise profile (e.g. sector, size, legal status);
- (2) current workforce and existing skills gaps, focusing on issues related to perceived workforce characteristics, job proficiency and workforce development;
- (3) recruitment processes and demand for labour;
- (4) future outlook in terms of challenges, prospective development and anticipated demand for skills in the near future.

Survey data were triangulated with qualitative data collected through a number of in-depth semi-structured interviews and round-table discussions with 24 industrialists, organized by ALI. Research findings were compared with the extant literature.

The research findings can be summarized according to the following themes:

Current workforce:

- The presence of women and youth in the industrial workforce remains limited among the enterprises surveyed, partly because industrial work is generally undervalued, especially for technicians, as well as the limited participation of women in TVET and the significant outward migration of young skilled workers.
- Overall, participants were satisfied with the job proficiency of their current workforce. However, skills were still considered lacking, especially for technicians. Most commonly, the kind of skills reported lacking were job-specific technical skills. “Soft” skills were also lacking, even among higher-skilled occupations, including managerial and administrative staff. Overall, there was little difference between the skills currently lacking among the current workforce and those required for new employees, with the exception of basic literacy and numeracy for unskilled occupations, which are invariably required for recruitment.
- Skills for green jobs were not considered lacking, but neither were they considered a priority. Those enterprises that have developed a set of environmental priorities have already trained their staff on environmental practices and procedures, while other enterprises do not yet consider the issue a priority.
- The most common action reported to address skills gaps within respondents’ current workforce was to provide further training, with a focus on job-specific skills or training at the point of induction. Health and safety training was also seen as a priority. However, budget constraints and the lack of available training courses in relevant subjects have hindered enterprises from implementing comprehensive staff training.

Job-specific skills:

- There is clear demand across all manufacturing subsectors for technicians. Some 75 per cent of respondents expressed a need for technicians, and 40 per cent expressed a need for low-skilled labour. Demand for other occupations remains significantly lower. Skills gaps for specific occupations in the labour market have translated into significant skills shortages. Around half of all surveyed enterprises reported labour shortages, and 62 per cent of enterprises had at least one job vacancy still open.
- There is unmet demand for electrical and mechanical technicians across all manufacturing subsectors, particularly for machinery maintenance. There is also high demand for computer numerical control (CNC)¹ operators, heating, ventilation and air conditioning (HVAC) technicians, lathe technicians and welders.
- There is high demand for salespeople and sales account managers across all subsectors.

Non-job-specific skills:

- The importance of soft skills for both managers and administrative workers was cited by 63 per cent and 35 per cent of respondents, respectively, but not for technicians and low-skilled workers (cited only by 22 per cent of respondents for both occupational groups).
- IT skills were considered important for all occupations.
- Foreign language skills were in demand for all occupations, except low-skilled occupations.
- Skills were increasingly seen as important in sales, marketing and e-commerce.
- The capacity to operate machinery, together with basic literacy and numeracy skills, were the only skills in high demand for low-skilled workers.
- Manufacturers still use a mix of traditional and new (e.g. social media) methods to recruit employees. The most common recruitment method remained word-of-mouth (47 per cent), followed by social media (41 per cent). Respondents often faced significant challenges in recruiting technicians, such as reallocating work or paying higher wages to retain staff. Higher pay was the most common strategy used by enterprises to meet demand and retain skilled workers.

Anticipated skills demand:

- Expectations regarding future demand (i.e. within 1 year) for occupations did not differ significantly from current trends, with technicians anticipated to be in highest demand. However, respondents expected a significant increase in the need for IT and artificial

¹ A manufacturing method that automates the control, movement and precision of machine tools through the use of software embedded inside the tools.

intelligence (AI) skills, particularly for the management and programming of automated systems. In particular, there was a high expected need for programmable logic controller human-machine interface (PLC HMI) and CNC technicians and associated professionals.

In consideration of the findings, a number of recommendations were developed:

Promote women's enrolment in TVET:

- (a) Collaborate with TVET institutions to develop outreach programmes that target young women, and highlight the opportunities presented by technical occupations in manufacturing.
- (b) Offer scholarships and other financial incentives to encourage women to pursue technical education.
- (c) Implement mentorship programmes pairing female employees with aspiring young women interested in technical careers, and provide guidance and support.

Address youth unemployment:

- (a) Enhance vocational training curricula to align with the evolving needs of manufacturing, focusing on practical experience in areas such as machinery operation, maintenance and automation.
- (b) Establish apprenticeship programmes that offer on-the-job training for young people, addressing the skills gap in manufacturing.
- (c) Promote a quality TVET system capable of attracting young men and women towards technical fields and strengthen career guidance services. This could help reduce youth unemployment.

Establish a TVET centre of excellence:

- (a) Leverage the strengths of both the public and private sectors to improve the quality, relevance and reach of TVET programmes.
 - (b) Create a collaborative governance structure to include key stakeholders from government, the private sector, educational institutions and industry associations. This should oversee the centre's strategic direction, policy development and operational management.
 - (c) Engage industry experts from the private sector to co-develop and continually update the curriculum, ensuring it aligns with current and emerging market needs.
 - (d) Invest in infrastructure and resources by pooling resources to develop state-of-the-art training facilities and establish a model of sustainable funding.
-

- (e) Establish research and innovation hubs within the centre to address specific industry challenges and promote the development of new technologies, processes and solutions.
- (f) Implement a robust monitoring and evaluation framework to assess the impact of the centre on skill development, employment rates and industry satisfaction.

Improve recruitment practices:

- (a) Enhance employers' branding efforts to promote the manufacturing sector as an attractive career prospect, highlighting opportunities for skills development and advancement.
- (b) Improve the skills and knowledge of current human resources (HR) employees, and provide them with the necessary skills and tools to improve coordination with technical institutes and career guidance centres.
- (c) Encourage manufacturing enterprises to improve working conditions and offer attractive employment packages.

Invest in training and skills development for the current workforce:

- (a) Mainstream the development of comprehensive training programmes tailored to the specific needs of different occupations. Ensure the implementation of relevant training, targeting women and youth.
- (b) Address budget constraints by seeking external funding or partnerships between several enterprises to levy funds for workforce training development and implementation.

Anticipate future skills needs:

- (a) Invest in and modernize the TVET system to align with the private sector's needs through modular systems that incorporate work-based learning and apprenticeship programmes as part of the official TVET curriculum.
 - (b) Foster partnerships with technology providers, research institutions and TVET institutions to incorporate new technologies into education programmes.
 - (c) Capitalize on local school advisory boards, and support their development (i.e. local initiatives in which industrialists support local TVET curricula development).
 - (d) Encourage ongoing professional development among employees, and provide opportunities for workshops and certification programmes in emerging technologies.
 - (e) Conduct regular skills gap assessments to identify emerging skills needs and trends in the manufacturing sector.
-

List of abbreviations

■ AI	ARTIFICIAL INTELLIGENCE
■ ALI	ASSOCIATION OF LEBANESE INDUSTRIALISTS
■ CNC	COMPUTER NUMERICAL CONTROL
■ HR	HUMAN RESOURCES
■ HVAC	HEATING, VENTILATION AND AIR CONDITIONING
■ ILO	INTERNATIONAL LABOUR ORGANIZATION
■ PLC HMI	PROGRAMMABLE LOGIC CONTROLLER HUMAN-MACHINE INTERFACE
■ SMES	SMALL AND MEDIUM-SIZED ENTERPRISES
■ TVET	TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING

Background

Lebanon is gradually recovering from a series of protracted humanitarian, economic and political crises that have drastically impacted the socio-economic landscape since 2011. The 2019 financial collapse – largely interpreted as a consequence of the unsustainable post-civil war financial model – occurred while the country was still grappling with the Syrian refugee crisis. Since then, these challenges have been compounded by the worldwide COVID-19 pandemic, the devastating Beirut Port blast in August 2020, the war in Ukraine and the war in Gaza, exacerbating political and economic instability and generating rising levels of precarity. The country continues to face simultaneous crises which, although considered independent from one another, are creating an extremely challenging and complex national context.

The productive sectors, especially manufacturing, are looked upon as potential drivers of a more sustainable post-crisis economy. Manufacturing has shown significant resilience to economic and political instability and has, relatively speaking, sustained added value thanks to a mix of export and input substitution strategies (Mercy Corps 2022). The sector represented 7 per cent of the country's gross domestic product (GDP) in 2019 and 12 per cent in 2020,² ³and employed 10.9 per cent of the Lebanese workforce in 2019. ⁴Further, the food and beverage subsector contributes approximately 25 per cent of Lebanon's total manufacturing output.⁵

However, manufacturing still faces significant challenges related to the lack of policy support, weak infrastructure and outdated facilities, difficulties obtaining finance and the need to improve product complexity and workforce productivity. The significant gap between the demand and supply of a qualified industrial workforce remains a major constraint. Mismatches between those skills currently demanded by employers and the skills possessed by workers hinders progress towards full and productive employment in the sector. This disparity stems from the limited alignment between Lebanon's education system, especially TVET and the demands of the private sector. Consequently, the skills imparted by educational institutions have failed to meet the demands of employers (ALI 2023).

Identifying the skills required by the labour market has, so far, depended on the efforts of development agencies and NGOs. These have tended to focus on small enterprises, with interventions designed to increase the labour force participation of vulnerable groups. Such an approach prioritizes short, accelerated technical training, but with a reduced focus on medium-sized enterprises, workforce development or better integration between public TVET

²Central Administration for Statistics (CAS), Lebanon National Accounts.

³Note that the increase in the relative shares of manufacturing and food manufacturing out of total GDP was primarily due to the collapse of other economic sectors after the 2019 economic crisis. Nonetheless, industrial sectors have maintained a relatively constant level of output since October 2019, compared with other sectors.

⁴CAS, Labour Force and Household Living Conditions Survey 2018–2019.

⁵CAS, Lebanon National Accounts.

institutions and the private sector. Without consistent communication between leading industrialists and TVET institutes, along with access to current information on competencies, occupational needs and technological advancements in production processes, TVET will continue to be disconnected from the skills demanded by employers. This, in turn, negatively impacts productivity and growth across a range of economic sectors.

Against that background, ALI and the ILO have jointly undertaken a series of research projects on skills anticipation and skills gaps in Lebanon, focusing on the labour market challenges faced by industrialists. This partnership aims to eventually establish an industrial labour market research hub at ALI, with the objective of regularly reporting changes in labour demand, and ultimately improving connections between industrialists, TVET providers, policymakers and workers.

Further, the partnership aims to improve access to labour market information to help jobseekers (youth and adults) identify and anticipate the skills required by employers now and in the future. This should also help improve the relevance of TVET programmes while responding to the need for regular data collection on skills demand to identify, design and implement priority training programmes for the industrial sector. Both ALI and the ILO contend that identifying sector-specific skills mismatches offers dual advantages. First, it assists jobseekers and workers to enhance their employability by acquiring appropriate skills. Second, it aids employers to locate skilled labour.

Initially, a pilot survey was conducted between November and December 2022 to evaluate skills mismatches and institutionalize a regular skills anticipation process in the plastics subsector (ALI 2023). Building on this methodology, ALI and the ILO have extended the project to include several other manufacturing subsectors through a comprehensive skills survey, including interviews and group discussions with key informants. Objectives of the study include:

- identifying current workforce skills development needs;
- identifying recruitment challenges and skills gaps;
- anticipating future skills needs;
- identifying any other challenges hindering access to a skilled workforce

Methodology

Survey data and sample

All of ALI's 852 members were invited to participate between 29 January and 29 April 2024. Data were collected via an online survey using Survey Monkey digital tools. A total of 172 enterprises responded partially to the survey. However, only 140 surveys were completed, and these form the basis of the present study. In terms of regional distribution, 71 per cent of respondents were from Beirut and Mount Lebanon, representing 77 per cent of non-agri-food manufacturing⁶, reflecting the high concentration of manufacturing enterprises around greater Beirut. The remaining 12 per cent of respondents were from North Lebanon, 8 per cent from the South, 7 per cent from Bekaa, 2 per cent from Akkar, and 0.5 per cent from Baalback -Hermel and Nabatieh each.

The questionnaire was based on a comprehensive skills survey developed by the ILO⁷, which was first adapted for the pilot study in 2022 and then subsequently revised for the local context. The present survey revolved around four main sections:

- (1) enterprise profile, including sector of activity, size, legal status, etc.;
- (2) current workforce and existing skills gaps, focusing on issues related to perceived workforce characteristics, job efficiency, existing skills gaps and workforce development;
- (3) recruitment processes and demand for labour from industrial enterprises;
- (4) anticipated future demand for skills (within 1 year), as well as current and challenges foreseen over the next 3 years.

Data were disaggregated by occupation, using the ILO International Standard Occupation Classification (ISCO). However, ISCO 1-digit categories were grouped into four broader occupational groups and adapted to the Lebanese manufacturing sector, namely:

- (1) managers and high-level professionals (hereafter abbreviated to “managers”); ⁸
- (2) technicians, associated professionals, supervisors and skilled trades workers in production and operations (hereafter “technicians”); ⁹
- (3) administrative, HR, finance, and sales workers (hereafter “administrative occupations”); ¹⁰
- (4) other production workers and operators, including low-skilled elementary workers (hereafter “low-skilled occupations”). ¹¹

⁶Around 50% of surveyed agri-food companies were located in Beirut and Mount Lebanon.

