

Electronics and Telecommunications Training Board
電子及電訊業訓練委員會



Electronics and Telecommunications Industries
Manpower Survey Report
電子及電訊業 • 人力調查報告書

2024



2024 Manpower Survey Report

Electronics and Telecommunications Industries

Electronics and Telecommunications Training Board

Vocational Training Council

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Acknowledgement

The Electronics and Telecommunications Training Board would like to express its gratitude to all respondents of the sampled companies for providing the information required by the survey.

1 Executive Summary

Background

1.1 The Electronics and Telecommunications Training Board (Training Board) of the Vocational Training Council (VTC) conducted a manpower survey for the electronics and telecommunications industries from June to September 2024, with the data reference date on 1 June 2024. This report presents the survey findings of the latest manpower situation of the industries and proposes recommendations on the manpower demand and training needs to different stakeholders of the industries, including employers, employees and training providers by making reference to the business outlook.

Survey Coverage and Methodology

1.2 The survey covered around 7 289 companies in different sectors of the industries. By adopting the stratified random sampling method for selecting companies from the Central register of Establishments of the Census and Statistics Department, and the inclusion of supplementary samples recommended by the Training Board, a total of 769 companies were selected for the survey.

1.3 A pack of survey documents was given to each sampled company. The selected companies were asked to complete a questionnaire, which comprised two parts. Part I collected quantitative manpower information by job levels and by principal jobs, and Part II collected supplementary information related to the industries' manpower situation. The respondents were asked to provide manpower information of their companies based on a list of principal jobs, which were defined by the Training Board with detailed job descriptions given for each job.

1.4 During the fieldwork period between June and September 2024, enumerators assisted the respondents to complete the questionnaire through phone calls or on-site visits. The data collection and enumeration processes were closely monitored and data was verified to ensure quality and accuracy. Among the 480 valid sampled companies, 450 were successfully enumerated which contributed to an effective response rate of 93.8%¹.

¹ Sampled companies which had ceased operation, not employed any relevant technical staff, nil reply to the survey, etc. were classified as invalid samples.

Manpower Projection Methodology

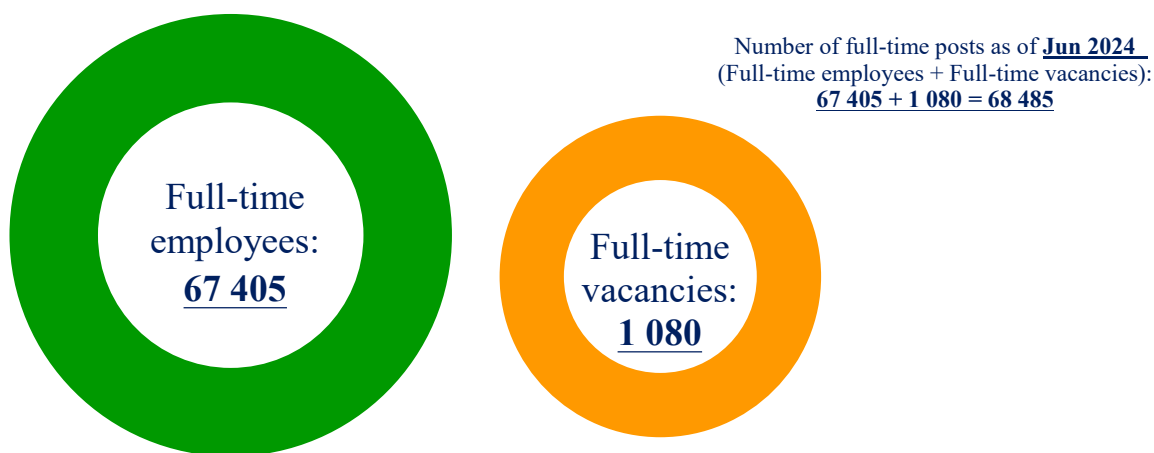
1.5 The Training Board adopts the approach of Adaptive Filtering Method (AFM) for projecting the manpower trend of the electronics and telecommunications industries for the period from 2025 to 2028. The method is compiled by taking into account the historical survey data. The details of methodology are shown in *Appendix 8*.

Findings

Number of Full-time Employees and Full-time Vacancies

1.6 As at 1 June 2024 (i.e. the reference date of the survey), there were 67 405 full-time employees and 1 080 full-time vacancies in the electronics and telecommunications industries. Aggregating the number of full-time employees and full-time vacancies, it was estimated that there was a total of 68 485 full-time posts. (*Chart 1.1*)

Chart 1.1 Overview of manpower situation



Note: "Full-time vacancies" refer to those unfilled, immediately available job openings for which the establishment is actively trying to recruit personnel as at survey reference date.

1.7 Among the 67 405 full-time employees in the electronics and telecommunications industries, 22.4% were engaged in “information technology services”, 19.5% in “telecommunications” and 19.5% in “import and export trading” and 18.2% in “design houses, R&D/educational institutes and public bodies”. Analysed by job level, 57.9% were employed at the technician level, 27.7% at the professional/technologist level and 12.9% at the craftsman level. (Charts 1.2 - 1.3)

Chart 1.2 Full-time employees by sector

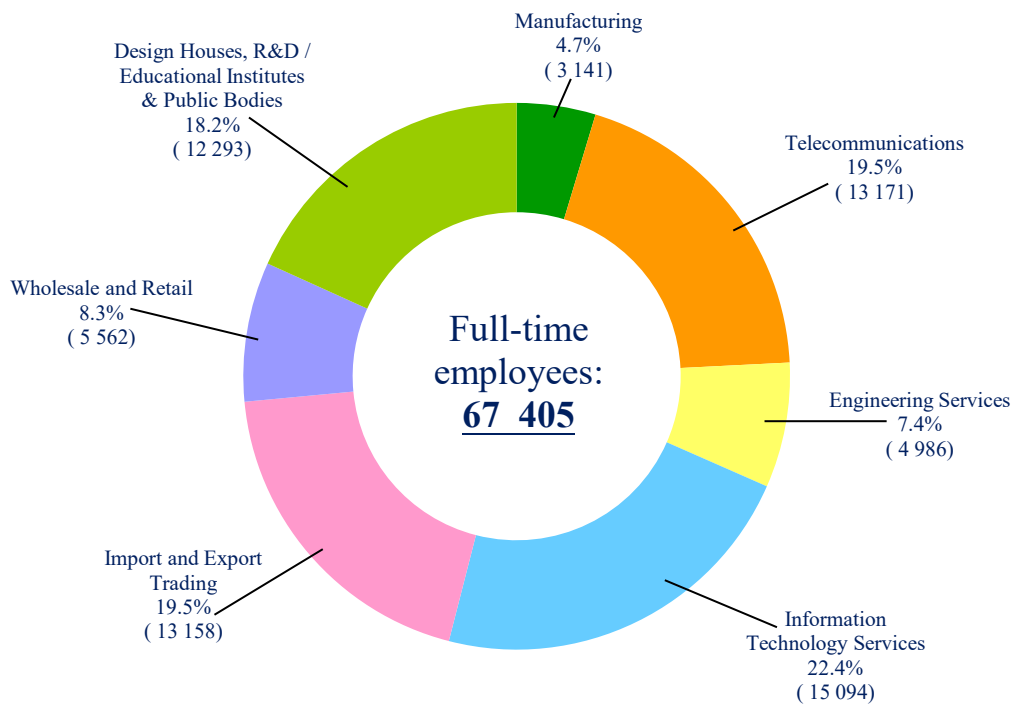
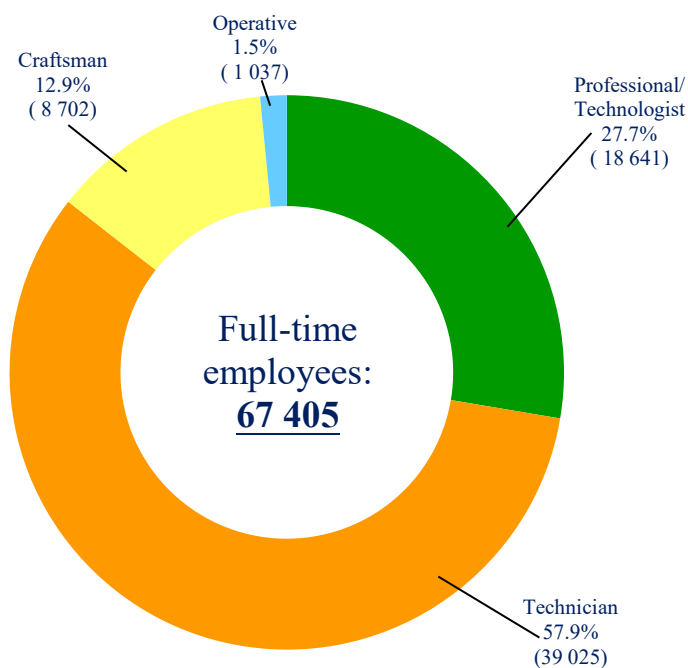
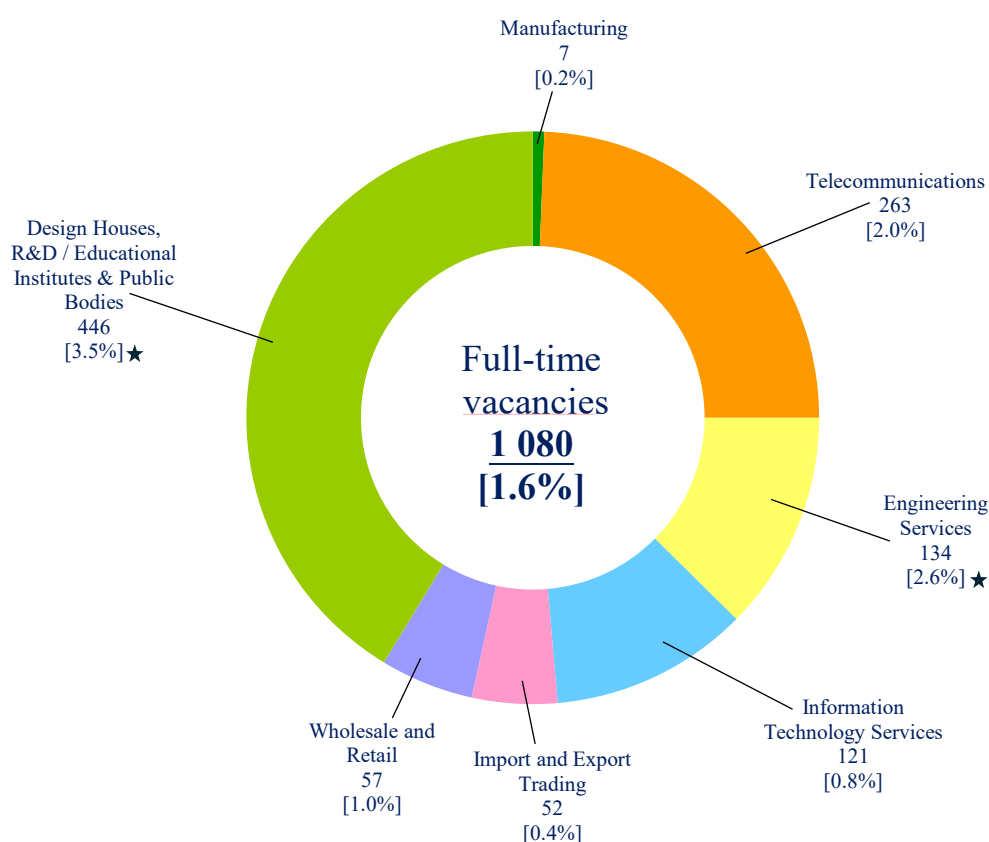


Chart 1.3 Full-time employees by job level



1.8 As at 1 June 2024, a total of 1 080 full-time vacancies were reported in the electronics and telecommunications industries, representing a vacancy rate of 1.6% (i.e., full-time vacancies as a percentage of the total number of full-time employees and full-time vacancies). Relatively more vacancies were found in “design houses, R&D/educational institutes and public bodies” (446 full-time vacancies), “telecommunications” (263 full-time vacancies), “engineering services” (134 full-time vacancies) and “information technology services” (121 full-time vacancies), while higher vacancy rates were registered in “design houses, R&D/educational institutes and public bodies” (3.5%) and “engineering services” (2.6%). (Chart 1.4)

Chart 1.4 Vacancies by sector



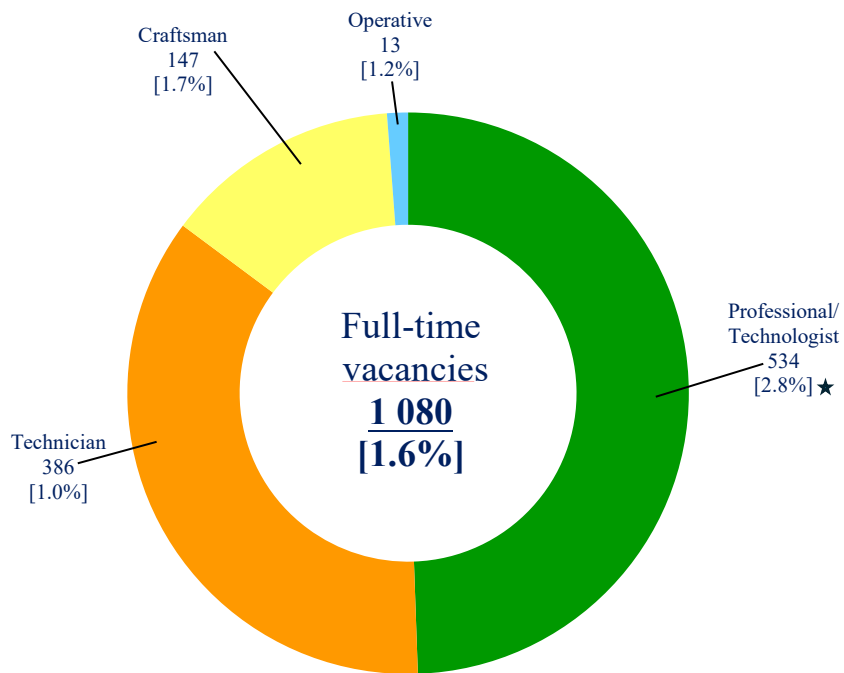
Notes:

(1) Figures in [] brackets indicate the **Vacancy rate** = $\frac{\text{No. of full-time vacancies}}{\text{No. of full-time employees} + \text{No. of full-time vacancies}}$

(2) Figures marked with the symbol “★” refer to relatively higher vacancy rates than the overall rate.

