

Penang Talent Prospects Survey 2023

In collaboration with





Surging Demand for Engineering and IT Talent

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Objective, data and methodology

The Penang Talent Prospects 2023 survey, designed by Penang Institute in collaboration with Penang Skills Development Centre (PSDC) and PenangSTEM, was carried out in March/April 2023. It assesses directly the skills and manpower shortage experienced in the manufacturing industries in the state.

A targeted questionnaire with queries on (1) current workforce demand and the expected demand in the next three years, (2) the most critically-needed talents, and (3) the positions suffering the lowest retention rate, was disseminated to over 1,000 industry members of PSDC, FREPENCA, FMM, SAMENTA, Penang Foundry & Engineering Industries Association and SME Association of Malaysia from 16-27 March 2023. Of the 73 companies who responded to the survey, 62 responses were found to be complete and valid. A majority of these responses are from the Electronics & Electrical (E&E) industry (39%), followed by Machinery Equipment (29%) and Semiconductors (11%). It is encouraging to see SMEs representing 75% of the sample, however more participation from large firms in future exercises would provide a more complete picture of skill requirements.

Key Findings

1

Industry players expect demand for engineering and IT talent in manufacturing and adjacent sectors in Penang to grow at an annual rate of 30% from 2023-2026.

2

Technicians are as critically needed as talented technologists across the manufacturing sector.

3

The importance of IT/Software professionals is growing, particularly in the semiconductor industry.

Key Finding

1

Industry players expect demand for engineering and IT talent in manufacturing and adjacent sectors in Penang to grow at an annual rate of 30% from 2023 to 2026.

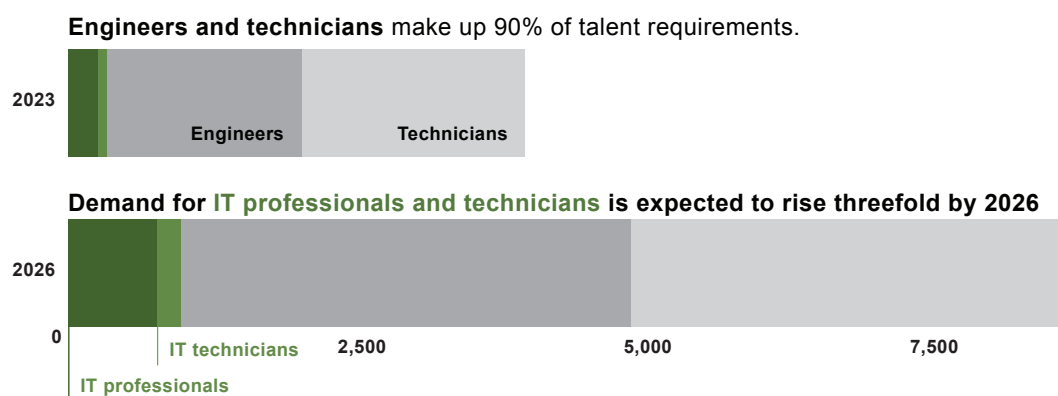
Across 62 respondents in manufacturing and related industries, the total current demand for talent that was reported is 3,970 persons (average 64 per firm), and this is projected to more than double by 2026 to 8,652 (average 140 per firm).

Table 1: Total current and projected demand for talent

	2023	2026	CAGR ¹
Engineers	1,698	3,933	32.3%
Technicians/Machinists	1,935	3,737	24.5%
IT/software professionals	251	765	45.0%
IT technicians	86	217	36.1%
Total	3,970	8,652	29.7%

¹ Compounded annual growth rate

Diagram 1: Total current and projected demand for talent, 2023 and 2026



Collectively, the demand for engineers and technicians dominated, with each firm hiring on average 28.8 and 33.4 engineers and technicians respectively (Table 2), making up 90% of reported talent requirements (Diagram 1).