⁷See annex in Mane and Corbella (2017), developing and running an establishment skills survey

⁸Includes senior managers, production managers, engineering and science professionals, other managers and high-level professionals.

⁹Includes supervisors, production technicians, laboratory technicians, skilled trade workers, skilled maintenance workers and other medium- to high-skilled workers.

¹⁰Includes marketing and sales workers, customer service workers, financial and accounting workers, administrative and clerical workers, human resources and training staff, site service workers (food service, cleaning, security, etc.) and other support and administrative workers.

¹¹Includes skilled operators and assemblers, packers, quality controllers, logistics workers, low-skilled workers and other operations workers.

Data analysis

Quantitative and qualitative survey data were triangulated with the data obtained through 12 in-depth semi-structured interviews and 2 round-table discussions organized by ALI. A total of 24 industrialists (ALI's members, sub-sectors syndicates' representatives, board members) were consulted through this process. Additionally, the research findings were compared with those in the extant literature.

The semi-structured interviews and roundtable discussions were organized based on the survey themes, focusing on skills gaps for both the current workforce and job seekers, recruitment processes, and anticipated skill needs. The information gathered was structured in a matrix format. The roundtable discussions, facilitated by the ILO consultant and ALI staff, centered on current and future sector challenges, with an emphasis on identifying skills gaps.

The analysis is organized around the survey sections where possible, and data have been disaggregated at the sectoral level. For the sake of clarity, only relevant results and figures are presented.

Research limitations

A number of limitations can be noted with respect to the research methodology, including the following:

- (1) Survey fatigue was considered a major challenge expressed by contacted ALI members. To mitigate a potentially low response rate, the survey was simplified and reduced to a limited number of key questions.
 - (2) Members of ALI were repeatedly called by phone, and reminders were sent by ALI to help increase participation. Such engagement with members led to a final number of 140 completed questionnaires, although this was somewhat below an optimally representative sample size of 260 enterprises (95 per cent confidence level for a population of 852 enterprises).
 - (3) The sample size did not allow for systematic disaggregation at the sectoral level. Data analysis was disaggregated at the sectoral level wherever relevant and feasible.
 - (4) Given the low number of respondents, data for the textiles and furniture subsectors should be considered indicative only.
 - (5) The survey only targeted ALI members, so the sample does not represent the distribution of all manufacturing companies in Lebanon. As the survey was addressed to all 852 ALI members, there was no random sampling design. Thus, the survey may have appealed more to respondents who are more actively engaged with ALI and have well-established HR in place. Such enterprises are more likely than others to have the resources, infrastructure and organizational capacity to respond comprehensively, as well as provide more accurate HR information. Thus, smaller or less established enterprises may have been underrepresented.
-

Results

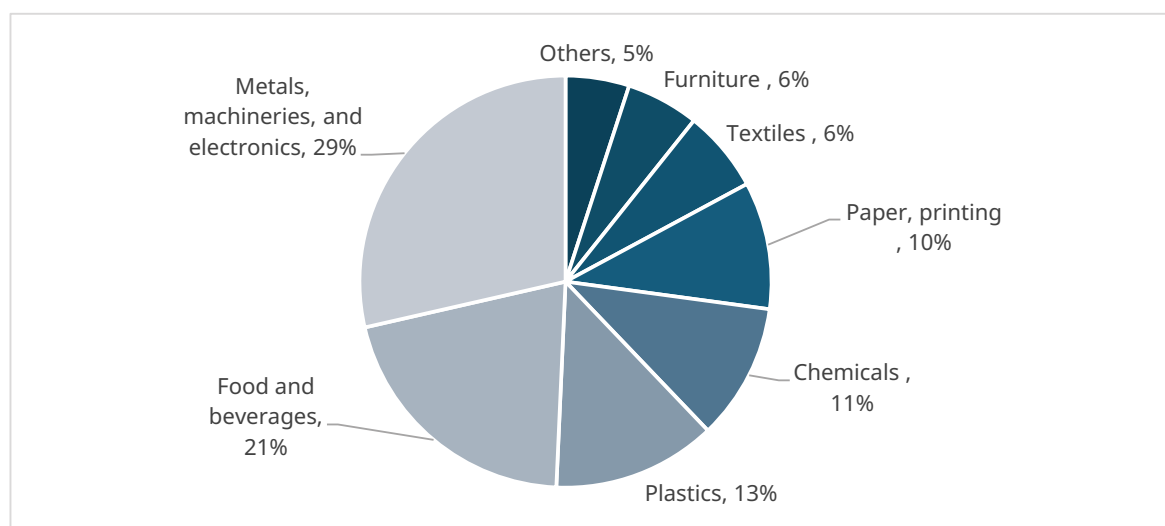
The two largest subsectors were metals, machinery and electronics (29 per cent) and food and beverages (21 per cent). Plastics, chemicals, and paper and printing represented, respectively, 13 per cent, 11 per cent and 10 per cent of surveyed enterprises (figure 1).¹²

Around 52 per cent of the enterprises were classified as joint stock companies (SAL) and 33 per cent were limited liability companies (SARL). Sole proprietorship and partnerships limited by shares represented only 8 per cent and 6 per cent, respectively. This shows the high levels of capitalization of leading Lebanese manufacturing enterprises compared with small businesses (ILO and UNICEF 2022).¹³ This was also mirrored by the high number (82 per cent) of enterprises that had access to export markets. This value was high across all subsectors, except furniture, of which only half of such enterprises exported their products.

In terms of enterprise size¹⁴, around 31 per cent of surveyed enterprises reported 25 employees or fewer, 15 per cent reported between 26 and 50 employees, 26 per cent between 51 and 100, and 28 per cent of enterprises reported more than 100 employees.

In the present study, comparisons are reported between small enterprises (50 employees or fewer, representing 46 per cent of the sample) and medium-sized enterprises (more than 50 employees, representing 54 per cent).

Figure 1. Survey respondents by subsector



Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 140.

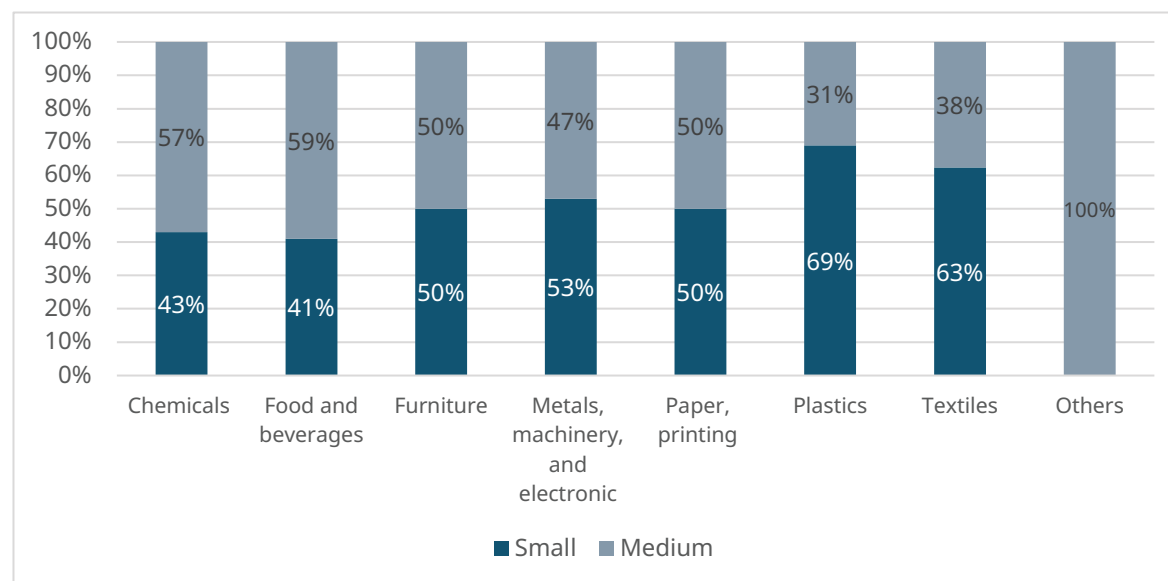
¹²Sectoral distribution of 852 ALI members: metals, machinery and electronics 17%; food and beverages 24%; plastics 12%; chemicals 10%; paper and printing 12%; furniture 4%; textiles 6%; quarry and mining 8%; others 5%. In terms of subsector distribution, metals, machinery and electronics is overrepresented, compared to the population, while quarrying and mining is not represented in this sample.

¹³A survey of 1,792 small businesses across Lebanon showed that around 87% of surveyed enterprises were sole ownership (ILO and UNICEF 2022).

¹⁴Ministry of Economy, SMEs strategy 2020

Figure 2 shows the distribution of enterprises by size and subsector. There was an equal share of small and medium-sized enterprises in the metals, machinery and electronics, paper and printing, and furniture subsectors. The share of medium-sized enterprises in chemicals and food and beverages was slightly below 60 per cent, while around one third of enterprises in plastics and textiles were medium-sized. Enterprises characterized as “other”¹⁵ were invariably medium-sized. These enterprises typically require a significant number of workers, often linked to distribution networks involving suppliers and contractors, such as those in gas and water distribution.

Figure 2. Surveyed enterprises by subsector and size



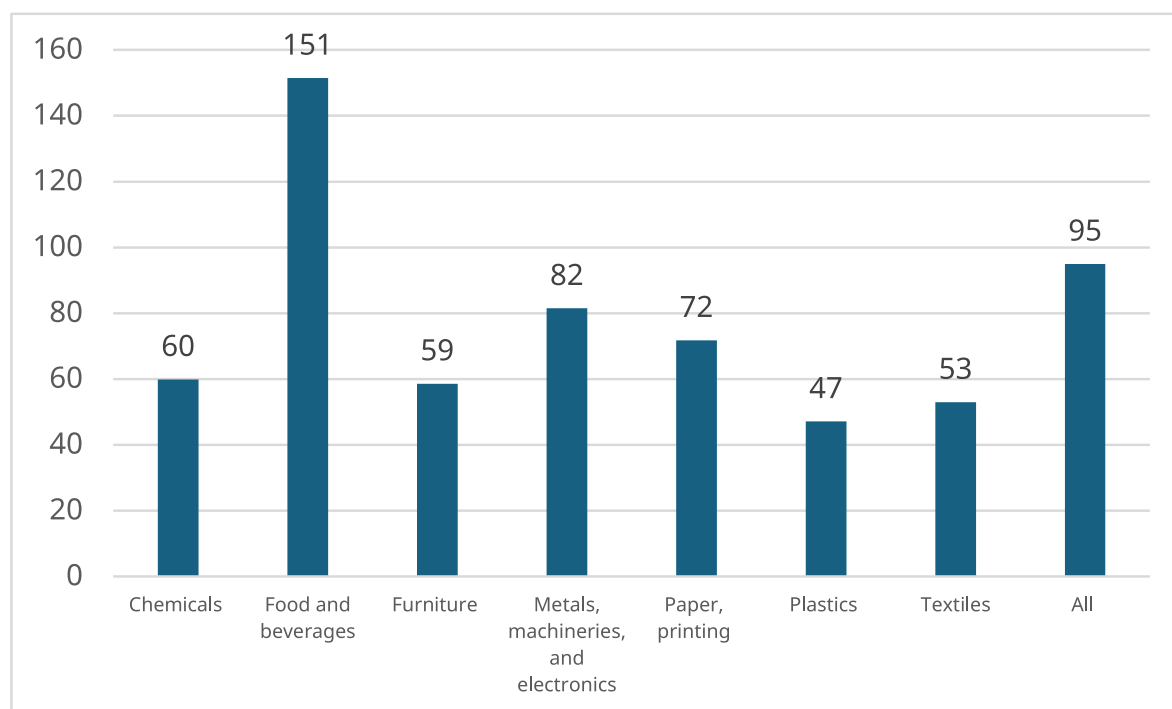
Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 134.

Number of employees

Surveyed enterprises employed a mean number of 95 workers, with a median value of 50. Figure 3 shows the range across subsectors. For example, the average agro-food enterprise employed 151 employees, whereas plastics employed an average of 47 employees per enterprise. The contrast between the mean (95) and the median number of employees (50) shows that most workers were employed by a relatively small number of large enterprises.

¹⁵ Other subsectors included electricity, gas and steam, water collection treatment and supply, pharmaceuticals and quarrying and mining.

Figure 3. No. of employees by subsector (mean)



Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 134.

Women

According to official statistics, only 22 per cent of Lebanese women are economically active compared with 66 per cent of men.¹⁶ Women are more likely to be trained and employed in education, health and service work. Moreover, economically active women are more likely to hold a university degree compared with men (43 per cent of women versus 20 per cent of men) (GIZ 2019). These national figures are reflected in manufacturing, where women's representation in the workforce remains limited, with certain exceptions.

Table 1, and table 12 (see annex), show that the sampled enterprises employ women mostly in administrative occupations, with around 25 per cent of enterprises employing more than 50 per cent women in these occupations. The percentage of women employed as technicians and low-skilled occupations is low, with around half of enterprises not employing any women, and a third of them employing women in less than 25 per cent of positions. Women's employment is especially low in certain subsectors, such as furniture and paper and printing, where 88 per cent and 79 per cent of enterprises employ no women as technicians, respectively. This is in line with ILO (2023), which revealed a clear underrepresentation of women in the printing and packaging subsector. Similar findings for the plastics subsector were found by ALI (2023), which noted that enterprises that employ a higher number of women tended to offer a wider array of products.