1.9 Analysed by job level, most of the full-time vacancies were at the professional/technologist level (534 full-time vacancies) and the technician level (386 full-time vacancies). A higher vacancy rate of 2.8% was recorded at the professional/technologist level. (Chart 1.5)

Chart 1.5 Vacancies by job level



Notes:

- (1) Figures in [] brackets indicate the **Vacancy rate** = $\frac{\text{No. of full-time vacancies}}{\text{No. of full-time employees} + \text{No. of full-time vacancies}}$
- (2) Figures marked with the symbol “★” refer to relatively higher vacancy rates than the overall rate.

Average Monthly Remuneration Package

1.10 The average monthly remuneration package for full-time employees at the professional/technologist level in the electronics and telecommunications industries is mainly in the range of \$30,001 - \$50,000 (60.6%), followed by \$20,001 - \$30,000 for the technician level (80.1%) and the craftsman level (71.1%), and \$15,001 - \$20,000 for the operative level (82.9%). (Table 1.1)

Table 1.1 Average monthly remuneration package by job level

Job level	Over \$50,000	\$30,001 - \$50,000	\$20,001 - \$30,000	\$15,001 - \$20,000	\$15,000 or below	No. of full-time employees
Professional/Technologist	17.8%	60.6%	21.6%	*	0.1%	18 641
Technician	0.3%	8.5%	80.1%	10.9%	0.3%	39 025
Craftsman	0.0%	0.0%	71.1%	27.6%	1.3%	8 702
Operative	0.0%	0.0%	3.3%	82.9%	13.9%	1 037

denotes prominent ranges of the monthly remuneration package in the respective job level.

Note: * Less than 0.05%

Preferred Level of Education

1.11 In the electronics and telecommunications industries, most of the full-time employees at the professional/technologist level were preferred to have a first degree or above qualification (90.8%). Among the full-time employees at the technician level, 49.0% were preferred to have a sub-degree qualification and 37.9% were preferred to have a diploma/certificate qualification. For the full-time employees at the craftsman level, 49.5% were preferred to have a diploma/certificate qualification and 46.9% were preferred to have a secondary 4 to 7 qualifications. Most of the full-time employees at the operative level were preferred to have a secondary 4 to 7 qualifications (66.2%). (Table 1.2)

Table 1.2 Preferred level of education by job level

Job level	First degree or above	Sub-degree	Diploma/certificate	Secondary 4 to 7	Secondary 3 or below	No. of full-time employees
Professional/ Technologist	90.8%	9.2%	0.0%	0.0%	0.0%	18 641
Technician	13.0%	49.0%	37.9%	*	0.0%	39 025
Craftsman	0.0%	1.3%	49.5%	46.9%	2.3%	8 702
Operative	0.0%	0.0%	0.4%	66.2%	33.4%	1 037

denotes prominent ranges of the preferred level of education in the respective job level.


Note: * Less than 0.05%

Preferred Years of Experience

1.12 Regarding the years of experience, 89.1% of the full-time employees at the professional/technologist level in the electronics and telecommunications industries were preferred to have 6 years to less than 10 years. 89.8% of the full-time employees at the technician level were preferred to have 3 years to less than 6 years of experience. Among the full-time employees at the craftsman level, 78.4% were preferred to have 1 year to less than 3 years of experience. For the full-time employees at the operative level, 99.6% were preferred to have less than 1 year of experience. (Table 1.3)

Table 1.3 Preferred years of experience by job level

Job level	More than 10 years	6 years to less than 10 years	3 years to less than 6 years	1 year to less than 3 years	Less than 1 year	No. of full-time employees
Professional/ Technologist	9.3%	89.1%	1.6%	0.0%	0.0%	18 641
Technician	0.4%	9.1%	89.8%	0.0%	0.7%	39 025
Craftsman	0.0%	0.0%	3.5%	78.4%	18.1%	8 702
Operative	0.0%	0.0%	0.0%	0.4%	99.6%	1 037

 denotes prominent ranges of the preferred years of experience in the respective job level.

Turnover

1.13 Employers reported that there were 4 009 full-time employees left their companies in the past 12 months. The turnover rate (i.e. the number of full-time employees left as a percentage of the total number of full-time posts) was 5.9%. Analysed by job level, the technician level registered the largest number of full-time employees left (2 179 full-time employees) whereas the turnover rate was the highest at the operative level (13.0%). (Table 1.4)

Table 1.4 Full-time employees left in the past 12 months and turnover rate by job level

Job level	Number of full-time employees left	Turnover rate*
Professional/Technologist	1 310	6.8%
Technician	2 179	5.5%
Craftsman	383	4.3%
Operative	137	13.0%
Overall	4 009	5.9%


* Turnover rate = $\frac{\text{No. of full-time employees left in past 12 months}}{\text{No. of full-time employees} + \text{No. of full-time vacancies}}$

Training Requirements


1.14 In the electronics and telecommunications industries, the training requirements for full-time employees at the professional/technologist level tended to focus on various strategic planning and management skills. While “problem-solving” is the common soft skill required for full-time employees at all job levels (in particular the technician, craftsman and operative levels), the training requirements for full-time employees at the technician, craftsman and operative levels tended to focus on various technical skills. (Table 1.5)

Table 1.5 Major training requirements

Rank	Professional/ Technologist	Technician	Craftsman	Operative
1	Project Management	Problem-solving		
2	Quality Management	Maintenance		Information Security
3	Risk Management	Manufacturing and Operations	Information Security	Maintenance
4	Business Continuity Management	Big Data Analytics	Product Development and Testing	Automation System
5	Problem-solving	Information Security	Manufacturing and Operations	Organisational Development

 *Strategic Planning and Management Skills*

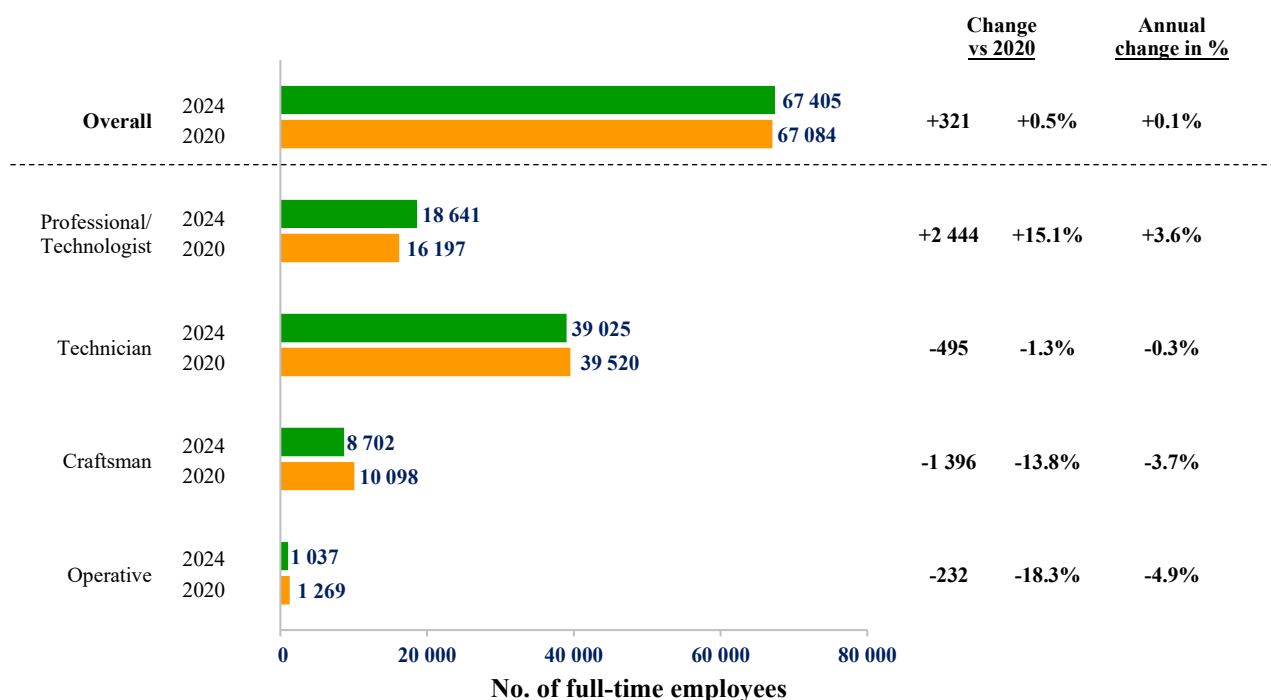
 *Technical Skills*

 *Soft Skills*

Manpower Changes between 2020 and 2024

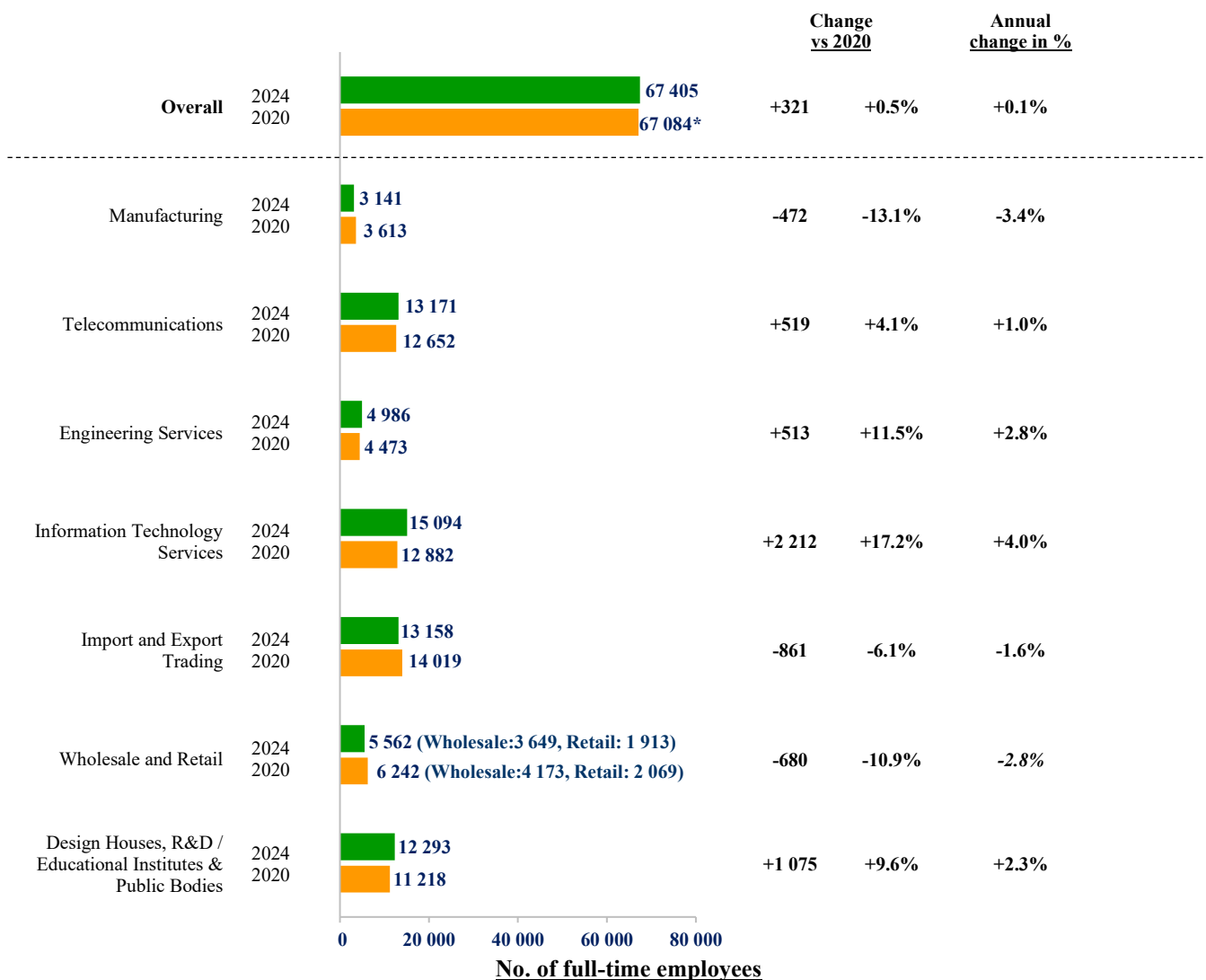
1.15 In the electronics and telecommunications industries, the total number of full-time employees increased from 67 084 in 2020 to 67 405 in 2024 (+321 full-time employees; +0.5%). Analysed by job level, an increase in manpower was registered at the professional/technologist level (+2 444 full-time employees; +15.1%) while decreases in manpower were recorded for the craftsman level (-1 396 full-time employees; -13.8%), the technician level (-495 full-time employees; -1.3%) and the operative level (-232 full-time employees; -18.3%). (Chart 1.6)

Chart 1.6 Change in full-time employees by job level



1.16 Analysed by sector, increases in manpower were mainly registered in the “information technology services” (+2 212 full-time employees; +17.2%) and “design houses, R&D/educational institutes and public bodies” (+1 075 full-time employees; +9.6%) sectors. On the other hand, decreases in manpower was recorded in the “import and export trading” (-861 full-time employees; -6.1%) and “wholesale and retail” (-680 full-time employees; -10.9%) sectors. (Chart 1.7)

Chart 1.7 Change in full-time employees by sector



Note: *Out of the 67 084 employees in 2020, there were 1 985 full-time employees working in some supplementary companies which have not been grouped under the sectors below.