Firms, especially larger ones, are expected to double their demand for engineering-related talent over the next three years. For the state as a whole, therefore, reinforcing the talent pool of engineers is crucial in meeting the talent needs of the manufacturing sector.

Table 2: Average number of current and projected demand for talent by firm size

Size	Engineers		Technicians/ machinists		IT and software professionals		IT technicians	
	2023	2026	2023	2026	2023	2026	2023	2026
Small	5.4	12.2	5.0	6.6	0.5	1.0	0.4	0.6
Medium	31.0	76.2	21.9	51.1	5.1	17.0	1.7	4.2
Large	61.5	171.5	92.2	206.0	10.2	31.2	3.8	10.5
Average demand per firm	28.8	74.2	33.4	72.0	4.6	14.7	1.7	4.4

Key Finding

2

Technicians are as critically needed as talented technologists are across the manufacturing sector.

Technologists play a critical role in the manufacturing sector. Irrespective of firm size, respondents consistently highlight engineering positions as being critically needed, followed by technicians (Table 3). Respondents from the Semiconductors and Electrical and Electronic (E&E) sectors generally find engineers to be most critical, whereas in the machinery equipment (ME) and medical devices sectors, technicians are considered most critical (Table 4).

There are differences in requirements across firm sizes. Smaller firms have more critical roles available in non-engineering functions such as procurement, sales and finance, while there are more critical roles for IT and software professionals in larger companies.

Table 3: Top critically-needed talent by firm size, ranked by number of critical roles

Rank	Small	Medium	Large
1	Engineers		
2	Technicians/machinists		
3	Others	Others	IT and software professionals
4	IT and software professionals	IT and software professionals	Others
5	IT Technicians		

**Table 4: Top critically-needed talent by industry type,
ranked by number of critical roles**

Rank	E&E	E&E/ME	Machinery equipment	Medical devices	Process engineering	Semi-conductors	Other industries ¹
1	Engineers		Technicians/machinists			Engineers	Engineers
2	Technicians/machinists	IT technicians	Engineers		Others ²	Technicians/machinists	IT and software professionals
3	Others	Technicians/machinists	Others	IT and software professionals	Engineers	Others	Technicians/machinists
4	IT and software professionals			IT technicians	IT and software professionals		Others
5	IT technicians	Others	IT technicians	Others	IT technicians		

Note:

1 Other industries are trading, chemical and logistics.

2 Others include procurement & supply chain, sales & marketing and accounts & finance positions.

Key Finding

3

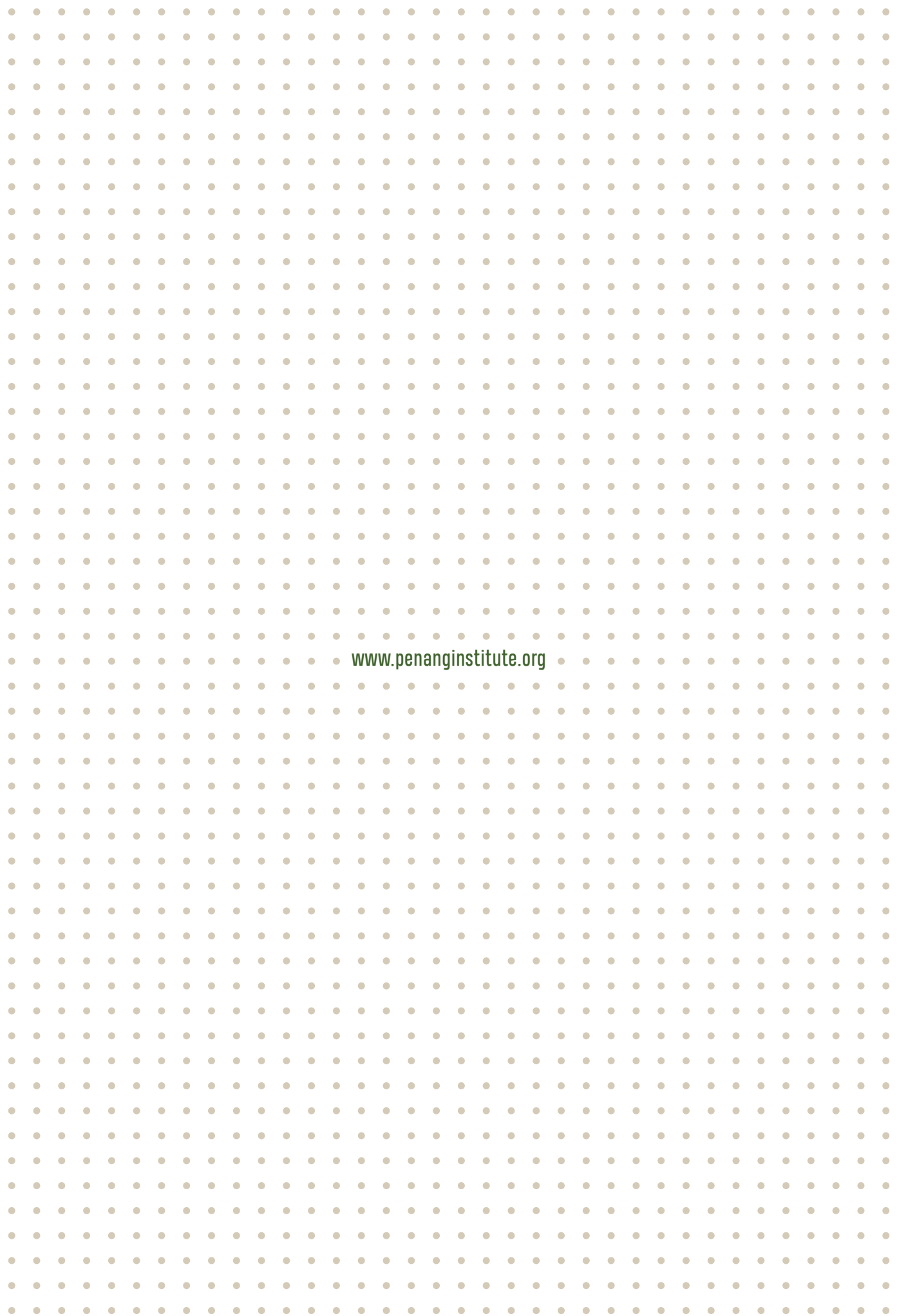
The importance of IT/Software professionals is growing, particularly in the semiconductor industry.

Although the current demand for IT professionals is relatively low, this is expected to triple by 2026, from 4.6 to 14.7 IT professionals per firm on average, while the need for IT technicians is projected to increase 2.5 times.

The demand for higher-qualified talent is expected to grow at a higher rate than in the case of lower-qualified talent. This is consistent with the increasing importance of Industry 4.0 technologies such as IoT and machine learning in the manufacturing sector. Semiconductor (and E&E) firms in particular face great need to hire IT/Software professionals (Table 5).

Table 5: Average number of current and projected demand for talent, by job roles and industry type

Type	Engineers		Technicians/ machinists		IT and software professionals		IT technicians	
	2023	2026	2023	2026	2023	2026	2023	2026
E&E/ME	12.0	31.8	7.5	29.8	1.7	2.7	1.7	2.7
Electronics and electrical	29.2	97.0	20.5	62.2	6.3	22.0	2.1	6.2
Machinery equipment	6.8	15.3	12.8	22.3	1.1	1.5	0.9	1.2
Medical devices	39.3	54.7	77.3	104.7	10.7	12.3	0.0	0.5
Process engineering	6.7	3.7	11.3	4.7	0.7	1.0	1.0	0.0
Semiconductors	102.7	185.4	136.6	241.7	8.7	29.3	2.0	4.7
Others	2.5	0.0	8.0	1.0	5.0	15.0	5.0	15.0
Average demand per firm	28.8	74.2	33.4	72.0	4.6	14.7	1.7	4.4



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