¹⁶ CAS, January 2022. Available at: cas.gov.lb.

Table 1. Distribution of women, youth and foreigners by occupational group (%)

Women					
Occupational group	None	Up to 25%	26%-50%	51%-75%	Above 75%
Managers	19	56	9	12	4
Technicians	46	36	12	4	-
Administrative occupations	9	49	16	17	8
Low skilled occupations	45	32	13	6	4
Youth					
Managers	51	24	16	6	3
Technicians	34	39	19	5	4
Administrative occupations	39	39	15	3	4
Low skilled occupations	28	37	11	12	11
Foreigners					
Managers	79	15	4	1	1
Technicians	70	24	1	-	4
Administrative occupations	90	7	1	1	1
Low skilled occupations	43	38	7	2	7

Refer to report annex for details data per sector and firm size

Women are better represented in food and beverages, with many surveyed enterprises employing more than 25 per cent of women as managers (38 per cent), technicians (31 per cent), administrative (49 per cent) and low-skilled staff (38 per cent). Similarly, the textiles subsector tends to employ a significant number of women, with 56 per cent and 33 per cent of enterprises employing between 25 and 50 per cent women as technicians and low-skilled workers, respectively. In fact, the majority of low-skilled textile workers are women. Furthermore, medium-sized enterprises generally employ a higher share of women compared with small enterprises. For example, only 4 per cent of medium-sized enterprises do not employ female managers, compared with 34 per cent of small enterprises.

The lack of women working in manufacturing is partly explained by the low outreach from TVET schools, and the low societal value placed on manufacturing for female students, with the exception of textiles and agro-food, in which the majority of students are women (USAID 2021). Key informants expressed the view that some enterprises were willing and actively working to increase the number of women they employ, especially for technical occupations. However, they also stated that collaboration with TVET schools to increase the number of female students had been unsuccessful and disappointing.

Youth

According to the ILO and CAS (2019), youth unemployment (23.3 per cent) is 2.1 times higher than the total unemployment rate (11.4 per cent). The Lebanese job market cannot generate enough jobs to accommodate all new entrants. An estimated 11,000 to 15,000 new jobs have been created annually over the past 10 years, but the annual number of university graduates over the same period was estimated at between 23,000 and 43,000, without taking TVET graduates into account. Moreover, job creation has been concentrated in low-productivity activities that require low-skilled labour. Meanwhile, high-productivity sectors such as communications, financial services and manufacturing (GIZ 2019) have created fewer jobs. Unemployment rates are higher among higher-educated youth; some 25 per cent of secondary education graduates are unemployed, compared with 36 per cent per cent of university graduates (ILO and CAS 2019). High expectations with respect to wages and responsibility, and the lack of capacity of enterprises to meet these expectations, are among the factors that explain the reluctance of university graduates to access low-skilled occupations and they either prefer to remain unemployed or leave the country; it is estimated that up to 44 per cent of Lebanon's tertiary-educated population has migrated abroad (GIZ 2019).

As noted by GIZ (2019), the manufacturing sector has the capability to create jobs for highly qualified youth. The survey data show that, for example, in food and beverages, and in metals, machinery and electronics:

- 23 per cent and 28 per cent of these enterprises, respectively, employ more than 25 per cent of youth as managers;
- 34 per cent and 33 per cent of these enterprises, respectively, employ more than 25 per cent of youth as technicians

Nonetheless, the number of enterprises that do not recruit youth remains high, overall, with around half of all enterprises not employing any young managers, and around a third of enterprises not employing any youth in other occupations.

These figures can be explained by two complementary factors:

- (1) Technologically up-to-date subsectors, such as food and beverages, and metals, machinery and electronics, need a young and highly qualified workforce. Furthermore, key informants noted that specialized TVET and university training courses are available and are of relatively high quality for these subsectors.
- (2) Other subsectors are less likely to employ youth because of the relatively high skills mismatch between their education and the private sector's needs, the lower mobility of less qualified workers and the incentive for enterprises that have trained workers in-house to keep their experienced workers. The ILO (2023) reports that most companies in paper and printing had not witnessed significant changes in their workforce over the previous 3 years and enterprises had not experienced high turnover. In that study, 81 per cent reported an employee turnover rate of less than 10 per cent. Those with a high turnover were companies that were downsizing and no longer looking to hire new employees. It is

also interesting to note that increasing workers' pay to retain existing workers and expand their scope of work were the most common actions when an enterprise was unable to recruit staff.

In the present study, data show that medium-sized enterprises tend to hire more youth than small enterprises. For example, only around a quarter of medium-sized enterprises do not employ any youth as technicians or in administrative and low-skilled occupations compared with almost half of small enterprises.

Foreign workers

The Lebanese Ministry of Labour issues around 200,000 foreign labour permits per year. However, the actual number of foreign workers is believed to be much higher, as many reside in Lebanon without registering. Hiring foreign workers is a limited practice, particularly among competitive and well-established manufacturing enterprises.¹⁷ Table 1 shows that, respectively, 79 per cent, 70 per cent and 90 per cent of surveyed enterprises currently do not hire foreigners to work as managers, technicians or administrative occupations. There is no noteworthy difference between subsectors or different sizes of enterprise.

However, manufacturing enterprises partially rely on foreign workers for low-skilled occupations – 57 per cent reported hiring at least some foreign workers for these occupations. This is because foreign workers are more likely to accept lower wages than Lebanese workers. In certain instances, manufacturing enterprises rely on foreign technicians and managers, especially when facing issues related to skills gaps. A study conducted by ILO (2017) reported that, in order to overcome a lack of skilled workers for specific machinery and processes, especially automated processes, enterprises in food and beverages recruited foreigners, mainly Egyptians with prior experience in production supervision with international companies in Egypt. Syrians with experience in modern and advanced factories were also recruited. Agro-food businesses also considered hiring Asian labour for skilled technical tasks.

Job proficiency

Surveyed enterprises rated their satisfaction with current workers' proficiency. The average satisfaction score (out of 10) was 8.3 for managers and high-level professionals, 7.7 for technicians and 7.9 for administrative workers. Unskilled and low-skilled labour was rated relatively lower at 6.5. There was no substantial difference between subsectors, and standard deviations from the mean¹⁸ indicated a relative consistency in ratings across all surveyed firms.

Despite respondents' satisfaction scores, they still acknowledged that workers lacked skills. This was particularly the case for low-skilled workers and technicians, with, respectively, 16 per cent and 25 per cent of respondents declaring they did not lack skills, compared with 44 per cent and 39 per cent for managers and administrative occupations, respectively. Table 2 shows the scores across subsectors.

¹⁷ Note that the limited reliance on foreign workers is a characteristic of the formal manufacturing sector. Informal enterprises tend to hire a significant number of foreigners.

¹⁸ SD = 1.5 for the three skilled categories and SD = 2.0 for low-skilled occupations.

Table 2. “No skills are lacking” – employers’ perceptions of workers’ job proficiency by subsector, occupational group and size of enterprise (% of respondents)

Subsector and size	Managers	Technicians	Administrative occupations	Low-skilled occupations
Chemicals	27	27	33	7
Food and beverages	41	31	38	17
Furniture	50	38	38	25
Metals, mach. & elec.	50	25	43	15
Paper and printing	29	14	29	14
Plastics	44	22	39	28
Textiles	44	22	44	11
Small	44	30	40	19
Medium-sized	42	18	34	12
Total	44	25	39	16

Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 140.

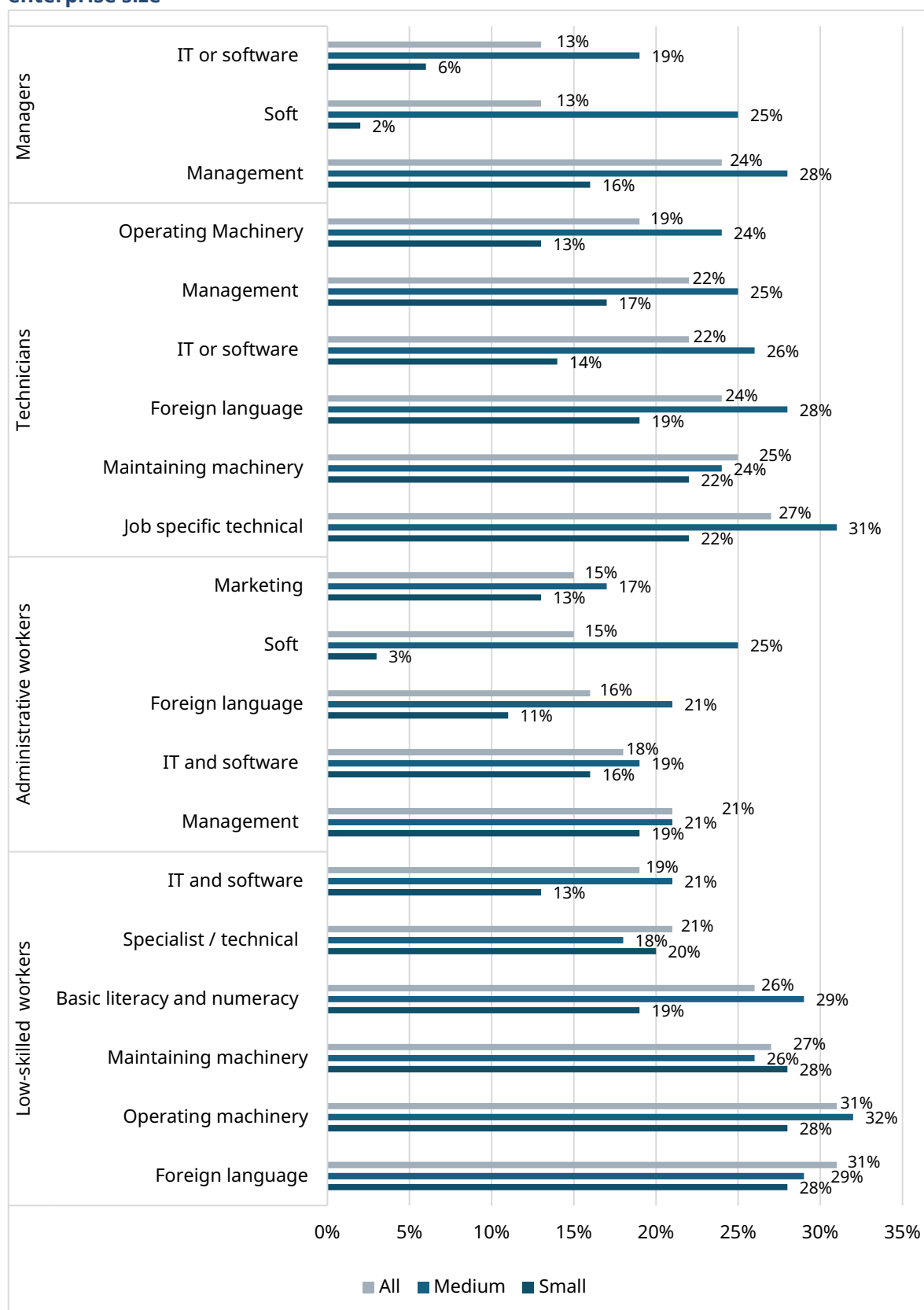
As shown in figure 4, the top skills considered lacking were mostly related to job-relevant technical skills, such as:

- (3) for managers – management skills (24 per cent), IT skills and soft skills for managers in medium-sized enterprises;
- (4) for technicians – technical skills (27 per cent), maintaining machinery (25 per cent) and operating machinery (19 per cent);
- (5) for administrative occupations – management skills (21 per cent) and marketing skills (15 per cent);
- (6) for low-skilled occupations – operating machinery (31 per cent), maintaining machinery (27 per cent), basic literacy and numeracy (26 per cent) and technical skills (21 per cent).

Interestingly, soft skills were considered lacking for managers and administrative occupations. IT or software skills and foreign languages were considered lacking for all occupations, except managers. Respondents from medium-sized enterprises tended to express a higher lack of skills compared with those from small enterprises for all occupations. According to interviewees, this difference was due to two factors: (a) the tendency of small firms to go through an intensive selection process of a limited number of candidates, and (b) medium-sized enterprises require a higher level of skills and use more complex processes (both managerial and technical).

Green (environmental) skills were not considered lacking. Neither were they considered a priority; just 8 per cent of respondents cited them. According to key informants, this can be explained by two dynamics. From one side, enterprises with environmental concerns (e.g. the chemicals subsector) have already put in place high environmental standards of production, introduced environmentally friendly products and certifications, installed relevant recycling procedures and machinery and are increasingly relying on solar energy. On the other hand, enterprises with limited environmental concerns do not consider the issue as a priority.

Figure 4. Top skills lacking among current workforce by occupational group and enterprise size



Note: Figures are only reported where more than 15 per cent of respondents expressed a lack of this specific skill in at least one category.

Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 140.

Overcoming skills gaps

The most common action taken to overcome a lack of skills within respondents' current workforce was to provide training. On average, more than half of respondents stated that they used training to improve skills. This was observed across all occupational groups (table 3). Furthermore, about 25 per cent of respondents have used mentoring and coaching programmes, along with improved supervision and performance monitoring. There were no significant differences observed between subsectors.