Changes in Average Monthly Remuneration Package

1.17 Compared with the results of the 2020 survey, the changes in the average monthly remuneration package varied among different job levels. (Table 1.6)

- Professional/Technologist level: the majority remained in the range of \$30,001 - \$50,000 (57.5% in 2020 and 60.6% in 2024);
- Technician level: expanded in the range of \$20,001 - \$30,000 (from 67.7% in 2020 to 80.1% in 2024);
- Craftsman level: shifted upward from \$15,001 - \$20,000 (67.3% in 2020) to \$20,001 - \$30,000 (71.1% in 2024); and
- Operative level: shifted upward from \$15,000 or below (70.4% in 2020) to \$15,001 - \$20,000 (82.9% in 2024).

Table 1.6 Average monthly remuneration package

Job level	Year	\$50,001 or above	\$30,001 - \$50,000	\$20,001 - \$30,000	\$15,001 - \$20,000	\$15,000 or below
Professional/Technologist	2024	17.8%	60.6%	21.6%	*	0.1%
	2020	10.5%	57.5%	32.0%	0.0%	0.0%
Technician	2024	0.3%	8.5%	80.1%	10.9%	0.3%
	2020	3.6%	8.6%	67.7%	20.1%	0.0%
Craftsman	2024	0.0%	0.0%	71.1%	27.6%	1.3%
	2020	0.0%	0.0%	28.4%	67.3%	4.2%
Operative	2024	0.0%	0.0%	3.3%	82.9%	13.9%
	2020	0.0%	0.0%	0.5%	29.1%	70.4%

 denotes prominent ranges of the monthly remuneration package in the respective job level.

Note: * Less than 0.05%

Manpower Projection

1.18 The manpower information (i.e. employees and vacancies) collected for the current and past manpower surveys was used to project the manpower trend of the industries in the next four years. The respective manpower projections from 2025 to 2028 is shown as follows.

Table 1.7 Manpower Trend for 2025-2028

Year	Professional/Technologist	Technician	Craftsman
2024	19,169	37,795	8,560
2025	19,794 (3.3%)	37,871 (0.2%)	8,685 (1.5%)
2026	20,382 (3.0%)	37,868 (0.0%)	8,641 (-0.5%)
2027	20,933 (2.7%)	37,866 (0.0%)	8,607 (-0.4%)
2028	21,448 (2.5%)	37,864 (0.0%)	8,582 (-0.3%)

Notes: (1) Percentage in the bracket refer to the percentage of annual change of manpower over the preceding year.

(2) Retail sector was excluded in the figures.

Annual Additional Manpower Requirement

1.19 The Annual Additional Manpower Requirement has taken into account the (i) projected manpower trend and (ii) wastage rate (i.e. percentage of employees leaving the industries permanently on annual basis). The Training Board agreed on the wastage rate of 2.0%, 2.5% and 3.0% for the job levels of Professional/Technologist, Technician, and Craftsman respectively. The estimated annual additional manpower requirement from 2025 to 2028 is shown as follows.

Table 1.8 Estimated Annual Additional Manpower Requirement from 2025 to 2028

Job Level	Wastage rate	Additional Annual Manpower Requirement		
		Manpower trend (a)	Industry leavers (b)	Total (a) + (b)
Professional/ Technologist	2.0%	570	406	976
Technician	2.5%	17	946	963
Craftsman	3.0%	6	257	263

Note: Retail sector was excluded in the figures

Business Outlook

The electronics and telecommunication industries in Hong Kong are poised for significant growth, driven by several key factors that contribute to a positive outlook for the industries.

1.20 The rollout of 5G services is revolutionising connectivity. This advanced mobile communication technology not only enhances communication but also enables the development of innovative applications across various sectors, including healthcare, transportation, and smart cities. As Hong Kong positions itself as a leader in smart city development, there are ample opportunities for companies to create and implement cutting-edge technologies that improve urban living.

1.21 Moreover, the aging population presents a unique challenge and opportunity for the industries. There is a growing demand for smart health solutions and assistive technologies tailored to meet the needs of older adults. This demographic shift is driving investment in life and health technologies, further stimulating the growth of the industries.

1.22 The rapid expansion of e-commerce is another critical factor contributing to the positive outlook of the electronics and telecommunications industries. As online shopping continues to gain momentum, there is an increasing need for advanced electronic solutions, efficient logistics technologies, and secure digital payment systems. This demand propels innovation and investment in the industries.

1.23 Strategic government policies outlined in the 2024 policy address further bolster this optimistic outlook. Hong Kong is striving to become an International I&T Center. Initiatives such as the Third InnoHK Research Cluster and increased funding for research and development are pivotal in fostering innovation. The establishment of the AI Supercomputing Centre and the Hong Kong Microelectronics Research and Development Institute enhances research capabilities, facilitating collaboration between academia and industries to advance semiconductor and AI technologies. Furthermore, Shenzhen Park of Hetao serves as a catalyst for growth in the electronics and telecommunication industries by fostering an environment conducive to innovation, collaboration, and investment. Its strategic initiatives align with the goals of enhancing Hong Kong's position as a leading technology hub in the region.

1.24 Additionally, the government's commitment to funding life and health technology research exemplifies its dedication to innovation, empowering companies to develop solutions that align with evolving market demands. The New Industrialisation Acceleration Scheme also provides substantial financial support, encouraging enterprises to adopt innovative solutions that enhance efficiency and competitiveness.

1.25 Furthermore, the development of a low altitude economy is opening new avenues for drone technology and logistics, integrating advanced technologies into everyday business operations. This evolution presents fresh opportunities for growth and innovation within the industries.

1.26 Enhancements to the talent admission schemes aim to attract skilled professionals globally, including the Top Talent Pass Scheme and the Technology Talent Admission Scheme. Furthermore, starting June 30, 2025, new pathways under the General Employment Policy and the Admission Scheme for Mainland Talents and Professionals will address manpower shortages in eight skilled trades. The "Technical Professional List" covers eight specified skilled trades including smart manufacturing, robotics engineering, mechanical engineering, mechatronics engineering, and microelectronics engineering. Additionally, the Immigration Arrangements for Non-local Graduates aims to retain university graduates, while the Vocational Professionals Admission Scheme aims to attract vocational talents to the local workforce.

Product Trends

1.27 AI Deployment

AI-driven enterprise productivity solutions that enhance automation and decision-making in customer service, innovative consumer electronics featuring advanced camera processing and health diagnostics, and the establishment of robust infrastructure through high-performance and edge computing to support AI advancements.

1.28 Beyond 5G

The low altitude economy leveraging drones for logistics and precision agriculture, which requires ultra-reliable communication; non-terrestrial networks that integrate satellite and terrestrial systems for universal coverage; and the advancement of network slicing and edge computing to create dedicated networks for specific industrial and IoT applications.

1.29 Smart Site Safety (4S)

Proactive hazard detection using IoT sensors and AI for real-time monitoring in construction and manufacturing, predictive maintenance powered by AI to foresee machinery failures and reduce downtime, and real-time location systems that improve safety through precise tracking of personnel and equipment.

1.30 Smart and Preventive Healthcare

AI-driven health analysis that integrates wearables, genomics, electronic health records, and environmental data for holistic health insights; advanced remote patient monitoring that evolves telehealth into continuous home care systems; and innovative diagnostics utilising AI to analyse medical imaging, pathology slides, and genetic data for quicker and more accurate diagnoses.

1.31 Cybersecurity

Enhanced data protection solutions to safeguard sensitive information against rising threats from AI and digital transactions; the use of AI in cybersecurity to counter sophisticated attacks; and the strengthening of supply chain security measures to address vulnerabilities in supply chain processes.

Recommendations

Government

Elevated Global Branding Initiative

1.32 The government is recommended to launch a global branding campaign to showcase Hong Kong's strengths in high-growth sectors like Artificial Intelligence and Smart City technologies. Targeted outreach to international markets and strategic investors, including high-level roadshows led by officials and industry leaders, can effectively present investment opportunities and facilitate networking.

Strategic Talent Development Fund

1.33 Establishing a strategic talent development fund is essential to align with the the future needs of the electronics and telecommunications industries. This fund should address skills gaps in areas like AI, quantum computing, and cybersecurity, while also creating job placements and mentorship programmes. Emphasising upskilling and attracting new talent will prepare the workforce for future demands.

Agile Regulatory Sandbox

1.34 To foster innovation, the government is recommended to create an agile regulatory sandbox. This controlled environment would allow companies to test emerging technologies like AI and IoT without existing regulatory constraints. It would help refine innovative solutions while enabling regulators to understand potential benefits and risks, positioning Hong Kong as a hub for technological advancement.

Educational Institutions

Curriculum Modernisation

1.35 Educational institutions should update their curriculum to integrate emerging technologies such as 5G, IoT, cybersecurity, and sustainable technologies across core courses. Strengthening STEM education with hands-on learning, problem-solving, and critical thinking is essential. Interdisciplinary programmes that combine technology with business and law will better prepare graduates for the complexities in the market. Additionally, incorporating entrepreneurship courses will foster innovation and support the growth of technology-based startups.

Fostering Innovation and Research

1.36 Educational Institutions should proactively cultivate innovation and research by seeking government funding for key technology advancements and establish technology incubators to support student and faculty startups. Collaborating with industries through joint projects and internships will keep academic research relevant and provide practical experience for students.

Industry Collaboration and Partnerships

1.37 Educational institutions should strengthen industry partnerships to ensure relevant education and better prepare students for the workforce. Proactively exploring more internship programs is essential. To continuously upskill professionals in the electronics and telecommunications industries, institutions should offer diverse learning opportunities that support individual needs and foster business growth.

Employers

Strategic Talent Development

1.38 To maintain a competitive edge in Hong Kong's technology landscape, employers are encouraged to prioritise specialised training for employees in areas like semiconductor design, 5G, IoT, and cybersecurity. Investing in these skills equips the workforce to drive innovation and adapt to the changes. Fostering a culture of continuous learning will empower employees and enhance operational efficiencies, competitiveness, and global market positioning.

Attracting and Retaining Specialised Expertise

1.39 Attracting top talent requires a strategic recruitment approach. Companies should proactively seek professionals with specialised expertise in electronics and telecommunications, offering competitive compensation and career development opportunities. Building partnerships with universities can access to emerging talent, while exposure to global projects enhances the appeal of the organisation, fostering an innovative and collaborative environment that retains skilled individuals.

Enhancing Career Pathways Through Attachments and Partnerships

1.40 Industrial attachment opportunities enable students to experience the challenges of the real workplace. Employers should leverage these attachments to identify candidates with the right skills for future full-time jobs, seasonal and part-time roles. Additionally, employers are encouraged to promote the industries to secondary school students through the Business-School Partnership Programme (BSPP). The BSPP is administered by the Education Bureau. Through the activities offered by the business sector such as workplace visits, workplace experience, and career talks, help students understand key roles in the electronics and telecommunication industries, employer requirements, and the development of soft skills, right work attitude and values.

Employees

Proactive Skill Development

1.41 Employees should prioritise continuous learning and professional development by actively seeking upskilling opportunities in emerging technologies like AI, 5G, IoT, and cybersecurity. Engaging in company-sponsored programs, obtaining relevant certifications, and pursuing self-directed study are essential for growth. A proactive approach to skill acquisition enables professionals to adapt to changing market conditions and technological advancements.

Embrace Innovation and Collaboration

1.42 Employees are encouraged to actively foster a culture of innovation within their organisations by participating in brainstorming sessions, proposing creative ideas, and collaborating across departments. Sharing knowledge, mentoring junior team members, and cultivating an environment of creativity and collaboration enhance professional development and contribute to the organisation's growth and agility.

Building a Personnel Brand

1.43 Employees should cultivate a personal brand that emphasise their skills and values in the electronics and telecommunications industries. This involves establishing a professional online presence on LinkedIn to showcase achievements, share content, and engage in discussions. Contributing through writing articles, participating in webinars, and speaking at events further enhances their expertise. Actively promoting their contributions increases visibility and positions employees as thought leaders.

2 Introduction

Background

2.1 The Electronics and Telecommunications Training Board (Training Board) of the Vocational Training Council (VTC) is appointed by the Government of the Hong Kong Special Administrative Region (HKSAR) to analyse the manpower situation and training needs of the electronics and telecommunications industries. The Training Board comprises members nominated by major trade associations, trade union, professional bodies, educational and training institutions and Government departments. The Working Party of the Manpower Survey is formed by selected members of the Training Board. The membership and terms of reference of the Training Board, as well as the members in the Working Party are listed in *Appendices 1, 2 and 3*.

2.2 The manpower survey of the electronics and telecommunications industries is conducted every four years, followed by two periodic manpower updates supplemented with information collected from focus groups and desk research to better reflect the changing trends of the manpower situation. This manpower survey mainly focuses on the analysis of technical manpower, which refers to the personnel who are expected to apply the industrial knowledge and technical skills required to complete the work assigned.

2.3 Manpower data with respect to the survey reference date on 1 June 2024 was collected from June to September 2024. This report presents the survey findings and analysis of the latest manpower situation in the electronics and telecommunications industries and proposes recommendations on manpower development to different stakeholders of the industries, including employers, employees, and training providers by referring to the business outlook.

Objectives

2.4 The objectives of this manpower survey are:

- (a) To collect up-to-date manpower information by industry sectors, job levels and principal jobs in the industries;
- (b) To assess the technical manpower structure;
- (c) To forecast the training requirements in the near future; and
- (d) To recommend to the VTC and relevant stakeholders the talent development strategies to meet the manpower needs.

Survey Coverage

2.5 The survey covered the following sectors in the electronics and telecommunications industries:

Sector 1: Manufacturing

Sector 2: Telecommunications

Sector 3: Engineering Services

Sector 4: Information Technology Services

Sector 5: Import and Export Trading

Sector 6: Wholesale and Retail

Sector 7: Design Houses, R&D / Educational Institutes and Public Bodies

3 Methodology

Sample Design

3.1 Based on the Hong Kong Standard Industrial Classification list from the Census and Statistics Department (C&SD) of the HKSAR Government, the survey covered around 7 289 companies in different sectors of the industries. By adopting the stratified random sampling method for selecting companies from the Central Register of Establishments of the C&SD, and the inclusion of supplementary samples recommended by the Training Board, a total of 769 companies were selected for the survey.

Questionnaire Design

3.2 The questionnaire designed for the survey comprised two parts. Part I collected quantitative manpower information by job levels and by principal jobs, and Part II collected supplementary information related to the industries' manpower situation. The list of principal jobs was defined by the Training Board with detailed job descriptions given for each job, and was classified into different job levels as follows:

- (a) Professional/Technologist
- (b) Technician
- (c) Craftsman
- (d) Operative

3.3 While job titles adopted in the companies might vary with the descriptions of the principal jobs, respondents were asked to provide manpower information corresponding to the job descriptions and the skill levels of the principal jobs. The definition of terms and the survey documents, including a sample questionnaire, explanatory notes and job descriptions for the principal jobs are given in *Appendices 4 and 5*.

Data Collection

3.4 Data collection was carried out between June and September 2024. A pack of survey documents was given to each sampled company. The respondents of the companies were asked to provide manpower information of their companies at the time of the survey with the reference date on 1 June 2024. During the fieldwork period, enumerators assisted the respondents to complete the questionnaire through phone calls or on-site visits.

3.5 Various measures were taken to ensure the quality of the data collection process. These included prior fieldwork preparation, thorough training of fieldwork staff, monitoring of the fieldwork execution, measures to increase the response rate, checking of the completed questionnaires, double data entry and validation and verification of the collected data. The list of quality control measures is shown in *Appendix 6*.

Data Analysis

3.6 Among the 480 valid sampled companies, 450 were successfully enumerated which contributed to an effective response rate of 93.8%². Taking into account (a) the satisfactory response rate of the individual sectors, (b) the satisfactory response rate from a majority of prominent and sizeable companies, and (c) the grossing-up of the sample results based on the statistically-grounded method, it could be concluded that the survey findings presented in this report contributed to a significant level of representativeness of the electronics and telecommunications industries. The response rate achieved for individual sectors was also adequate to produce a meaningful breakdown by sector. The response profile is shown in *Appendix 7*.

Manpower Projection Methodology

3.7 The Training Board adopts a forecasting method which rests on the weighted averages of historical data for projecting manpower demand of the electronics and telecommunications industries. Taking consideration of the historical manpower data with weighting given to the recent data, market trends in a longer term, technological developments of the industries and other social-economic determinants, the Training Board made the decision on the manpower projection for the period from 2025 to 2028. The details of the projection methodology are provided in *Appendix 8*.

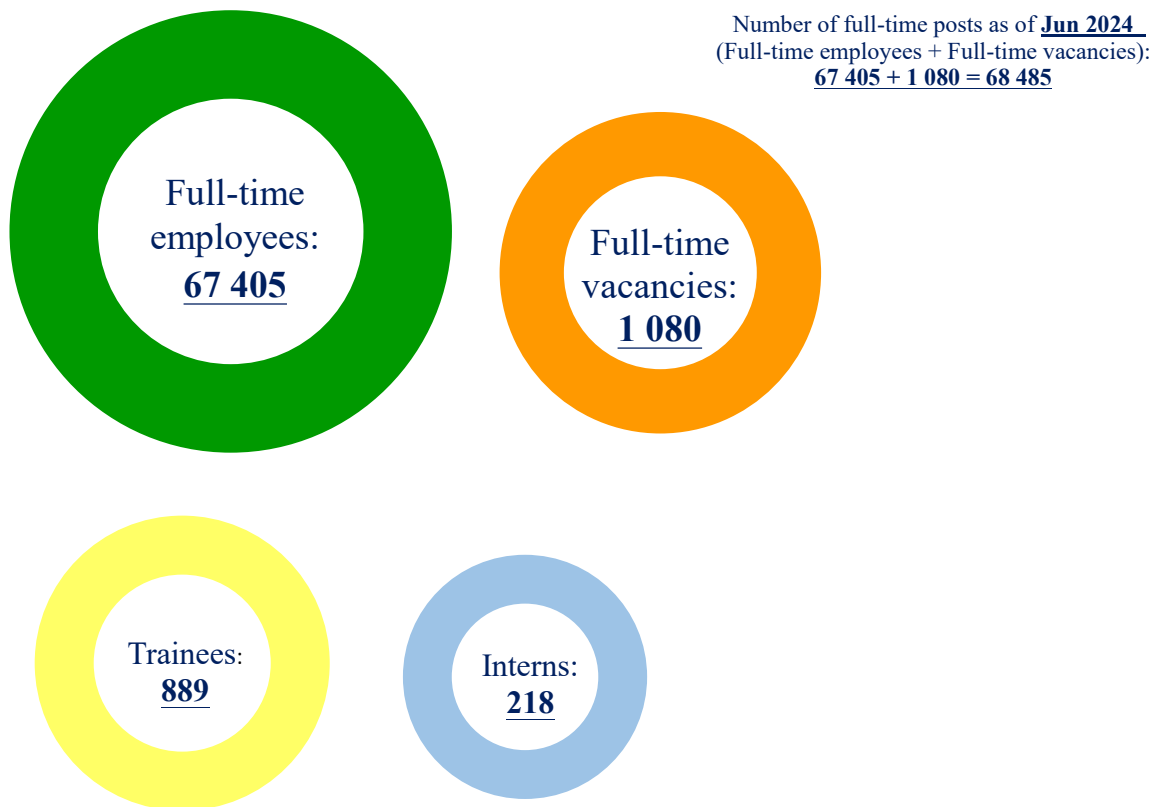
² Sampled companies which had ceased operation, not employed any relevant technical staff, nil reply to the survey, etc. were classified as invalid samples.

4 Survey Findings

Overview of Manpower Situation

4.1 As at 1 June 2024, there were a total of 67 405 full-time employees and 1 080 full-time vacancies in the electronics and telecommunications industries, aggregating the total manpower demand to 68 485 (i.e. the number of full-time employees plus number of vacancies). Moreover, there were 889 trainees and 218 interns found in the electronics and telecommunications industries. (Chart 4.1)

Chart 4.1 Overview of manpower situation



Note: "Full-time vacancies" refer to those unfilled, immediately available job openings for which the establishment is actively trying to recruit personnel as at survey reference date.

Full-time Employees

Number of Full-time Employees

4.2 Among the 67 405 full-time employees in the electronics and telecommunications industries, most of them were engaged in “information technology services” (15 094 full-time employees or 22.4%), “telecommunications” (13 171 full-time employees or 19.5%), “import and export trading” (13 158 full-time employees or 19.5%) and “design houses, R&D/educational institutes and public bodies” (12 293 full-time employees or 18.2%). (Table 4.1)

4.3 Analysed by job level, the majority of full-time employees were working at the technician level (39 025 full-time employees or 57.9%), followed by professional/technologist level (18 641 full-time employees or 27.7%). Relatively fewer were working at the craftsman level (8 702 full-time employees or 12.9%) and the operative level (1 037 full-time employees or 1.5%). (Table 4.1)

Table 4.1 Full-time employees by sector by job level

Sector	Professional/ Technologist	Technician	Craftsman	Operative	Overall
Manufacturing	687 (21.9%)	1 410 (44.9%)	627 (20.0%)	417 (13.3%)	3 141 [4.7%]
Telecommunications	4 918 (37.3%)	4 643 (35.3%)	3 603 (27.4%)	7 (0.1%)	13 171 [19.5%]
Engineering Services	1 243 (24.9%)	2 492 (50.0%)	1 211 (24.3%)	40 (0.8%)	4 986 [7.4%]
Information Technology Services	4 854 (32.2%)	9 689 (64.2%)	551 (3.7%)	0 (0.0%)	15 094 [22.4%]
Import and Export Trading	2 289 (17.4%)	10 184 (77.4%)	213 (1.6%)	472 (3.6%)	13 158 [19.5%]
Wholesale and Retail	233 (4.2%)	4 872 (87.6%)	415 (7.5%)	42 (0.8%)	5 562 [8.3%]
Design Houses, R&D/Educational Institutes & Public Bodies	4 417 (35.9%)	5 735 (46.7%)	2 082 (16.9%)	59 (0.5%)	12 293 [18.2%]
Total	18 641 (27.7%)	39 025 (57.9%)	8 702 (12.9%)	1 037 (1.5%)	67 405

() indicates % of total no. of full-time employees by respective job level.

[] indicates % of total no. of full-time employees by respective sector.

Prominent Principal Jobs

4.4 As shown in Table 4.2, the prominent principal jobs were “Sales Technician” (14 689 full-time employees) and “Electronics Technician” (10 099 full-time employees), followed by “Electronics Engineer; Computer Engineer” (6 114 full-time employees), “Electronics Craftsman” (6 059 full-time employees) and “Programmer; Software Technician” (4 530 full-time employees). (Table 4.2)

Table 4.2 Prominent principal jobs

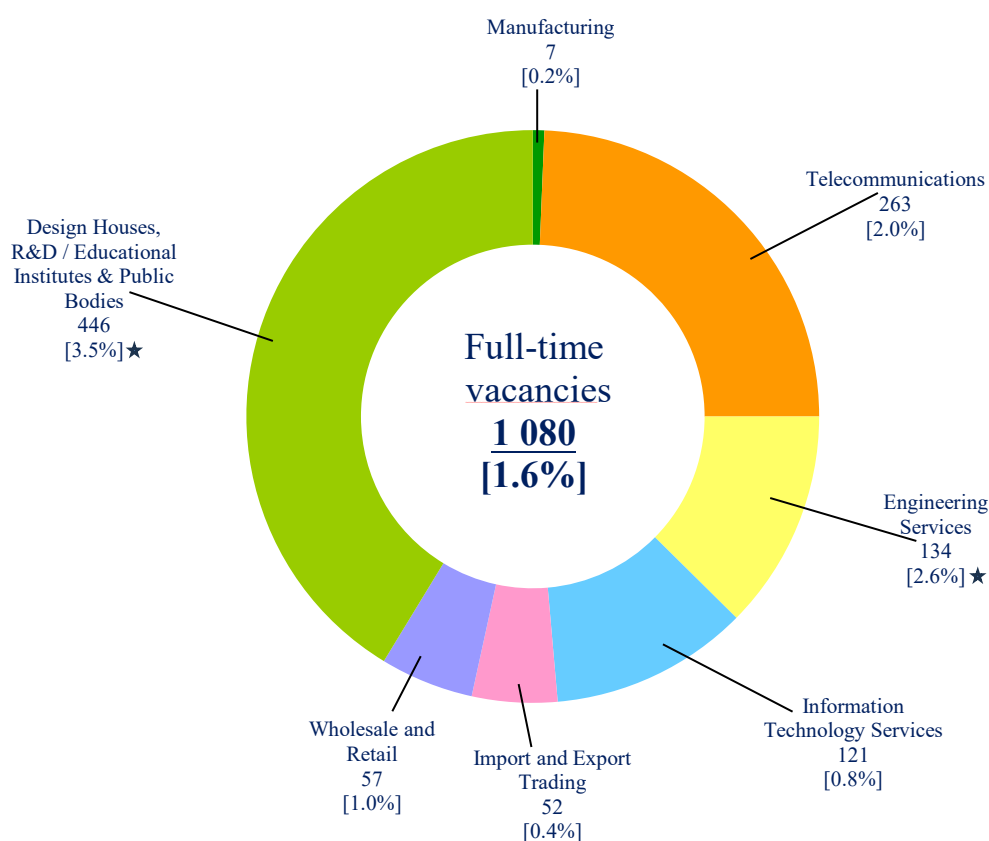
Job level	Principal job	No. of full-time employees	% of total number of full-time employees in respective job level
Professional/ Technologist	◆ Electronics Engineer; Computer Engineer	6 114	32.8%
	◆ Systems Analyst / Engineer	2 851	15.3%
	◆ Telecommunications Engineer	1 952	10.5%
Technician	◆ Sales Technician	14 689	37.6%
	◆ Electronics Technician	10 099	25.9%
	◆ Programmer; Software Technician	4 530	11.6%
Craftsman	◆ Electronics Craftsman	6 059	69.6%
	◆ Electrician	1 355	15.6%
	◆ Mechanic	693	8.0%