Around 21 per cent of respondents indicated they would hire new staff to address any lack of skills among technicians and administrative staff. This figure was higher for low-skilled workers (27 per cent) and notably lower for managers (12 per cent). It should be noted that 24 per cent of respondents would outsource technicians' tasks.

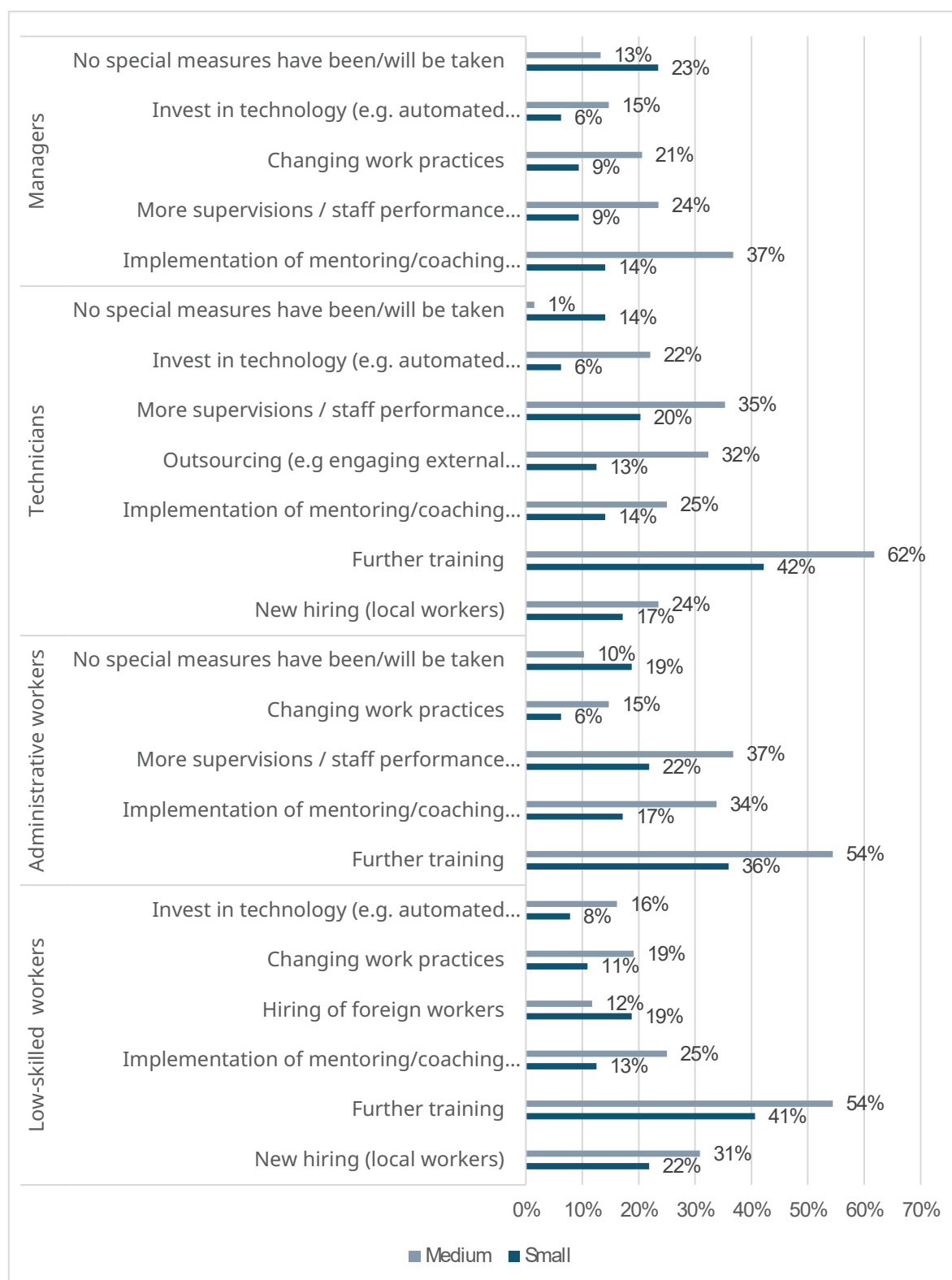
As shown in figure 5, medium-sized enterprises tended to report a more diverse set of responses to skills gaps. Across all occupations, a higher share of medium-sized enterprises would provide training, or implement coaching or mentoring schemes compared with small enterprises.

Table 3. Action taken to overcome lack of skills of current staff by occupational group

Action	Managers	Technicians	Administrative occupations	Low-skilled occupations
New hires (local workers)	12	21	20	27
Further training	52	55	49	50
Implement mentoring/coaching scheme	27	21	28	21
Outsource (e.g. engage external contractors)	12	24	6	9
Hire foreign workers	4	8	2	16
More supervision/staff performance reviews and monitoring	18	29	30	25
Change work practices	15	16	11	16
Reallocate work	7	14	14	14
Invest in technology (e.g. automated production)	11	14	8	13
No special measures	21	9	15	11

Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 140.

Figure 5. Action taken to overcome lack of skills by occupational group and enterprise size (selected results)



Note: For clarity, only responses for which small and medium-sized enterprises behave differently have been reported (i.e. differently from the sample average reported in table 3).

Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 140.

In fact, staff training is common across all manufacturing subsectors; some 70 per cent of respondents had provided training to staff in the past 12 months. This value reached around 80 per cent in chemicals, food and beverages, and metals, machinery and electronics. Staff training was relatively lower in plastics, paper and printing, and textiles (table 4). However, there was a significant difference between medium-sized enterprises (81 per cent) and small enterprises (56 per cent).

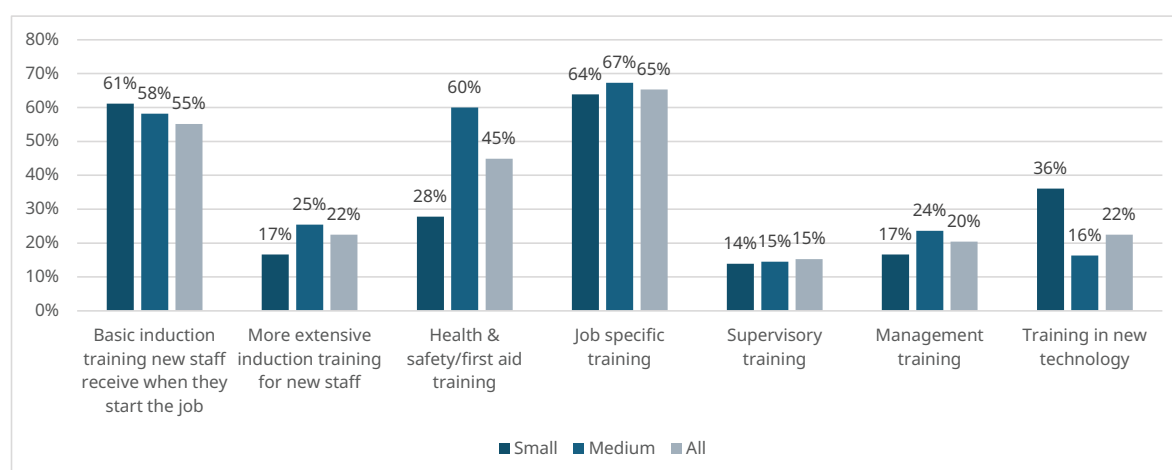
Table 4: Provision of staff training by subsector (%)

Subsector	Proportion of enterprises that provide training
Chemicals	80
Food and beverages	82
Furniture	63
Metals, machinery and electronics	78
Paper and printing	57
Plastics	39
Textiles	56
Total	70

Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 140.

According to figure 6, training was predominantly job-specific, followed by basic induction training and training on health and safety. Around 22 per cent of respondents provided training on new technology, and 20 per cent provided training in management. There was no significant difference between small and medium-sized enterprises, except that small enterprises provide more training related to new technology.

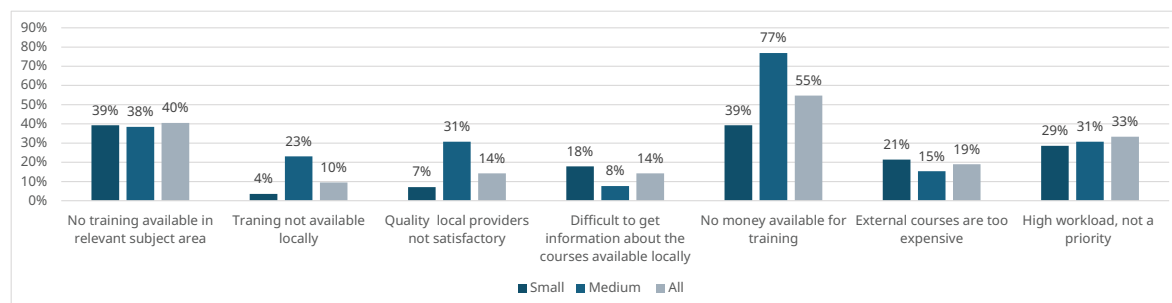
Figure 6. Type of training by enterprise size



Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 98.

The most common reason selected for not providing training was related to budget constraints (55 per cent), followed by the lack of available training in the relevant subject (41 per cent). There were no significant differences between subsectors. However, figure 7 shows significant challenges for medium-sized enterprises to find suitable training locally, in addition to financial constraints.

Figure 7. Reasons for not training staff by enterprise size



Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 42.

It is important to note that established competitive enterprises tend to have put in place clear staff performance monitoring and assessment systems, which are linked to staff training and job-improvement programmes. One key informant described their processes thus:

Our current focus includes in-house training, performance evaluation and system development. When it comes to training, we take the initiative to develop programmes internally, covering essential areas such as IT proficiency and internal procedures. Our approach involves comprehensive support, including guidance from team members, supervision and coaching from managers. Should additional expertise be required, we are open to engaging external providers. Prioritization is based on immediate job requirements or sourcing from outside experts. We maintain relationships with trusted providers. We also consider factors such as budget constraints and past client experiences when selecting external training providers. Furthermore, specialized machinery training is typically facilitated by the companies responsible for their sale or maintenance, leveraging their extensive experience in both machinery and training provision.

Regarding performance evaluation, our management cycle plays a crucial role in identifying needs. Each job description includes defined functional competencies and associated proficiency levels, aiding in pinpointing specific training requirements. It's essential to note that our evaluation system encompasses all levels of workers, not solely those in technical roles. This inclusive approach ensures that training needs are accurately identified across the organization, contributing to overall performance improvement and skill development at every level.

Occupations in demand

There is clear demand across all manufacturing subsectors for technicians. Some 75 per cent of respondents expressed a need for technicians, and 40 per cent expressed the need for low-skilled labour. Demand for other occupations was significantly lower. Table 5 shows slight differences across subsectors. Nonetheless, the following points can be noted:

- Demand for technicians is very high in paper and printing (expressed by almost all surveyed enterprises). This is in line with ILO (2023), which highlighted high demand for technicians, machine operators, engineers, graphic designers and accountants, among others. That report also noted that, while there was a significant supply of graphic designers, electro-technicians and mechanics, machine operators and maintenance workers were significantly lacking.
- The textiles subsector expressed significant demand for low-skilled labour, as well as technicians.
- The chemicals subsector expressed higher-than-average demand for administrative occupations, including sales.
- Overall demand for occupations is higher for medium-sized enterprises, compared with small enterprises.

Table 5. Occupational group in demand by subsector and enterprise size (%)

Subsector and size	Managers	Technicians	Administrative occupations	Low-skilled occupations
Chemicals	33	47	47	40
Food and beverages	10	62	34	45
Furniture	-	88	25	38
Metals, mach. & elec.	5	80	15	28
Paper and printing	7	93	14	36
Plastics	17	78	17	39
Textiles	22	67	-	67
Small	9	64	26	40
Medium-sized	15	82	20	36
Total	12	75	23	40

Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 140.

Skills shortages and vacancies

Labour market skills gaps appear to translate into significant labour shortages. Half of all surveyed enterprises reported labour shortages, including two thirds of enterprises in plastics and textiles. Overall, 62 per cent of surveyed enterprises had at least one open vacancy, with an average of 2.8 vacancies per enterprise that had vacancies (tables 6 and 7). This value rises to 72 per cent for medium-sized enterprises.

Half of the surveyed enterprises had vacancies for technicians, and around a quarter of enterprises had vacancies for administrative staff and low-skilled labour. The figures were significantly higher for medium-sizes enterprises for all occupations. For example, managerial vacancies were limited for small enterprises, with only 6 per cent of surveyed enterprises

looking to hire a manager or highly skilled professional. However, this figure reached 19 per cent for medium-sized enterprises. Enterprises in food and beverages and textiles reported a significant number of vacancies for low-skilled labour.

As an indicator of skills shortages, there was an average of, respectively, 1.5 job vacancies for technicians and 1.8 for low-skilled occupations per enterprise. Demand for administrative occupations was relatively limited with an average of 0.7 vacancy per enterprise. The largest demand for labour was from medium-sized enterprises. Table 6 presents the proportion of enterprises with vacancies by occupational group and subsector for those that reported having a vacancy. Table 7 presents the mean number of vacancies per enterprise for each occupational group.