Full-time Vacancies

Number of Full-time Vacancies

4.5 As at 1 June 2024, a total of 1 080 full-time vacancies were reported in the electronics and telecommunications industries, representing a vacancy rate of 1.6% (i.e. full-time vacancies as a percentage of the total number of full-time employees and full-time vacancies). Relatively more vacancies were found in “design houses, R&D/educational institutes and public bodies” (446 full-time vacancies), “telecommunications” (263 full-time vacancies), “engineering services” (134 full-time vacancies) and “information technology services” (121 full-time vacancies). In terms of the vacancy rate, higher vacancy rates were registered in “design houses, R&D/educational institutes and public bodies” (3.5%) and “engineering services” (2.6%). (Chart 4.2)

Chart 4.2 Vacancies by sector



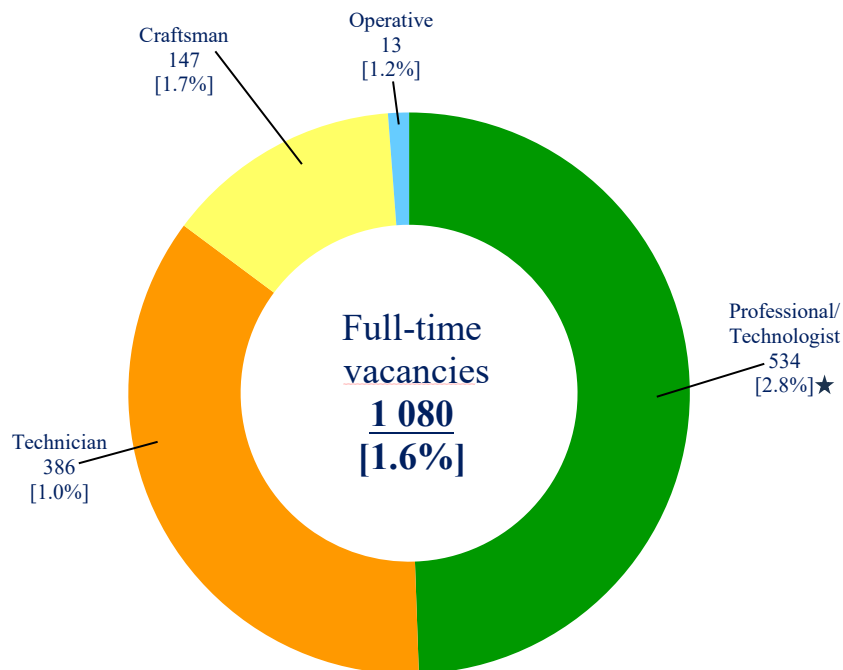
Notes:

(1) Figures in [] brackets indicate the **Vacancy rate** = $\frac{\text{No. of full-time vacancies}}{\text{No. of full-time employees} + \text{No. of full-time vacancies}}$

(2) Figures marked with the symbol “★” refer to relatively higher vacancy rates than the overall rate.

4.6 Analysed by job level, most of the full-time vacancies were jobs at the professional/technologist level (534 full-time vacancies) and the technician level (386 full-time vacancies). A higher vacancy rate of 2.8% was recorded at the professional/technologist level. (Chart 4.3)

Chart 4.3 Vacancies by job level



Notes:

- (1) Figures in [] brackets indicate the **Vacancy rate** = $\frac{\text{No. of full-time vacancies}}{\text{No. of full-time employees} + \text{No. of full-time vacancies}}$
- (2) Figures marked with the symbol “★” refer to relatively higher vacancy rates than the overall rate.

Prominent Vacancies

4.7 The prominent vacancies were focused on “Telecommunications Engineer” (139 full-time vacancies) and “Systems Analyst/Engineer” (102 full-time vacancies). (Table 4.3)

Table 4.3 Prominent vacancies

Job level	Principal job	No. of full-time vacancies	% of total number of full-time vacancies in respective job level
Professional/ Technologist	◆ Telecommunications Engineer	139	26.0%
	◆ Systems Analyst / Engineer	102	19.1%
	◆ Electrical Engineer	84	15.7%
Technician	◆ Electronics Technician	91	23.6%
	◆ Supervisor; Foreman; Leader	77	19.9%
	◆ Sales Technician	67	17.4%
Craftsman	◆ Electrician	52	35.4%
	◆ Mechanic	50	34.0%
	◆ Electronics Craftsman	37	25.2%

Trainees

4.8 As at 1 June 2024, there were 889 trainees in the electronics and telecommunications industries. Of these 889 trainees, most of them were engaged in “design houses, R&D/educational institutes and public bodies” sector (82.5%; 733 persons), followed by “telecommunications” sector (13.3%; 118 persons). (Chart 4.4)

4.9 Analysed by job level, trainees were mainly working at the technician level (50.5%; 449 persons) and craftsman level (34.6%; 308 persons). (Chart 4.5)

Chart 4.4 Trainees by sector

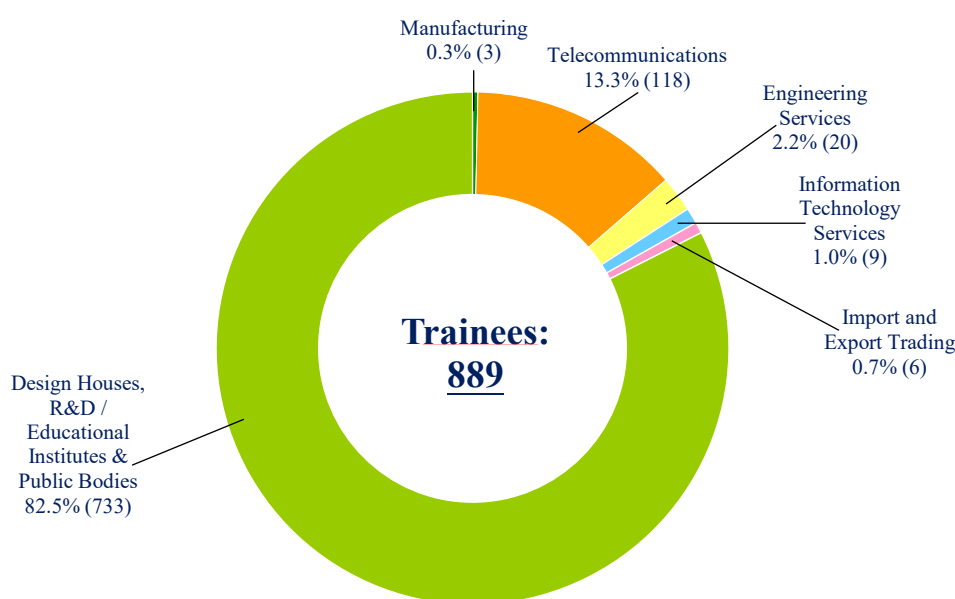
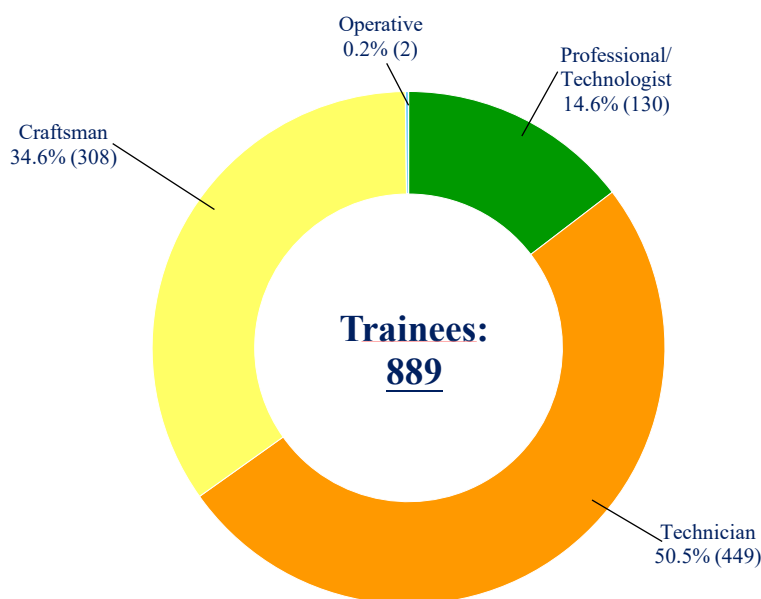


Chart 4.5 Trainees by job level



Average Monthly Remuneration Package

4.10 The average monthly remuneration package for full-time employees at the professional/technologist level in the electronics and telecommunications industries is mainly in the range of \$30,001 - \$50,000 (60.6%), followed by \$20,001 - \$30,000 for the technician level (80.1%) and the craftsman level (71.1%), and \$15,001 - \$20,000 for the operative level (82.9%). (Table 4.4)

Table 4.4 Average monthly remuneration package by job level

Job level	Over \$50,000	\$30,001 - \$50,000	\$20,001 - \$30,000	\$15,001 - \$20,000	\$15,000 or below	No. of full-time employees
Professional/ Technologist	17.8%	60.6%	21.6%	*	0.1%	18 641
Technician	0.3%	8.5%	80.1%	10.9%	0.3%	39 025
Craftsman	0.0%	0.0%	71.1%	27.6%	1.3%	8 702
Operative	0.0%	0.0%	3.3%	82.9%	13.9%	1 037

denotes prominent ranges of the monthly remuneration package in the respective job level.

Note: * Less than 0.05%

Preferred Level of Education

4.11 In the electronics and telecommunications industries, most of the full-time employees at the professional/technologist level were preferred to have a first degree or above qualification (90.8%). Among the full-time employees at the technician level, 49.0% were preferred to have a sub-degree qualification and 37.9% were preferred to have a diploma/certificate qualification. For the full-time employees at the craftsman level, 49.5% were preferred to have a diploma/certificate qualification and 46.9% were preferred to have a secondary 4 to 7 qualification. Most of the full-time employees at the operative level were preferred to have a secondary 4 to 7 qualifications (66.2%). (Table 4.5)

Table 4.5 Preferred level of education by job level

Job level	First degree or above	Sub-degree	Diploma/ certificate	Secondary 4 to 7	Secondary 3 or below	No. of full-time employees
Professional/ Technologist	90.8%	9.2%	0.0%	0.0%	0.0%	18 641
Technician	13.0%	49.0%	37.9%	*	0.0%	39 025
Craftsman	0.0%	1.3%	49.5%	46.9%	2.3%	8 702
Operative	0.0%	0.0%	0.4%	66.2%	33.4%	1 037

denotes prominent ranges of the preferred level of education in the respective job level.


Note: * Less than 0.05%

Preferred Years of Experience

4.12 Regarding the years of experience, 89.1% of the full-time employees at the professional/technologist level in the electronics and telecommunications industries were preferred to have 6 years to less than 10 years. 89.8% of the full-time employees at the technician level were preferred to have 3 years to less than 6 years of experience. Among the full-time employees at the craftsman level, 78.4% were preferred to have 1 year to less than 3 years of experience. For the full-time employees at the operative level, 99.6% were preferred to have less than 1 year of experience. (Table 4.6)

Table 4.6 Preferred years of experience by job level

Job level	More than 10 years	6 years to less than 10 years	3 years to less than 6 years	1 year to less than 3 years	Less than 1 year	No. of full-time employees
Professional/Technologist	9.3%	89.1%	1.6%	0.0%	0.0%	18 641
Technician	0.4%	9.1%	89.8%	0.0%	0.7%	39 025
Craftsman	0.0%	0.0%	3.5%	78.4%	18.1%	8 702
Operative	0.0%	0.0%	0.0%	0.4%	99.6%	1 037

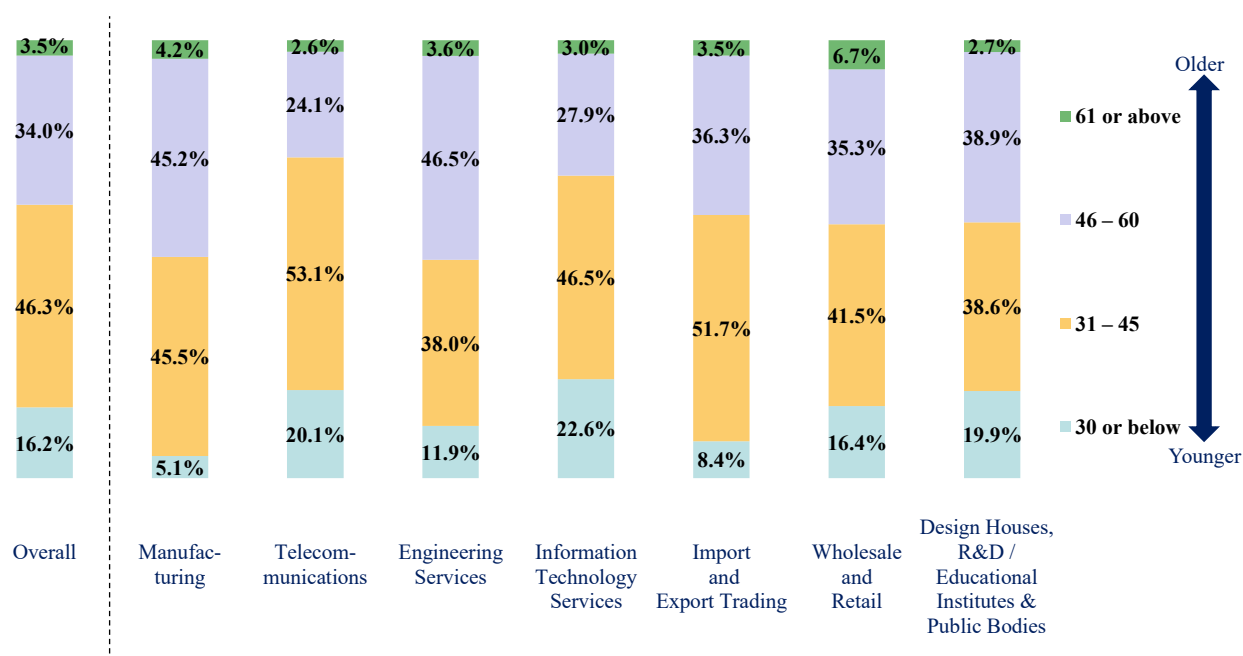
 denotes prominent ranges of the preferred years of experience in the respective job level.

Age Range of Full-time Employees

4.13 In the electronics and telecommunications industries, the major age range of full-time employees is aged 31 - 45 (46.3%), followed by 46 - 60 (34.0%). Relatively fewer were aged 30 or below (16.2%) and aged 61 or above (3.5%). (Chart 4.6)

4.14 Analysed by sector, the proportion of the younger age of 30 or below was relatively larger for the “information technology services” (22.6%) and the “telecommunications” (20.1%) sectors. On the other hand, the proportion of the older age of 61 or above was relatively larger for the “wholesale and retail” (6.7%) sector. (Chart 4.6)

Chart 4.6 Age range of full-time employees



Note: Percentage are calculated on the basis of total number of full-time employees

Average Retirement Age of Full-time Employees

4.15 The vast majority of the employers reported that the average retirement age of full-time employees was 65 (90.0%). Another one-tenth reported the average retirement age was 60 (9.6%). (Table 4.7)

Table 4.7 Average retirement age of full-time employees

Average retirement age of full-time employees	Aged 60	Aged 61 - 64	Aged 65	Aged 66 - 70
	9.6%	0.2%	90.0%	0.2%

Note: Percentage are calculated on the basis of total number of companies

Forecasted Retirees

4.16 In the electronics and telecommunications industries, a total of 557 full-time employees were expected to be retired in the next 12 month. Analysed by job level, most of the expected retirees were at the technician level (280 full-time employees), followed by the professional/technologist level (173 full-time employees). (Table 4.8)

Table 4.8 Expected number of retirees in the next 12 months

Job level	Number of retirees
Professional/Technologist	173
Technician	280
Craftsman	59
Operative	45
Overall	557

Full-time Employees Left and Recruited

4.17 Employers reported that there were 4 009 full-time employees left their companies in the past 12 months. The turnover rate (i.e. the number of full-time employees left as a percentage of the total number of full-time posts) was 5.9%. Analysed by job level, the technician level registered the largest number of full-time employees left (2 179 full-time employees) whereas the turnover rate was the highest at the operative level (13.0%). (Table 4.9)

Table 4.9 Full-time employees left in the past 12 months and turnover rate by job level

Job level	Number of full-time employees left	Turnover rate*
Professional/Technologist	1 310	6.8%
Technician	2 179	5.5%
Craftsman	383	4.3%
Operative	137	13.0%
Overall	4 009	5.9%

* Turnover rate = $\frac{\text{No. of full-time employees left in past 12 months}}{\text{No. of full-time employees} + \text{No. of full-time vacancies}}$

4.18 On the other hand, a total of 4 907 full-time employees were recruited in the past 12 months, with the majority being at the technician level (2 506 full-time employees) and professional/technologist level (1 774 full-time employees). Among the new recruits at the technician level and the professional/technologist level, over 60% had electronics and telecommunications industries working experience (69.9% and 66.4% respectively) while the corresponding proportions were smaller for the new recruits at the craftsman level (52.0%) and the operative level (36.5%). (Table 4.10)

Table 4.10 Staff recruited in the past 12 months by job level

Job level	Total number of new recruits	Number of new recruits with electronics and telecommunications working experience (% of total number of new experienced recruits)
Professional/ Technologist	1 774	1 178 (66.4%)
Technician	2 506	1 751 (69.9%)
Craftsman	523	272 (52.0%)
Operative	104	38 (36.5%)
Overall	4 907	3 239 (66.0%)

Recruitment Difficulties

4.19 In the electronics and telecommunications industries, there were not many companies engaged in recruitment exercise in the past 12 months, with the highest percentage recorded for full-time employees at the technician level (9.7%) as compared with the professional/technologist, craftsman and operative levels (0.3% - 2.7%). The majority of companies were not engaged in recruitment exercise in the past 12 months were mainly because there was no demand for the respective levels of staff in the companies (88.2% - 98.9%). *(Chart 4.7)*

4.20 Among those companies engaged in the recruitment exercises, the percentages of companies encountering recruitment difficulties was relatively higher for recruiting full-time employees at the craftsman (65%) level and the operative level (61%), followed by the professional/technologist level (54%) and the technician level (45%). *(Chart 4.8)*

4.21 The recruitment difficulties encountered when recruiting full-time employees at the professional/technologist level were mainly “lack of candidates with relevant experience” (66%), “terms of employment could not meet candidates' expectations” (46%), “lack of candidates with relevant training /academic or professional qualifications in the related disciplines” (40%) and “alternative offers in the market” (37%). The difficulties encountered for recruiting full-time employees at the technician level were mainly “lack of candidates with relevant experience” (67%), “terms of employment could not meet candidates' expectations” (61%) and “alternative offers in the market” (38%). The difficulties encountered for recruiting full-time employees at the craftsman level were mainly “lack of candidates with relevant experience” (75%), “terms of employment could not meet candidates' expectations” (45%), “lack of candidates with relevant training /academic or professional qualifications in the related disciplines” (40%) and “working conditions could not meet candidates' expectations (e.g. shift work, outdoor work, physically demanding work)” (35%), while at the operative levels was mainly “alternative offers in the market” (71%). *(Chart 4.8)*

Chart 4.7 Whether recruitment was taken place in past 12 months by job level

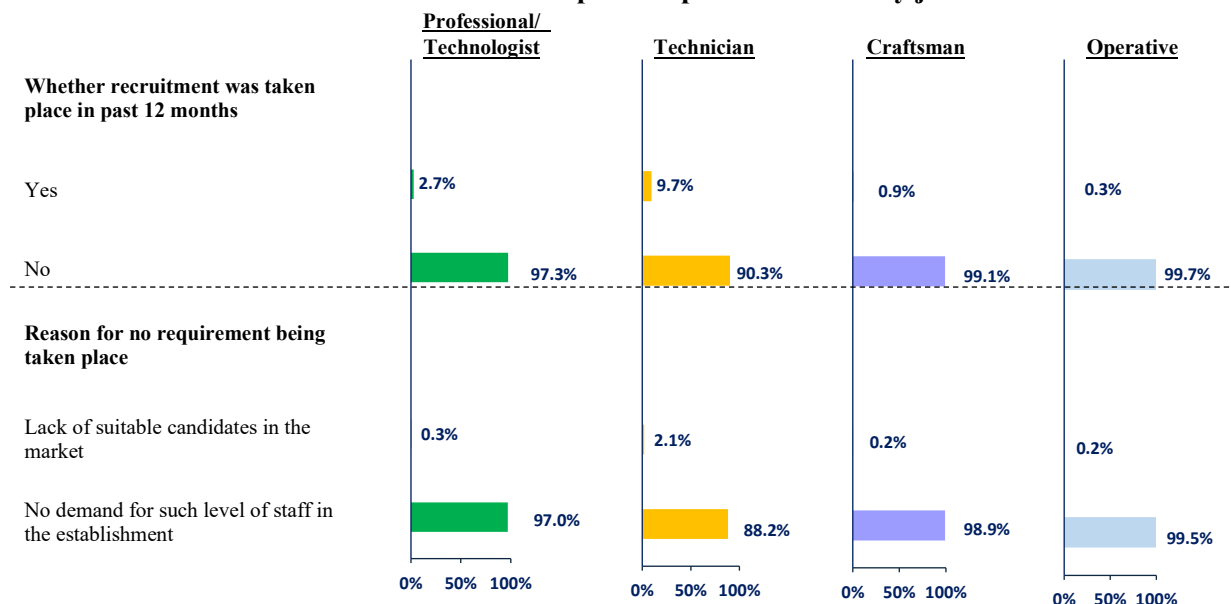
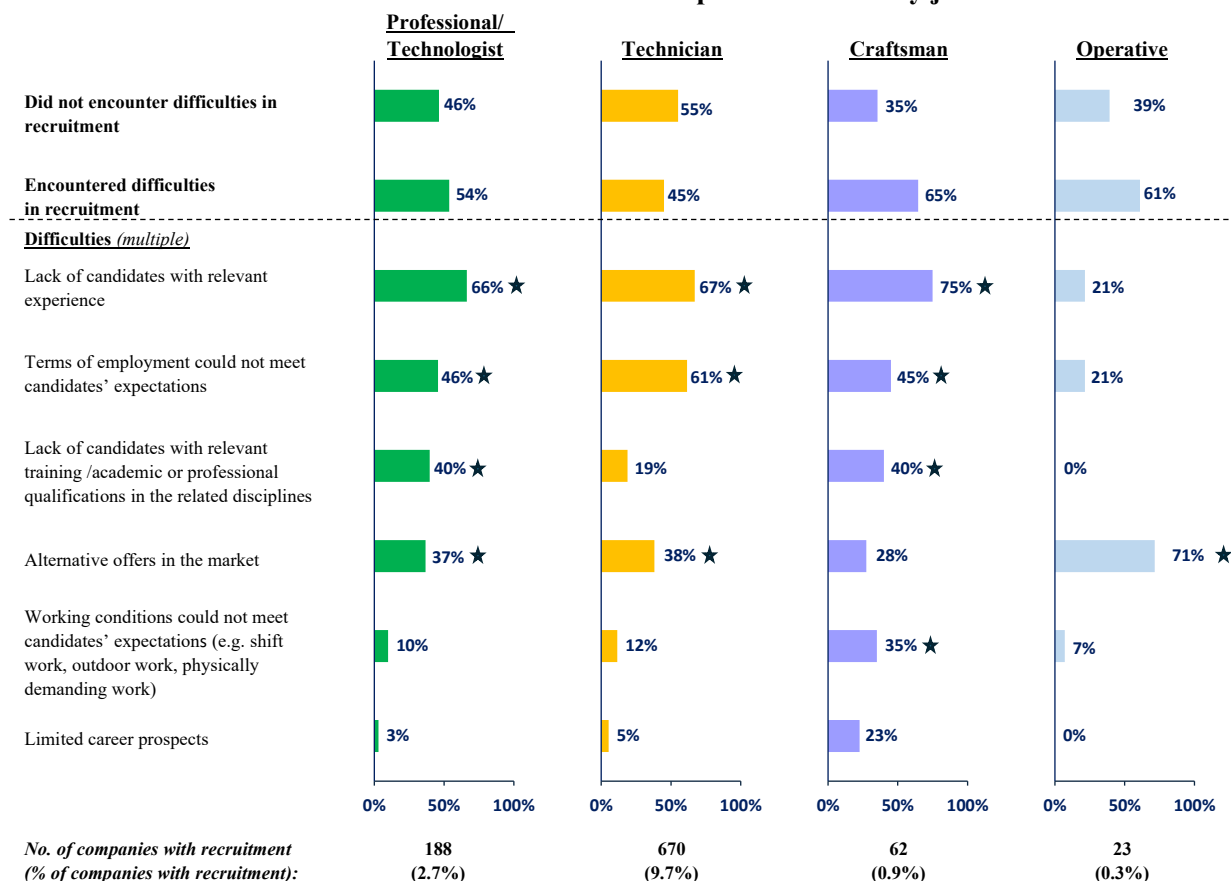


Chart 4.8 Difficulties encountered in recruitment in past 12 months by job level



Notes: (1) Percentages of difficulties in recruitment are calculated on the basis of companies having the recruitment difficulties in particular job level.