Table 6. Skills shortages and vacancies by subsector, occupational group and enterprise size (%)

Subsector and size	Skills shortages	Vacancies	Vacancies by occupational group			
			Managers	Technicians	Administrative	Low-skilled
Chemicals	53	67	34	27	40	27
Food and beverages	54	71	11	53	53	39
Furniture	13	38	13	25	13	13
Metals, mach. & elec.	51	59	8	51	15	21
Paper and printing	50	50	-	43	14	21
Plastics	61	61	16	56	16	22
Textiles	67	67	22	44	11	44
Small	49	48	6	36	16	21
Medium-sized	52	72	19	57	38	31
Total	51	62	13	48	26	28

Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 138.

Table 7. : Average number of vacancies by subsector and enterprise size

Subsector and size	Vacancies by occupational group			
	Managers	Technicians	Administrative	Low-skilled
Chemicals	0.5	0.6	1.8	4.6
Food and beverages	0.2	1.5	1.9	3.7
Furniture	0.2	2.7	0.8	1.5
Metals, machines & electricians	0.3	1.7	1.0	3.1
Paper and printing	-	2.4	0.4	1.1
Plastics	1.7	3.8	1.8	2.9
Textiles	2.7	4.0	0.8	5.0
Small	0.06	1.0	0.3	0.8
Medium-sized	0.4	1.9	1.1	2.2
Total	0.25	1.5	0.7	1.8

Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 138

With respect to occupational groups:

- For managers, most vacancies were related to general managerial responsibilities. However, there was significant demand for mechanical and embedded system engineers

in the metals, machinery and electronics subsector, as well as demand for product development and food production specialists in the food and beverages subsector.

- For administrative occupations, the vast majority of vacancies were related to salespersons and sales account managers; this was the case for all subsectors.

For low-skilled occupations, most vacancies were related to line operators and assistant

- technicians. There was a significant number of vacancies for packaging workers.

Table 8 summarizes the vacancies cited for technicians for each subsector. In addition to the clear skills shortages and demand for maintenance, electrical and mechanical technicians across all manufacturing subsectors, the survey revealed a high demand for CNC operators,¹⁹ HVAC technicians,²⁰ lathe technicians²¹ and welders. This was particularly the case in metals, machinery and electronics, and in plastics. Interviewees expressed the view that industrialists with leading edge technology are increasingly demanding PLC HMI technicians and associated professionals.²² Demand for laboratory and quality control specialists was noted in the chemicals subsector, and demand for production quality and safety supervisors was observed in food and beverages.

Table 8. Technician vacancies by subsector

Subsector	Main job vacancies for technicians
Chemicals	Electrical and mechanical control technicians, machine operators, laboratory and quality control specialists
Food and beverages	Production quality and safety supervisors, maintenance technicians, electrical and mechanical technicians, lathe technicians, welders
Furniture	Carpenters
Metals, machinery and electrical	Machine operators (turning and milling machine operators, motor winding, mechanic), electrical and mechanical technicians, CNC operators, HVAC technicians and electricians, technical product drafter, blacksmith/welder
Paper and printing	Maintenance technicians, electrical and mechanical technicians
Plastics	Maintenance technicians, electrical and mechanical technicians, CNC operators, HVAC technicians, lathe technicians, production supervisors (quality control)
Textiles	Tailors

Source: ALI-ILO Employer Skills Anticipation Survey 2024.

In terms of the top skills in demand (table 9), the following points were noted:

- Soft skills were in demand for both managers and administrative occupations (cited by 63 per cent and 58 per cent of respondents respectively), but were not in high demand for technicians and low-skilled occupations (cited by only 22 per cent of respondents for each).
- IT skills were in demand for all occupations, except low-skilled occupations.

¹⁹A CNC operator is a skilled technician who operates computer-controlled machinery used in manufacturing processes. CNC machines are programmed to perform precise and repetitive tasks such as cutting, milling, drilling or shaping various materials including metal, wood and plastics. The CNC operator is responsible for setting up the machine, loading the necessary tools and materials, interpreting technical drawings or blueprints, and monitoring the machining process to ensure accuracy and quality. They may also perform routine maintenance on the equipment to keep it in optimal working condition.

²⁰An HVAC operator, also known as an HVAC technician or HVAC engineer, is a skilled professional responsible for the operation, maintenance and repair of heating, ventilation, air conditioning and refrigeration systems in residential, commercial and industrial buildings.

²¹A lathe technician is a skilled professional who operates and maintains lathe machines used in machining processes. Lathes are versatile machine tools used to shape workpieces by rotating them against cutting tools to remove material and create cylindrical or conical shapes.

²²A PLC HMI control technician is a professional specialized in industrial automation systems, specifically the programming, configuration, operation and troubleshooting of such systems.

- Foreign language skills were demanded all occupations except low-skilled occupations.
- Marketing and e-commerce skills were increasingly important for administrative occupations.
- The capacity to operate machinery and basic literacy and numeracy skills were the only skills highly demanded for low-skilled occupations.

Table 9. Top skills needed for new employees by occupational group

Occupation	Top skills lacking ¹
Managers	Management skills (75%) ²
	IT skills (63%)
	Soft skills (63%)
	Foreign language (56%)
	Specialist/technical skills (44%)
Technicians	Specialist technical skills (82%)
	Maintaining machinery (66%)
	Operating machinery (65%)
	Foreign languages (37%)
	IT skills (35%)
Administrative occupations	Soft skills (58%)
	Marketing and e-commerce (52%)
	Foreign language (52%)
	IT skills (48%)
	Management skills (39%)
Low-skilled occupations	Operating machinery (56%)
	Basic literacy and numeracy (53%)

Notes: (1) Cited by more than one third of respondents who had an open vacancy for the specific occupation. (2) Expressed as a percentage of respondents that had an open vacancy for the specific occupation, n = 16 for managers, n = 62 for technicians, n = 33 for administrative workers, n = 36 for unskilled workers.

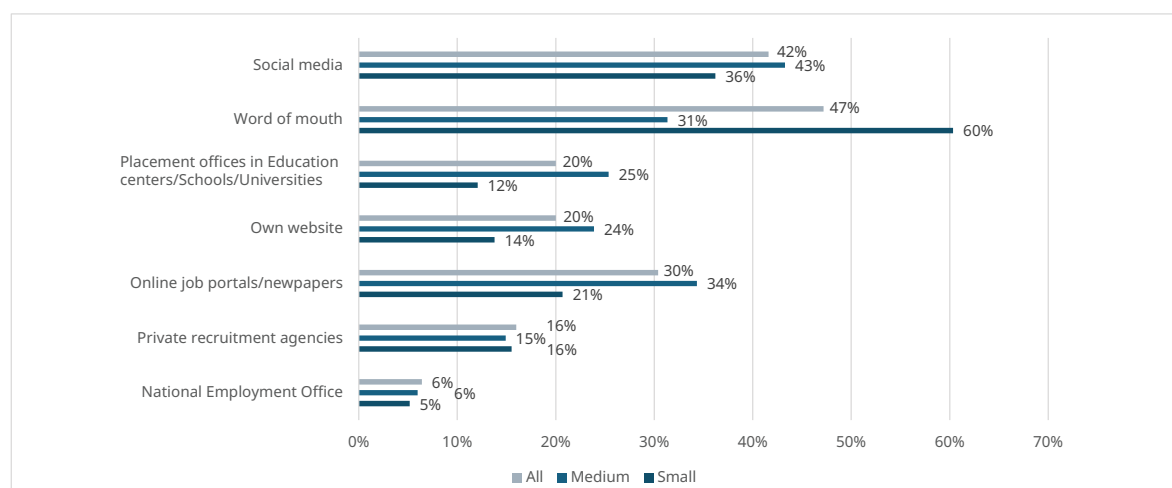
Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 125.

Recruitment methods and challenges

Industrialists still use a mix of traditional and new methods to recruit new employees. Respondents' most common recruitment channel was word-of-mouth (47 per cent) followed by social media (41 per cent). Conventional methods of recruitment (i.e. methods that would be used in a functional labour market) were limited: 30 per cent of respondents used job portals, while interaction with TVET institutions (19 per cent) and the National Employment Office (NEO) (6 per cent) were highly limited. A previous ILO (2016) study found that companies were reluctant to leverage other, more formalized routes, such as the NEO, because they felt that applicants using that system were often less qualified. Small enterprises tended to rely on word-of-mouth significantly more than medium-sized enterprises (60 per cent versus 21 per cent), while medium-sized enterprises tended to use job placement offices in TVET institutions and online tools more than small enterprises.

More generally, it was noted in the literature (GIZ 2019), and confirmed by interviewees, that the quality of the recruitment process varies depending on the size of the company. Small and medium-sized enterprises lack recruitment capacity. Larger companies, with their own HR department, may implement a highly structured and, to a certain extent, transparent and fair process with a large roster of qualified potential candidates.

Figure 8. Main recruitment mechanisms by enterprise size



Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 125

The key reasons stated for hiring were related to enterprises' efforts to expand production (59 per cent) and replacement of outgoing employees (44 per cent), with limited differences between small and medium-sized enterprises (figure 9). These findings reflect two dynamics:

- (1) Overall sustained growth and expansion of the Lebanese manufacturing sector is oriented towards export substitution and, to a lesser extent, import substitution. The capacity of the sector to grow was mentioned by several key informants, who stated that, despite challenges, the sector is not operating at full capacity, and can expand and diversify into other export markets:

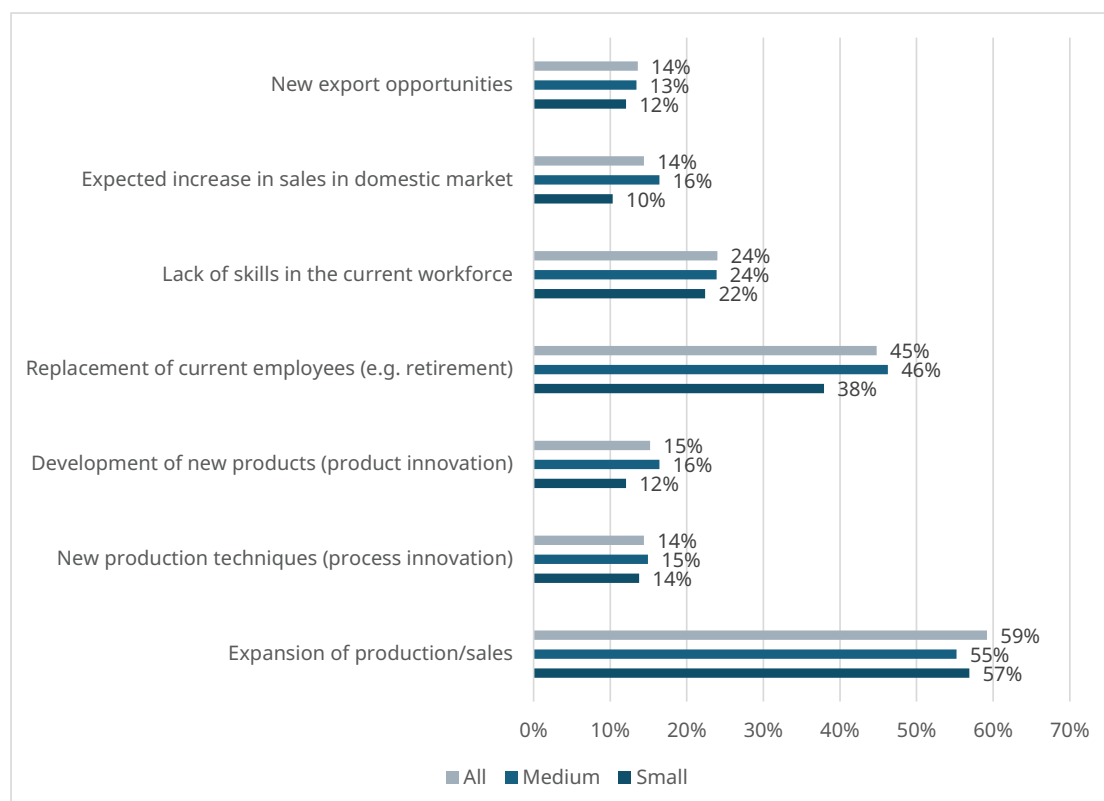
We have improved a lot since 2019. A lot of new manufacturing businesses are opening now and there is additional increased trust in the local production. This growth dynamic is particularly tangible in the chemicals, food and beverages, metals, machinery, and electronics [subsectors]. We export to Qatar, Kuwait, Angola, Congo, Netherland, Mexico, etc. ... despite the challenges, especially the lack of public support. But we believe there is a lot of expansion and growth opportunities. (Interviewee, metals, machinery and electronics)

- (2) An ageing workforce with a limited number of young people employed is linked to the skills mismatch between TVET institutions and the needs of the private sector.

The lack of skills of the current workforce was the third most common reason for hiring new staff by 24 per cent of respondents. All other reasons mentioned were directly linked to growth

dynamics (e.g. development of new products, expected increase in sales, new technology).