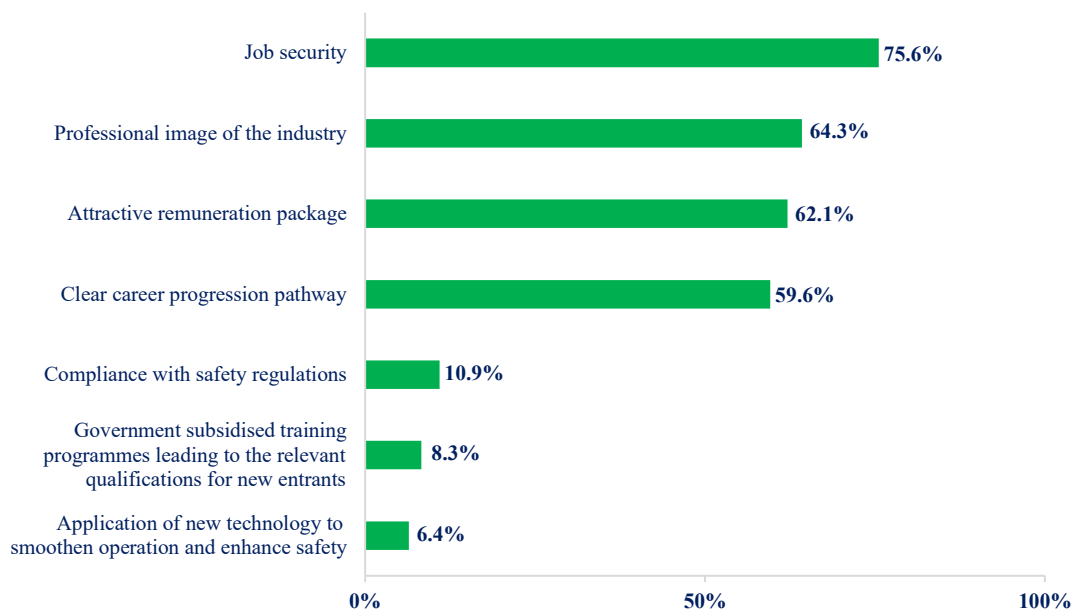
(2) Respondents are allowed to select more than one difficulty.

(3) Figures marked with the symbol "★" refer to major difficulties encountered at respective job level.

Factors Useful to Attract New Entrants to the Industries

4.22 Employers were asked to indicate the top three factors that they considered useful to attract new entrants to the industries. The major factors considered useful to attract new entrants to the industries were “job security” (75.6%), “professional image of the industry” (64.3%), “attractive remuneration package” (62.1%) and “clear career progression pathway” (59.6%). (Chart 4.9)

Chart 4.9 Factors useful to attract new entrants to the industries



Notes: (1) Percentage are calculated on the basis of total number of companies.
(2) Respondents are allowed to select more than one factor.

Employers' Views on Business Volume in the Next 12 Months

4.23 In the survey, employers were asked about their views on the expected change in business volume of their companies in the next 12 months. Around six in ten (59.4%) of the companies expected the business volume to remain stable, while 6.8% to be worsen and 3.3% to be better for the coming year. (Chart 4.10)

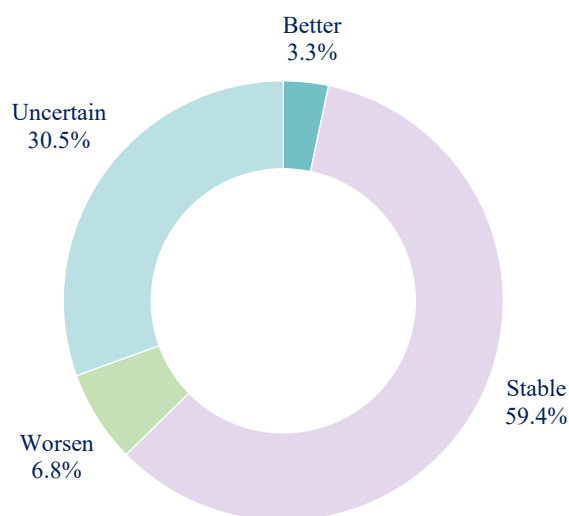
4.24 The major reasons for expecting worsen business volume cited included:

- Hong Kong's poor economy led to business drop;
- intense market and industry competition; and
- rising costs of operation.

4.25 The major reasons for expecting better business volume cited included:

- business amount and volume start to recover; and
- trend of Hong Kong people heading Mainland for consumption will diminish.

Chart 4.10 Views on business volume in the next 12 months

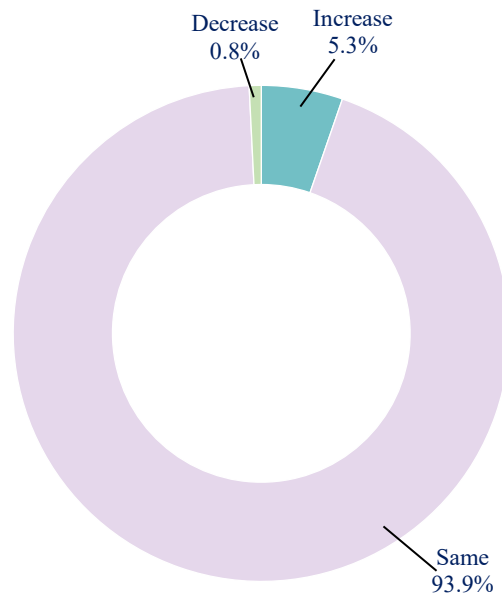


Note: Percentages are calculated on the basis of the total number of companies.

Expected Change in Number of Full-time Employees in the Next 12 Months

4.26 When asked to indicate the expected change in the number of full-time employees of their companies in the next 12 months, the vast majority (93.9%) expected the number of full-time employees to remain the same. 5.3% expected an increase in the number of full-time employees; whereas a mere 0.8% expected a decrease. (Chart 4.11)

Chart 4.11 Views on number of full-time employees in the next 12 months



Note: Percentage are calculated on the basis of total number of companies.

Preferred Mode of In-service Training

4.27 Regarding mode of in-service training, “company’s in-house” and “on-the-job training” were generally preferred for full-time employees across various job levels. “Professional qualification and certification” were recorded as another preferred mode of training for full-time employees at the professional/technologist level (21.5%), while “short course” was found to be another preferred mode of training for full-time employees at the craftsman level (22.9%). (Table 4.11)

Table 4.11 Preferred mode of in-service training for employees

Job level	Preferred mode of in-service training
Professional/ Technologist	Company’s in-house training (56.6%) On-the-job training (47.1%) Professional qualification and certification (21.5%)
Technician	On-the-job training (77.1%) Company’s in-house training (33.0%)
Craftsman	On-the-job training (81.3%) Company’s in-house training (23.6%) Short course (22.9%)
Operative	On-the-job training (90.1%) Company’s in-house training (24.2%)


Note: (1) Percentages are calculated on the basis of number of companies with such level of staff.
(2) Respondents are allowed to select more than one mode of training.

Training Requirements


4.28 In the electronics and telecommunications industries, the training requirements for full-time employees at the professional/technologist level tended to focus on various strategic planning and management skills. While “problem-solving” is the common soft skill required for full-time employees at all job levels (in particular the technician, craftsman and operative levels), the training requirements for full-time employees at the technician, craftsman and operative levels tended to focus on various technical skills. (Table 4.12)

Table 4.12 Major training requirements

Rank	Professional/ Technologist	Technician	Craftsman	Operative
1	Project Management	Problem-solving		
2	Quality Management	Maintenance		Information Security
3	Risk Management	Manufacturing and Operations	Information Security	Maintenance
4	Business Continuity Management	Big Data Analytics	Product Development and Testing	Automation System
5	Problem-solving	Information Security	Manufacturing and Operations	Organisational Development

 *Strategic Planning and Management Skills*

 *Technical Skills*

 *Soft Skills*

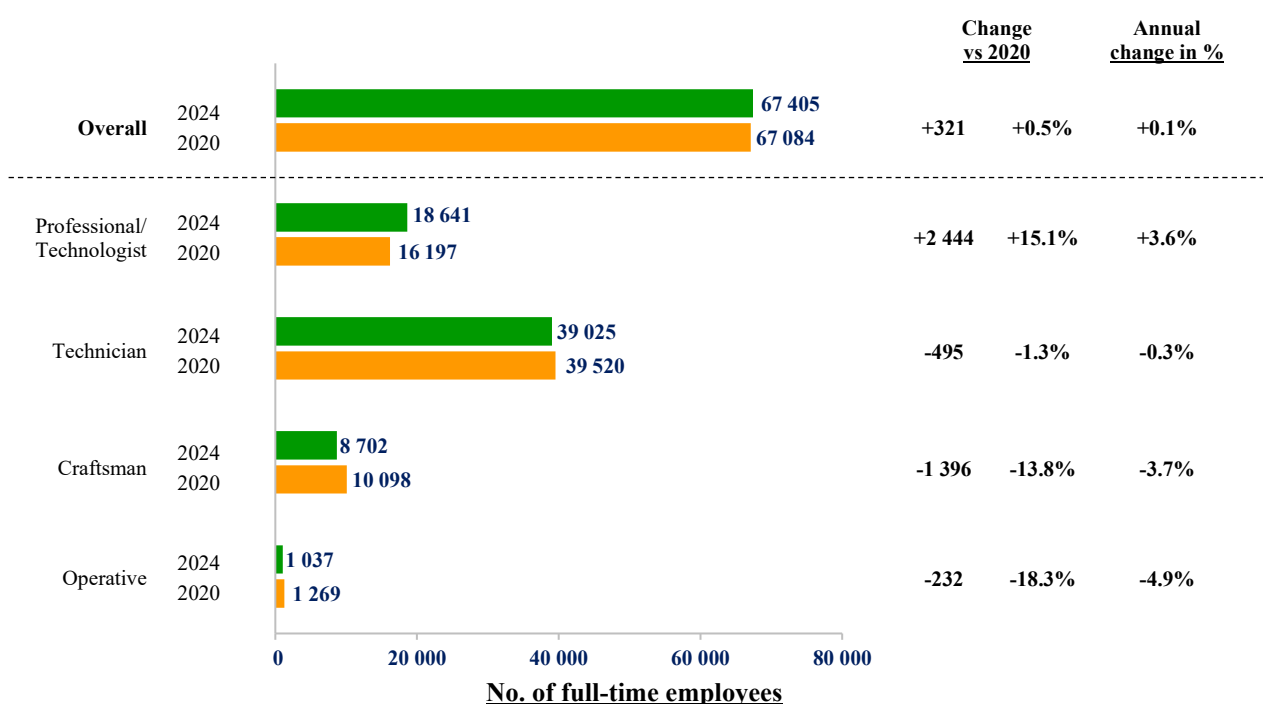
5 Manpower Analysis

Manpower Changes between 2020 and 2024

Change in Full-time Employees

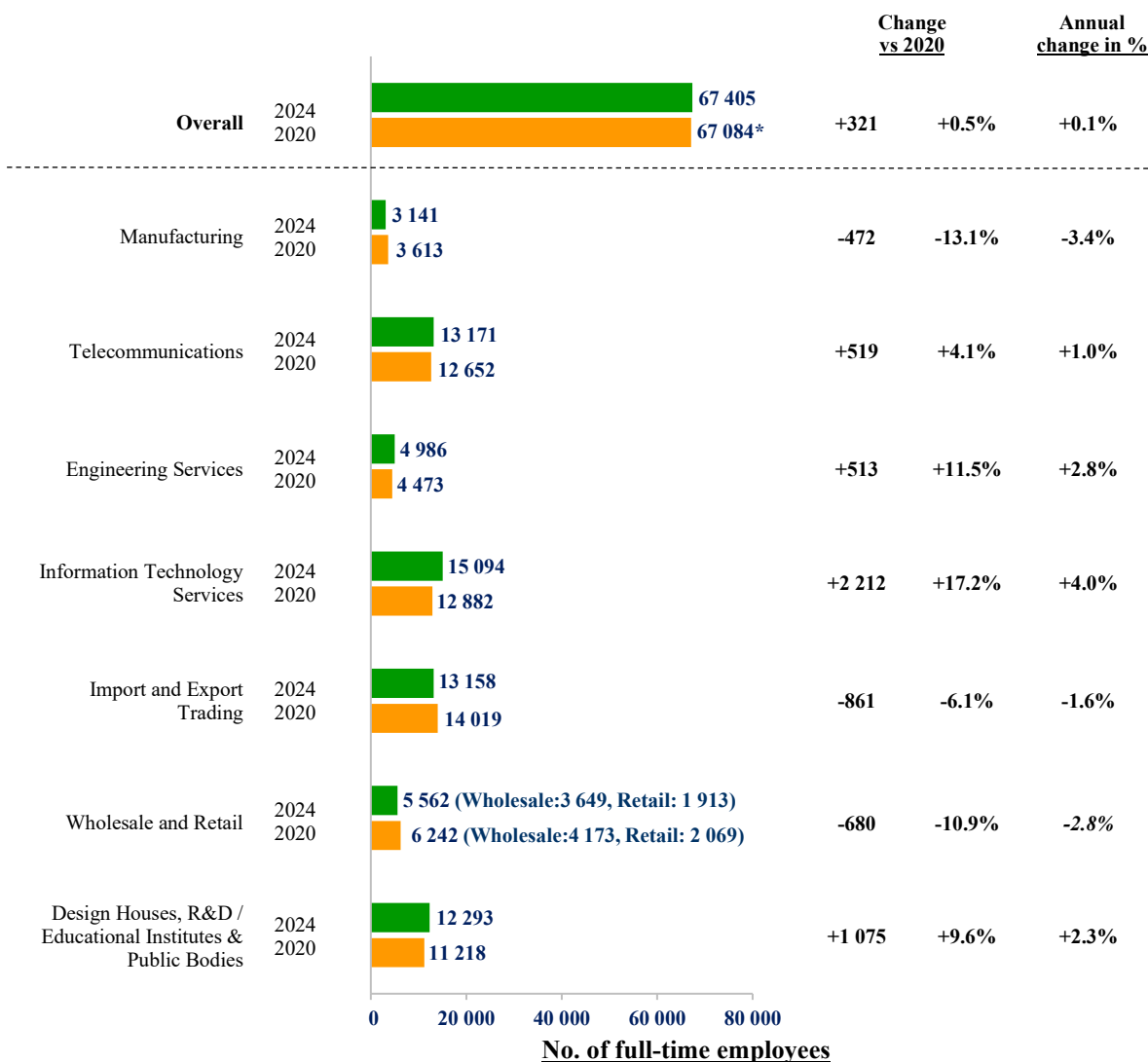
5.1 In the electronics and telecommunications industries, the total number of full-time employees increased from 67 084 in 2020 to 67 405 in 2024 (+321 full-time employees; +0.5%). Analysed by job level, an increase in manpower was registered at the professional/technologist level (+2 444 full-time employees; +15.1%) while decreases in manpower were recorded for the craftsman level (-1 396 full-time employees; -13.8%), the technician level (-495 full-time employees; -1.3%) and the operative level (-232 full-time employees; -18.3%). (Chart 5.1)