Figure 9. Reasons for hiring new staff by size of enterprise



Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 125

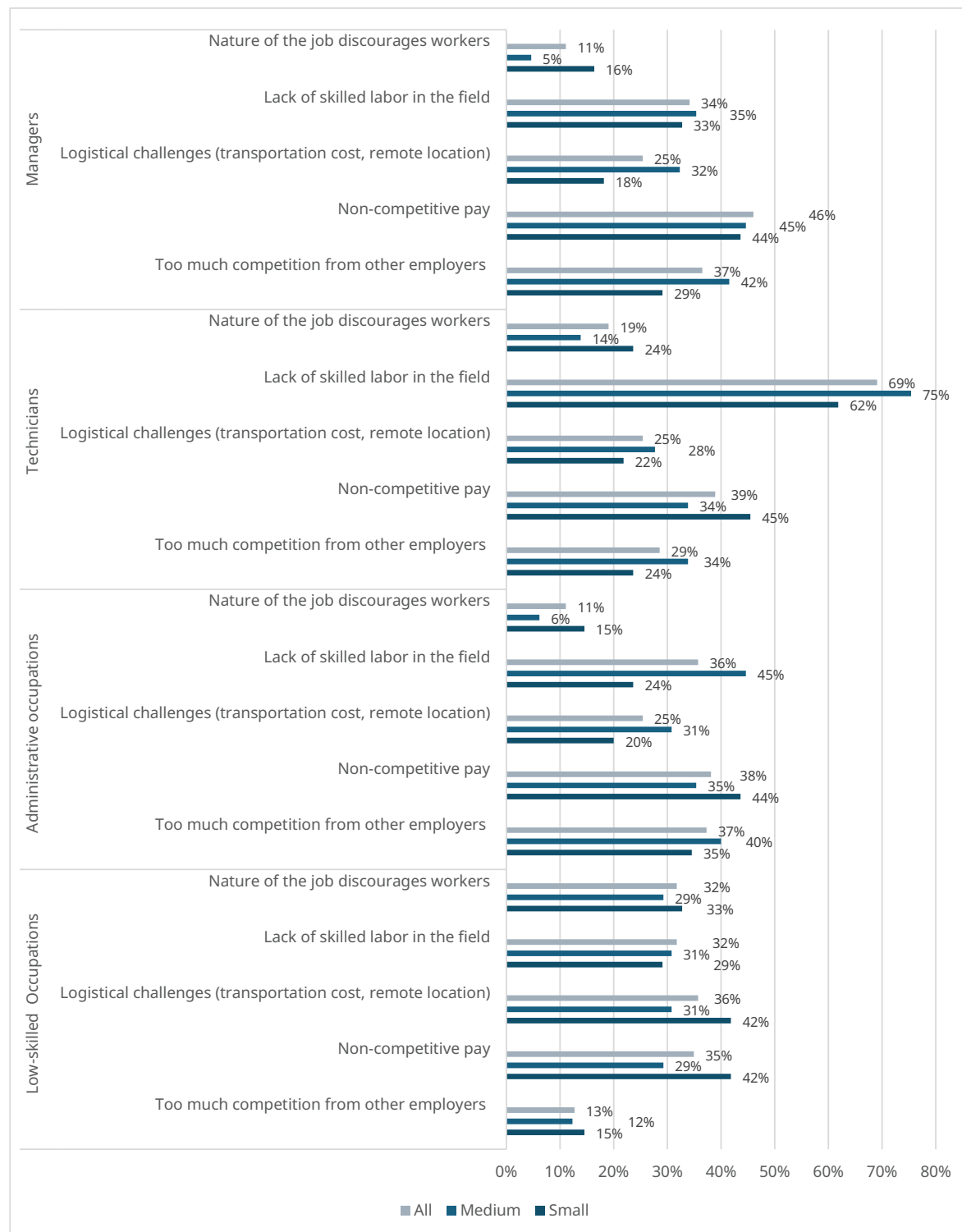
The mismatch of skills has made hiring technicians particularly difficult. Overall, the demand for technicians is hard to meet. Respondents rated hiring technicians as the most difficult (7.2), followed by managers (6.1), administrative staff (5.7) and low-skilled workers (4.7). There was no noteworthy difference in ratings based on enterprise size or subsector.

The limited supply of skilled labour was mentioned by 71 per cent of respondents among the top reasons for difficulties in hiring technicians, and by around 40 per cent of respondents as a key difficulty in hiring other workers (figure 10). The lack of skilled labour has also created significant competition between employers – respondents reported key challenges in hiring managers (43 per cent), technicians (30 per cent) and administrative staff (42 per cent). This raises the wage expectations of jobseekers, especially given the ability and willingness of skilled workers to look for job opportunities abroad.

Two other key reasons for difficulties in hiring were related to non-competitive pay and logistical challenges. These reasons are interconnected, as the relatively high transportation costs to and from work, especially in remote areas, can account for up to 10 per cent of wages for technicians and a significantly higher percentage for low-skilled workers. Finally, interviewees cited the lack of recognition of industrial and technical work as a major challenge for industrialists in hiring technicians and low-skilled workers. This issue is linked to negative perceptions surrounding

TVET schools, as well as the opportunities available for TVET graduates to work informally as self-employed technicians.²³ This was particularly evident among electricians, HVAC technicians, tailors and carpenters.

Figure 10. Top difficulties in hiring by occupational group and enterprise size



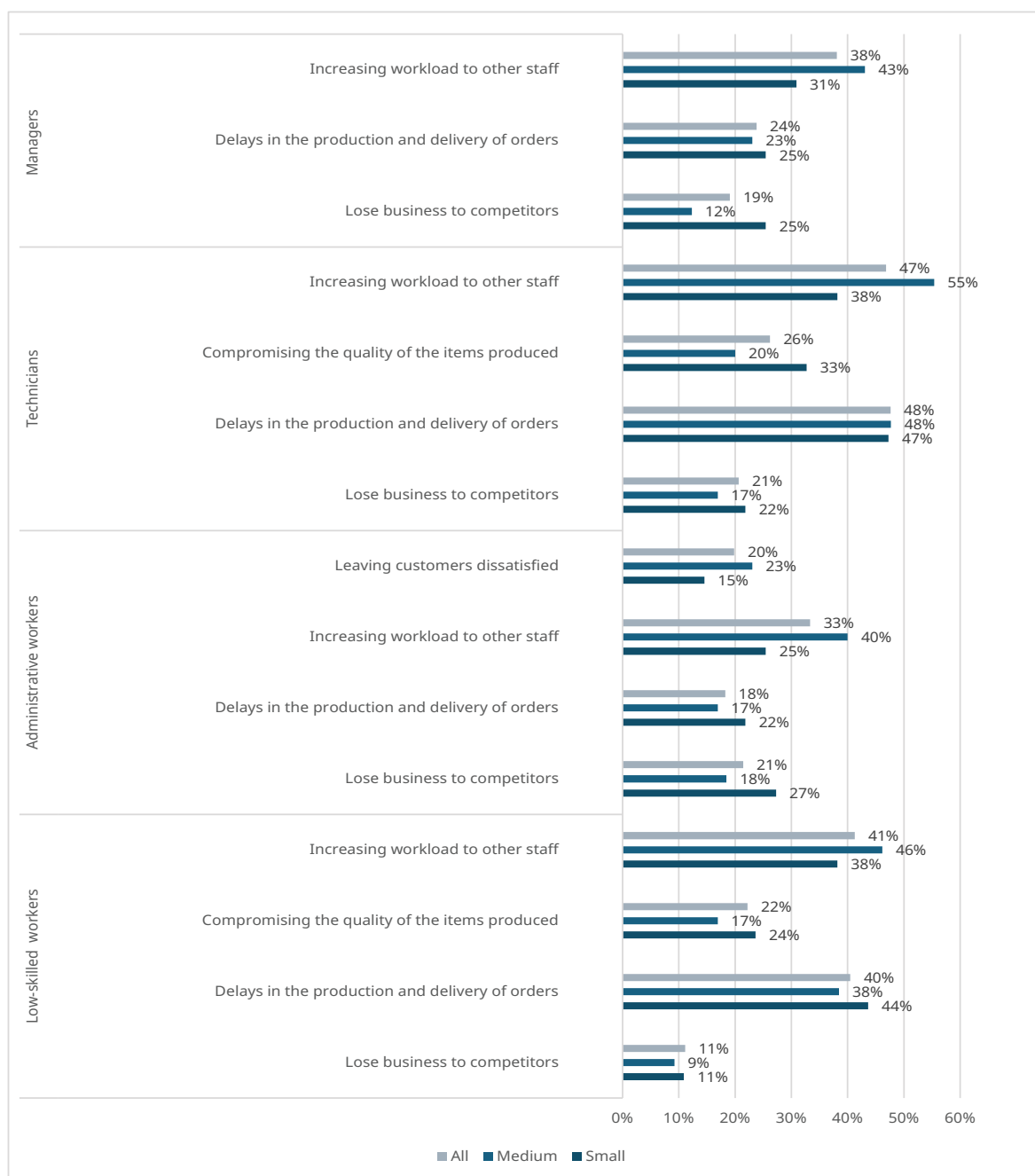
Note: For clarity, only answers cited by more than 10 per cent of respondents for at least one category are reported.

Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 126.

²³ Although there is a formal process of registering for self-employment through the Ministry of Finance, interviewees reported that the vast majority of self-employed technicians work informally and are not registered.

The impact of being unable to recruit staff differs depending on the occupation. Around 25 per cent of respondents declared that not being able to recruit managers or administrative staff had no impact. However, this figure was significantly lower for technicians (11 per cent) and low-skilled occupations (17 per cent), with no significant differences between subsectors or enterprise sizes. When reporting impact, enterprises mentioned mostly issues related to increasing the workload of other staff, delays in production and deliveries and, to a lesser extent, reduced quality of products and lower customer satisfaction (figure 11).

Figure 11. Impact of labour shortage by occupational group and enterprise size



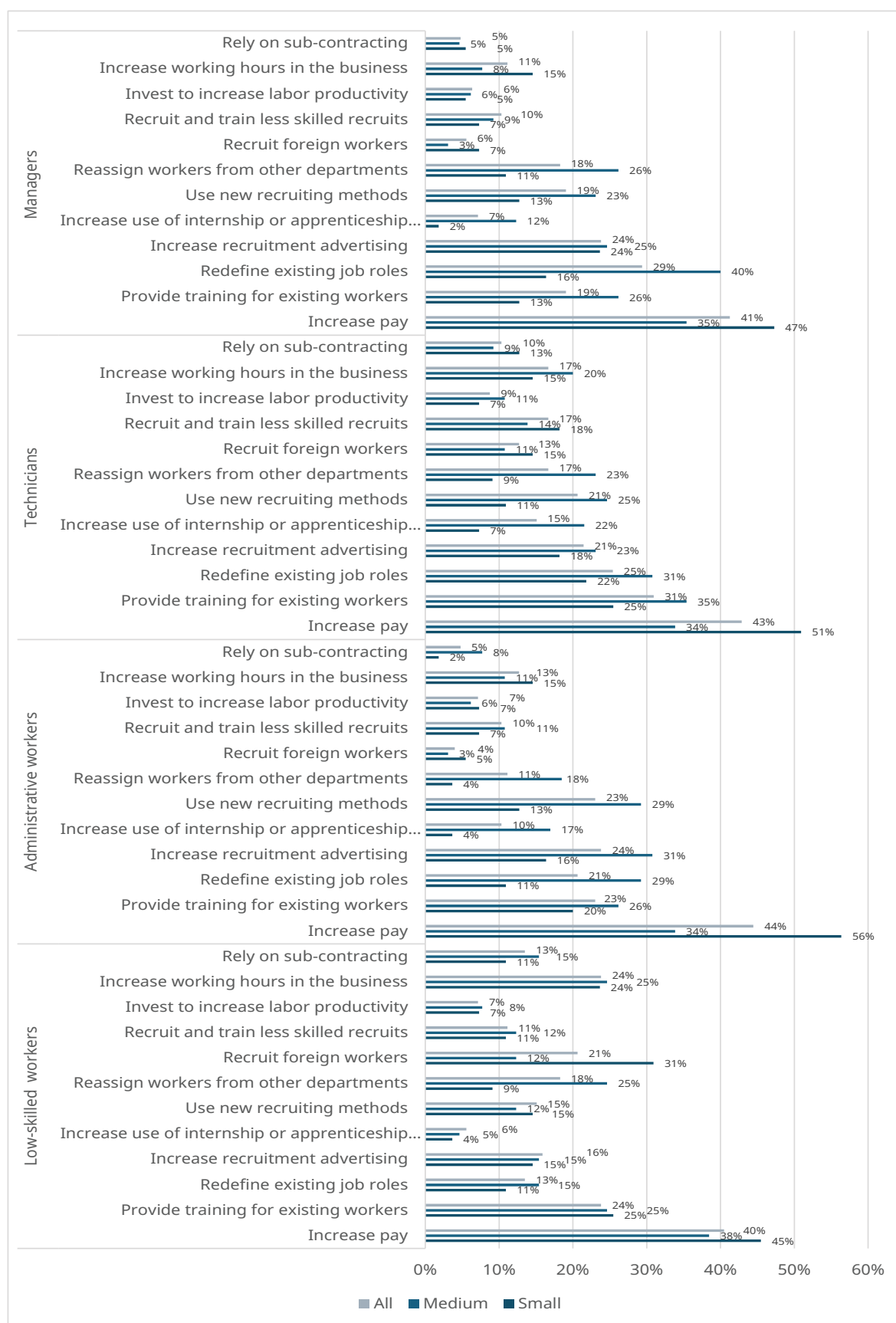
Note: For clarity, only answers cited by more than 10 per cent of respondents for at least one category are reported.

Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 126.

Higher workloads are compensated for by increasing wages and redefining job roles. Increasing wages was the most common measure taken by enterprises and was linked to the need to maintain levels of skilled labour (figure 12). Small enterprises tended to increase remuneration in order to retain staff more than medium-sized enterprises; this was true across all occupational groups. Medium-sized enterprises seem to have greater capacity to reallocate work or reassign workers from other departments. Such reallocation of work was also linked to providing additional staff training, one of the top mitigation measures used by enterprises.

Finally, increased use of advertising to recruit workers and the adoption of new recruitment methods (e.g. social media) were also frequently employed alongside other strategies to fill job vacancies in the medium term.

Figure 12. Top mitigation measures to address labour shortages by occupational group and enterprise size



Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 126.

Future outlook

Key challenges and growth expectations

The main challenges facing Lebanese industrialists can be broadly divided into two categories (figure 13):

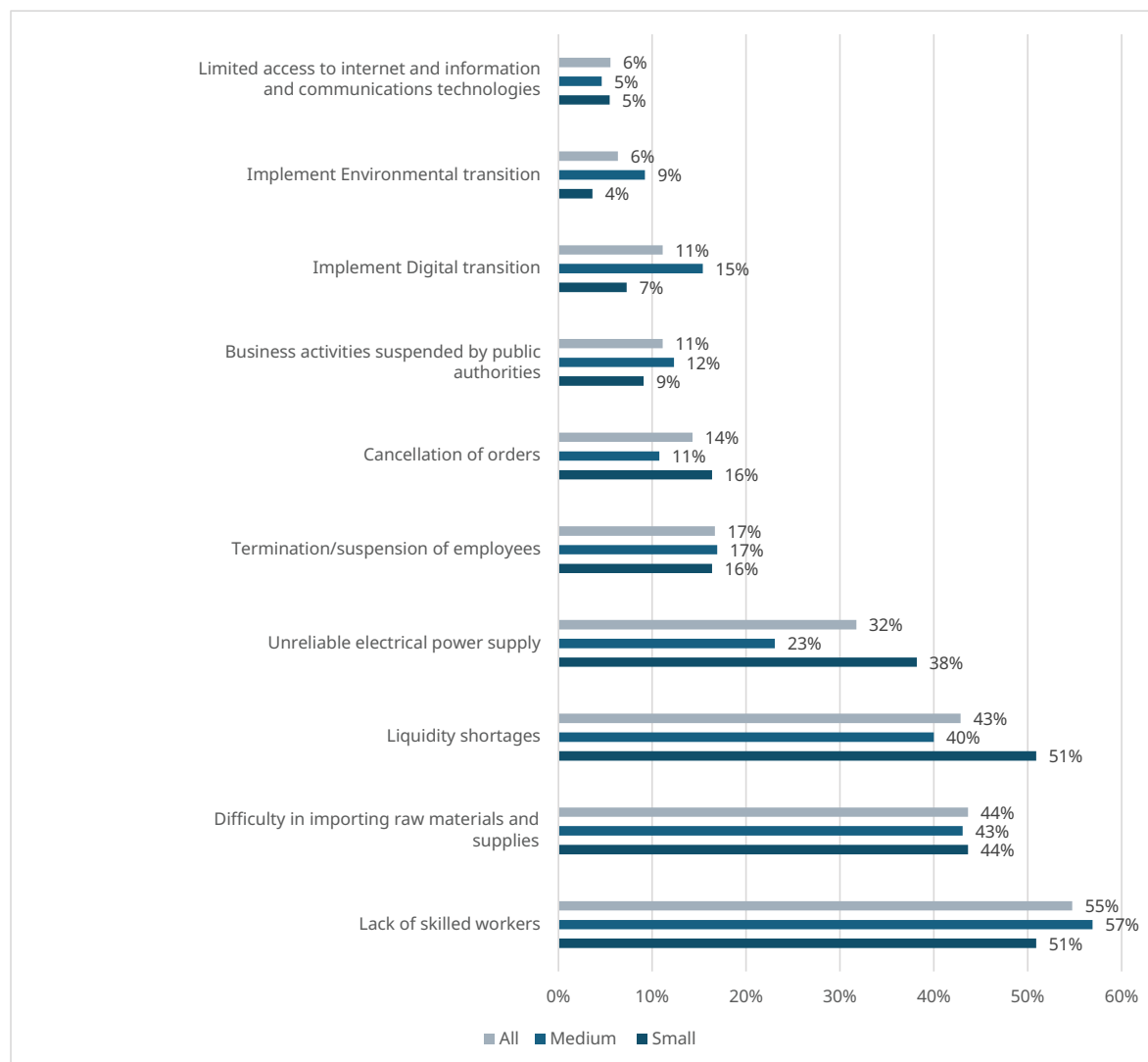
- (1) **Access to a skilled workforce.** The lack of skilled workers was the most prominent future challenge, cited by 55 per cent of respondents.
- (2) **External factors that hinder the private sector's capacity to grow.** These are related to the protracted crises that continue to challenge the country, as well as liquidity shortages and an unreliable electrical supply. Small enterprises anticipated more challenges related to liquidity and energy compared with medium-sized enterprises. In addition, there are difficulties in importing raw materials and supplies, related to both the impacts of the ongoing crises and issues with maritime distribution networks caused by the war in Gaza (cited by 44 per cent of respondents).

Lebanese SMEs have been significantly affected by the economic crisis. The most pressing challenge pertains to the collapse of financial services and paralysis of the banking sector, including the sharp depreciation of the Lebanese pound and subsequent drop in purchasing power and rampant inflation. Other challenges described in the literature (e.g. Oxfam 2023) were discussed in the interviews and round-table discussions, including:

- **Market access and trade procedures.** Access to markets is a primary concern because of the currency devaluation and reduction in purchasing power of local markets. Enterprises need alternative revenue sources to be able to sustain operations. Simplified payment systems, trade regulations and logistics were also major challenges mentioned by participants. This included understanding and implementing customs procedures and trade agreements, as well as reducing complex trade procedures and high shipping costs (especially for small volumes of cargo).
- **Energy infrastructure.** The collapse of Electricity du Liban's service and the high cost of private generators have led to skyrocketing energy costs for industrialists. As a result, many have turned to solar energy as an alternative.
- **"Brain drains" and exacerbation of skills gaps in the labour market.** The current exodus of skilled workers and professionals is impacting industrialists – even the most competitive ones. Enterprises, regardless of size, face a lack of skilled workers yet are limited in their ability to offer competitive wages.

Overall, negative expectations about the future were eased by a somewhat positive outlook. Around half of respondents expressed growth expectations (table 10). Medium-sized enterprises seem to have a more positive outlook, with 55 per cent reporting positive growth prospects, compared with 41 per cent of small enterprises. Around two thirds of industrialists expect to introduce innovative management processes and products.

Figure 13. Expected future challenges by enterprise size



Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 126.

Table 10. Future expectations by sector and enterprise size (%)

Subsector and size	Production will decrease	Number of employees will decrease	Business will be closed	Innovative management processes will be introduced	Innovative products will be developed	Positive growth prospect	Negative growth prospect
Chemicals	64	50	14	86	79	43	14
Food and beverages	40	32	8	60	64	72	-
Furniture	75	63	-	50	63	50	38
Metals, mach. & elec.	51	37	-	60	69	54	17
Paper and printing	67	50	8	75	50	25	8
Plastics	73	67	20	47	60	20	20
Textiles	67	44	22	78	67	56	11
Small	67	44	11	70	68	41	18
Medium-sized	48	47	6	62	66	55	6
Total	57	44	8	66	67	48	13

Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 126.

Industrialists were confident that the sector's growth is highly dependent on their capacity to access export markets. As shown in figure 14, some 57 per cent of respondents intended to access new export markets, while 38 per cent aimed to increase export volumes through already established channels. Interestingly, 41 per cent of respondents wished to improve local market sales. The crisis appears to have presented opportunities for re-industrialization, alongside both export and import substitution possibilities in areas such as chemicals, dairy products, processed food and furniture (Mercy Corps 2022).

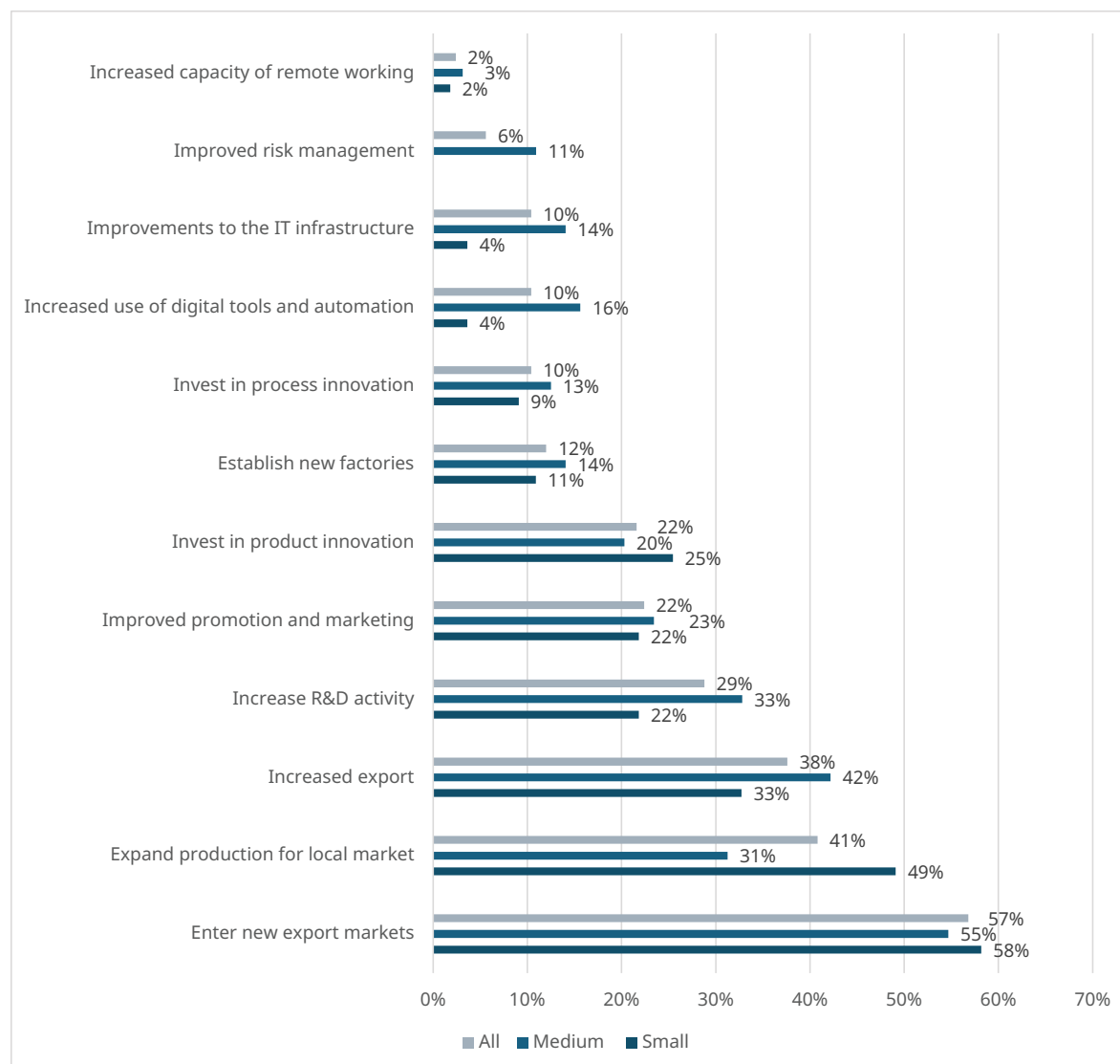
There were no major differences between small and medium-sized enterprises for the most cited future plans. However, some medium-sized enterprises mentioned improved risk management, IT infrastructure and increased digitalization, while a very limited number of small enterprises mentioned such plans.

Interestingly, 72 per cent of respondents in food and beverages reported growth prospects, and none of them stated having a negative growth prospect. Indeed, the Lebanese agro-food industry has shown a certain level of resilience to political instability and an ability to seize opportunities to maintain competitive advantage and access to international markets. Except for dairy production, which adopted an import substitution strategy, the recent growth of the agro-food subsector has been export-based. For instance, exports of processed fruit and vegetables and other edibles has witnessed significant growth from US\$85 million in 2004 to an average of US\$300 million per year since the 2019 economic crisis.²⁴ The subsector has shown a high capacity for exports, as well as a capacity to diversify export market channels. Processed food exports are valued highly in the market. In 2020 the US market was the most important export market, with around 11 per cent of total Lebanese food exports, followed by Canada and the Netherlands with 8.2 and 8.1 per cent shares, respectively. The subsector was able to

²⁴ Lebanese customs data. Available at: custom.gov.lb.

partially overcome the closure of the Saudi market route and other export restrictions. In 2015, the Saudi market represented around 25 per cent of Lebanese processed food exports.²⁵ However, this share dropped to zero in 2020 because of the export ban. Nonetheless, total export value has continued to grow. The reopening of the Saudi market represents an important opportunity for the Lebanese industrial sector.

Figure 14. Future plans by enterprise size



Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 126.

²⁵ Lebanese customs data.

Anticipated skills demand

Expectations regarding future demand for occupations did not differ significantly from current trends, with technicians anticipated to be in highest demand. Respondents also expected a significant increase in IT and AI skills, particularly in the management and programming of automated systems. There is a high expected need not only for PLC HMI and CNC technicians and associated professionals, but also for highly qualified IT and AI professionals. Detailed results regarding skills anticipation are presented in table 11.

Table 11. Future demand expected for specific occupations

Occupational group	Future demand¹	Why it will be in demand	Top skills demanded	Why it will not be in demand
Managers	12%	Market expansion will require more management functions Need for new strategies and leadership Increased management complexity maintains high-quality products	Management skills Strategic planning, leadership AI and IT-related skills (for high-level professionals, engineers)	It is available in the market Management is already established, thus limited demand – no high number of current vacancies Task often managed by owners (family-owned businesses)
Technicians	80%	Scarcity of skilled labour Increased complexity of production procedures New technology Expansion of production Emigration of skilled technicians	Understanding of AI processes and IT skills Technical skills CNC Knowledge of new technology and processes PLC HMI	Not applicable
Administrative occupations	38%	Access to new market and expansion of production Importance of brand image Improved customers' services High competition	Sales skills Digital marketing skills Public relations skills Communication skills IT skills	Currently available in the market Business already has an established team Task often managed by owners (family-owned businesses)
Low-skilled occupations	37%	To increase productivity Emigration of Lebanese workforce Renewing ageing workforce Lack of attractiveness (especially for Lebanese labour)	Basic literacy and numeracy Soft skills Basic IT skills	No qualification required High availability of labour supply (especially for foreign labour)

Note: (1) Percentage of respondents that believe this occupation will be in high demand in the future.

Source: ALI-ILO Employer Skills Anticipation Survey 2024; n = 126.

Conclusion

Summary of findings

Current workforce

- The representation of women and youth in the industrial workforce was limited in the enterprises surveyed. This is partially explained by the widespread undervaluing of industrial work, especially for technicians, limited outreach by TVET institutions to women, and the migration of young Lebanese graduates and skilled workers to other countries.
- Overall, the surveyed enterprises were satisfied with the levels of job proficiency of their current workforce. However, they acknowledged certain skills lacking, especially for technicians. The most common skills lacking in the current workforce were often directly related to their occupation (i.e. job-specific skills). Interestingly, soft skills were found to be lacking, even among higher-skilled occupations, including managerial and administrative staff.
- Overall, there was little difference between those skills lacking in the current workforce and the kinds of skills required of new employees, except basic literacy for unskilled occupations, which is a key requirement for recruitment.

Skills for green jobs were neither considered as lacking, nor were they considered a priority. This appears due to the fact that enterprises with high environmental priorities have already established procedures and trained staff, while other enterprises do not yet consider the issue a priority.

- The most common action taken to address skills gaps was to provide training to current staff. Staff training predominantly focused on job-specific skills either undertaken at the time of induction or as required. Health and safety training was also prioritized. Budget constraints and the lack of relevant training courses available have hindered enterprises from implementing comprehensive staff training.

Skills needs and gaps

- There was clear demand across all manufacturing subsectors for technicians in machinery maintenance, including electrical and mechanical technicians across all manufacturing subsectors. There was also high demand for CNC operators, HVAC technicians, lathe technicians and welders. Some 75 per cent of respondents expressed a need for technicians, and 40 per cent expressed the need for low-skilled labour. Demand for other occupations was significantly lower. It appears that skills gaps in the labour market are leading to labour shortages at enterprise level. Half of the surveyed enterprises reported labour shortages, and 62 per cent of surveyed enterprises had at least one job vacancy open. There was a high demand for salespeople and sales account managers, across all

subsectors.

- In terms of skills demanded, in addition to job-specific technical skills, respondents highlighted:
 - the importance of soft skills for both managers and administrative workers (cited by 63 per cent and 35 per cent of respondents, respectively), although these types of skills were not mentioned among the top skills needed for technicians and low-skilled workers (cited only by 22 per cent of respondents for both occupational groups);
 - the importance of IT skills for all occupations;
 - the need for foreign language skills for all occupations except low-skilled workers;
 - the increasing importance of marketing and e-commerce skills for administrative occupations;
 - the capacity to operate machinery, together with basic literacy and numeracy, are the only skills in high demand for low-skilled workers.
- Industrialists still use a mix of traditional and new methods to recruit employees. Most common was word-of-mouth, followed by social media. Conventional methods of recruitment were limited. Enterprises often face significant challenges in recruiting technicians, but this was mitigated by reallocating work and paying higher wages for staff with the requisite skills. Paying higher wages was the most common strategy by enterprises to deal with skill shortages and retain skilled labour.

Anticipated skills demand

- Expectations regarding future demand for occupations did not differ significantly from current trends, with technicians anticipated to be in highest demand. Respondents also expected a significant increase in IT and AI skills, particularly in the management and programming of automated systems. There is a high expected future need for PLC HMI and CNC technicians and associated professionals.
- Overall, Lebanese industrialists' expectations about the future appear mixed, with only half of them having a positive growth outlook. However, the majority believe that export-oriented growth and innovation would allow them to sustain and expand activities.

Recommendations

1. Promote women's enrolment in TVET:

- (a) Collaborate with TVET institutions to develop outreach programmes targeting young women, and highlight the opportunities available in technical occupations within the manufacturing sector.
- (b) Offer scholarships or financial incentives to encourage women to pursue technical education.
- (c) Implement mentorship programmes, pairing female employees with aspiring young women interested in technical careers to provide guidance and support.

2. Address youth unemployment:

- (a) Enhance vocational training curricula to align with the evolving needs of the manufacturing industry, focusing on providing practical experience in areas such as machinery operation, maintenance and automation.
- (b) Establish apprenticeship programmes that offer on-the-job training opportunities for young people, addressing the skills gap in the manufacturing sector.
- (c) Promote a quality TVET system capable of attracting young men and women to technical fields and strengthen career guidance services. This might help tackle youth unemployment.

3. Establish a TVET centre of excellence:

- (a) Leverage the strengths of both the public and private sectors to improve the quality, relevance and reach of TVET programmes.
- (b) Create a collaborative governance structure that involves key stakeholders from the government, private sector, educational institutions and industry associations. This committee should oversee the strategic direction, policy development and operational management of the centre of excellence.
- (c) Engage industry experts from the private sector to co-develop and continually update the curriculum, ensuring it aligns with current and emerging market needs.
Invest in infrastructure and resources by pooling resources to develop state-of-the-art
- (d) training facilities and establish a model of sustainable funding.
Establish research and innovation hubs within the centre of excellence to address
- (e) specific industry challenges and promote the development of new technologies, processes and solutions.
Implement a robust monitoring and evaluation framework to assess the impact of the
- (f) centre of excellence on skill development, employment rates and industry satisfaction.

4. Improve recruitment practices:

- (a) Enhance employer branding efforts to promote the manufacturing sector as an attractive career destination, highlighting opportunities for skill development and advancement.
- (b) Improve skills and knowledge of current HR employees, provide them with the necessary skills and tools to ensure improved coordination with technical institutes and career guidance centres.
- (c) Encourage manufacturing enterprises to improve working conditions and offer attractive employment packages.

5. Invest in training and skills development for the current workforce:

- (a) Mainstream the development of comprehensive training programmes tailored to the specific needs of different occupations. Ensure the implementation of relevant and specific training that targets women and youth.
- (b) Address budget constraints by seeking external funding or partnerships between

several enterprises to levy funds for workforce training development and implementation.

6. Anticipate future skill needs:

- (a) Invest in and modernize the TVET system to align with the private sector's needs through modular systems incorporating work-based learning and apprenticeship programmes as part of the official TVET curriculum.
- (b) Foster partnerships with technology providers, research institutions and TVET institutions to incorporate new technologies into education programmes.
- (c) Capitalize on existing local school advisory boards and support the development of new ones (i.e. local initiatives in which industrialists support local TVET schools in curriculum development, education and training).
- (d) Encourage ongoing professional development among employees, providing opportunities for workshops and certification programmes in emerging technologies. Conduct regular skills gap assessments to identify emerging skill requirements and
- (e) trends in the manufacturing sector.

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Annex

Table 12. Distribution of women, youth and foreigners by occupational group, subsector and enterprise size (%)

Subsector and size	Managers					Technicians					Administrative workers					Low-skilled workers				
	None	Up to 25%	26%-50%	51%-75%	Above 75%	None	Up to 25%	26%-50%	51%-75%	Above 75%	None	Up to 25%	26%-50%	51%-75%	Above 75%	None	Up to 25%	26%-50%	51%-75%	Above 75%
Women																				
Chemicals	20	33	7	33	7	40	40	13	7	-	7	33	20	40	-	40	33	20	7	-
Food and beverages	10	52	14	10	14	14	55	17	7	7	3	48	21	14	14	28	34	24	10	3
Furniture	13	88	-	-	-	88	13	-	-	-	-	63	13	25	-	88	13	-	-	-
Metals, machinery,	18	65	10	8	-	58	33	5	3	3	10	53	18	13	8	63	30	5	-	3
Paper, printing	14	64	7	7	7	79	14	7	-	-	14	50	7	21	7	43	50	-	-	7
Plastics	44	44	6	6	-	61	33	6	-	-	22	56	6	11	6	50	33	11	-	6
Textiles	11	44	22	22	-	-	44	56	-	-	11	44	22	22	-	11	-	33	44	11
Small enterprises	34	38	14	8	6	58	26	10	6	-	17	50	13	11	8	61	17	5	13	5
Medium enterprises	4	69	6	18	3	34	20	16	2	-	1	50	19	22	8	30	47	7	12	4
Total	19	56	9	12	4	46	36	12	4	-	9	49	16	17	8	45	32	13	6	4

Subsector and size	Managers					Technicians					Administrative workers					Low-skilled workers				
	None	Up to 25%	26%-50%	51%-75%		None	Up to 25%	26%-50%	51%-75%		None	Up to 25%	26%-50%	51%-75%		None	Up to 25%	26%-50%	51%-75%	Above 75%
Youth																				
Chemicals	33	33	27	7	-	33	47	20	-	-	40	27	33	-	-	13	33	13	33	7
Food and beverages	52	24	10	10	3	28	38	24	7	3	28	41	17	-	14	28	38	7	21	7
Furniture	38	13	38	13	-	38	38	13	13	-	25	50	13	13	-	13	50	25	-	13
Metals, machinery,	45	28	15	5	8	28	40	15	8	10	35	43	13	8	3	38	28	20	5	10
Paper, printing	71	14	14	-	-	50	43	7	-	-	57	43	0	-	-	21	57	-	7	14
Plastics	56	28	6	6	6	44	33	17	-	6	56	39	0	-	6	39	39	-	-	22
Textiles	56	11	33	-	-	44	11	44	-	-	44	11	44	-	-	33	11	22	33	-
Small enterprises	48	25	20	5	0	42	30	22	3	2	52	28	16	2	3	45	27	8	11	9
Medium enterprises	53	25	13	5	3	27	46	16	7	3	24	50	16	4	6	15	49	13	13	10
Total	51	24	16	6	3	34	39	19	5	4	39	39	15	3	4	28	37	11	12	11

Subsector and size	Managers					Technicians					Administrative workers					Low-skilled workers				
	None	Up to 25%	26%-50%	51%-75%	None	Up to 25%	26%-50%	51%-75%	None	Up to 25%	26%-50%	51%-75%	None	Up to 25%	26%-50%	51%-75%	None	Up to 25%	26%-50%	51%-75%
Foreigners																				
Chemicals	80	13	-	-	7	73	20	-	-	7	93	-	-	7	-	73	7	7	-	7
Food and Beverages	83	17	-	-	-	79	17	-	3	-	93	7	-	-	-	41	45	3	3	3
Furniture	75	25	-	-	-	50	38	-	-	13	100	-	-	-	-	63	25	-	-	-
Metals, machinery,	83	10	5	3	-	65	30	5	-	-	88	8	5	-	-	45	38	13	-	5
Paper, printing	79	14	7	-	-	93	7	-	-	-	100	-	-	-	-	36	50	-	-	7
Plastics	89	-	11	-	-	67	22	-	-	11	89	11	-	-	-	28	50	6	-	17
Textiles	44	44	-	-	-	56	33	-	-	11	78	11	-	-	11	22	22	22	22	11
Small enterprises	74	16	8	-	1	72	19	3	-	6	89	6	3	2	-	45	36	3	3	6
Medium enterprises	84	15	-	1	1	65	32	-	1	1	90	9	-	2	-	44	38	10	1	6
Total	79	15	4	1	1	70	24	1	-	4	90	7	1	1	1	43	38	7	2	7

Note on how to read the table: The percentages for subsectors represent the percentage of surveyed enterprises that employ a certain share of other women, youth or foreign labour per occupation group. For example, 33 per cent of surveyed enterprises in the chemicals subsector employ up to 25 per cent women in their managers and high-level professionals working force.



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