Chart 5.1 Change in full-time employees by job level



5.2 Analysed by sector, increases in manpower were mainly registered in the “information technology services” (+2 212 full-time employees; +17.2%) and “design houses, R&D/educational institutes and public bodies” (+1 075 full-time employees; +9.6%) sectors. On the other hand, decreases in manpower was recorded in the “import and export trading” (-861 full-time employees; -6.1%) and “wholesale and retail” (-680 full-time employees; -10.9%) sectors. (Chart 5.2)

Chart 5.2 Change in full-time employees by sector

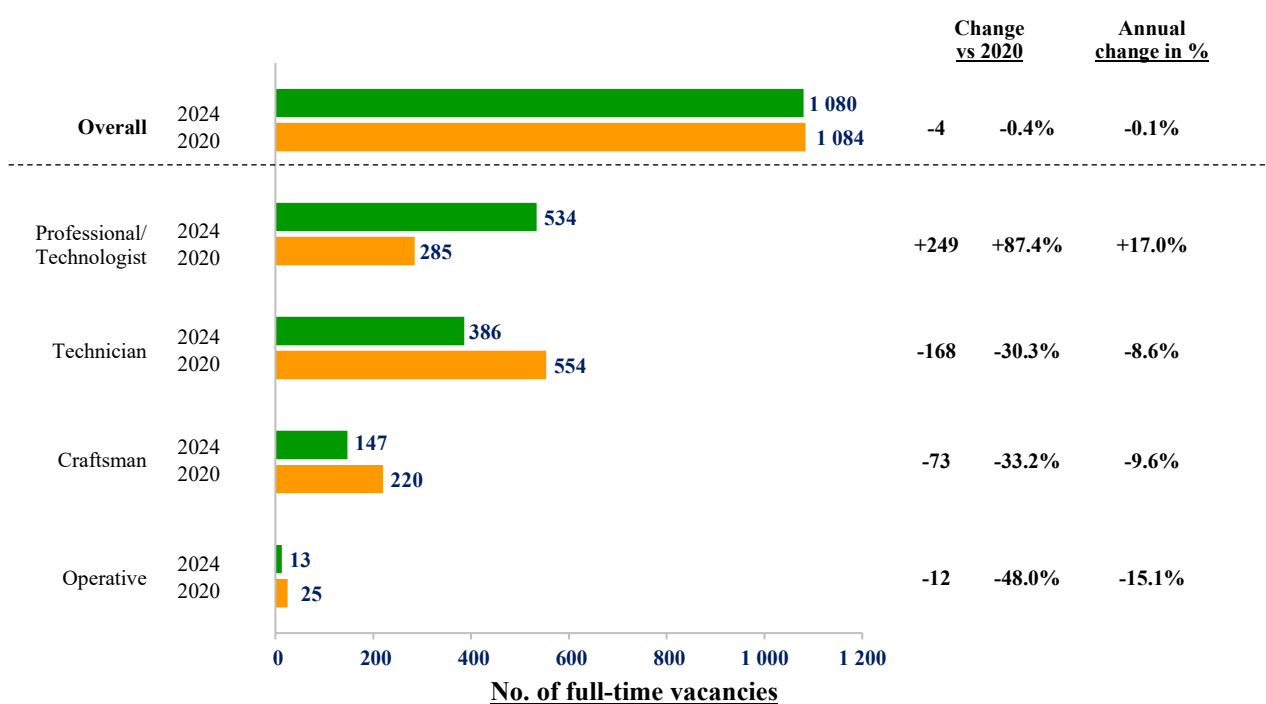


Note: *Out of the 67 084 employees in 2020, there were 1 985 full-time employees working in some supplementary companies which have not been grouped under the sectors below.

Change in Full-time Vacancies

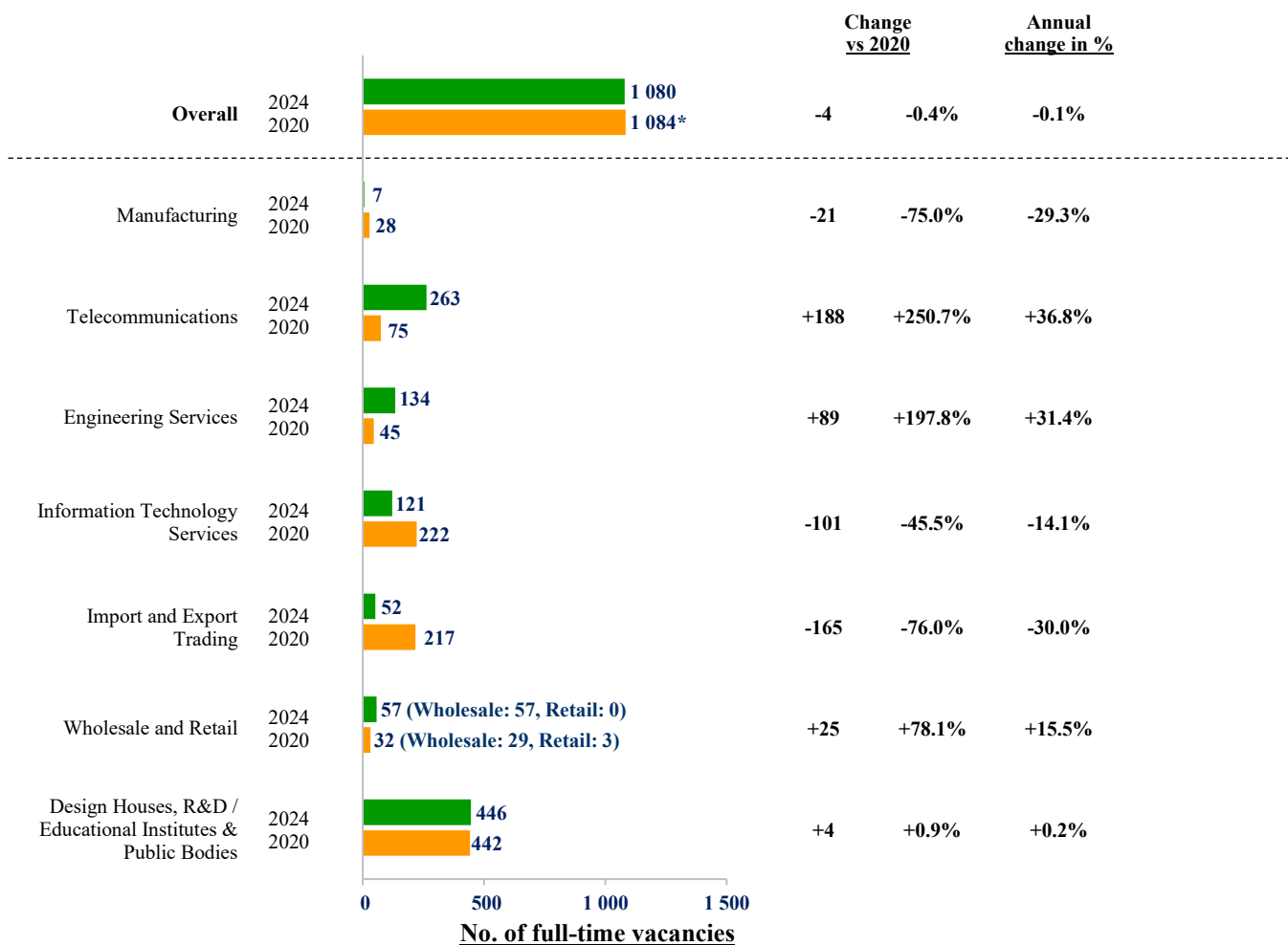
5.3 The total number of full-time vacancies remained similar in 2024 (1 084 in 2020 and 1 080 in 2024; -4 vacancies). Analysed by job level, an increase in full-time vacancies was recorded at the professional/technologist level (from 285 to 534; +249 full-time vacancies), while a decrease in vacancies was recorded for the technician level (from 554 to 386; -168 full-time vacancies). (Chart 5.3)

Chart 5.3 Change in full-time vacancies by job level



5.4 Analysed by sector, increases in full-time vacancies were found in the “telecommunications” (from 75 to 263; +188 full-time vacancies) and “engineering services” (from 45 to 134; +89 full-time vacancies) sectors. On the other hand, decreases in full-time vacancies were recorded in the “import and export trading” (from 217 to 52; -165 full-time vacancies) and “information technology services” (from 222 to 121; -101 full-time vacancies) sectors. (Chart 5.4)

Chart 5.4 Change in full-time vacancies by sector



Note: *Out of the 1 084 vacancies in 2020, there were 23 vacancies in some supplementary companies which have not been grouped under the sectors below.


Changes in Average Monthly Remuneration Package

5.5 Compared with the results of the 2020 survey, the changes in the average monthly remuneration package varied among different job levels. (Table 5.1)

- Professional/Technologist level: the majority remained in the range of \$30,001 - \$50,000 (57.5% in 2020 and 60.6% in 2024);
- Technician level: expanded in the range of \$20,001 - \$30,000 (from 67.7% in 2020 to 80.1% in 2024);
- Craftsman level: shifted upward from \$15,001 - \$20,000 (67.3% in 2020) to \$20,001 - \$30,000 (71.1% in 2024); and
- Operative level: shifted upward from \$15,000 or below (70.4% in 2020) to \$15,001 - \$20,000 (82.9% in 2024).

Table 5.1 Average monthly remuneration package

Job level	Year	\$50,001 or above	\$30,001 - \$50,000	\$20,001 - \$30,000	\$15,001 - \$20,000	\$15,000 or below
Professional/Technologist	2024	17.8%	60.6%	21.6%	*	0.1%
	2020	10.5%	57.5%	32.0%	0.0%	0.0%
Technician	2024	0.3%	8.5%	80.1%	10.9%	0.3%
	2020	3.6%	8.6%	67.7%	20.1%	0.0%
Craftsman	2024	0.0%	0.0%	71.1%	27.6%	1.3%
	2020	0.0%	0.0%	28.4%	67.3%	4.2%
Operative	2024	0.0%	0.0%	3.3%	82.9%	13.9%
	2020	0.0%	0.0%	0.5%	29.1%	70.4%

 denotes prominent ranges of the monthly remuneration package in the respective job level.

Note: * Less than 0.05%

Changes in Preferred Level of Education

5.6 Compared with the 2020 survey, changes in the preferred level of education varied among different job levels. (Table 5.2)

- Professional/ Technologist level: the majority remained to prefer first degree or above qualification (88.4% in 2020 and 90.8% in 2024);
- Technician level: the majority remained to prefer sub-degree qualification (40.6% in 2020 and 49.0% in 2024) and diploma/certificate qualification (41.6% in 2020 and 37.9% in 2024); and
- Craftsman level: skewed to secondary 4 to 7 (66.1% in 2020 and 46.9% in 2024) with tendency to shift upward to diploma/certificate (31.9% in 2020 and 49.5% in 2024).

Table 5.2 Preferred level of education#

Job level	Year	First degree or above	Sub-degree	Diploma/certificate	Secondary 4 to 7	Secondary 3 or below
Professional/ Technologist	2024	90.8%	9.2%	0.0%	0.0%	0.0%
	2020	88.4%	11.1%	0.5%	0.0%	0.0%
Technician	2024	13.0%	49.0%	37.9%	*	0.0%
	2020	17.4%	40.6%	41.6%	0.4%	0.0%
Craftsman	2024	0.0%	1.3%	49.5%	46.9%	2.3%
	2020	*	1.0%	31.9%	66.1%	1.0%

denotes prominent ranges of the preferred level of education in the respective job level.

Note: (1) # Information for operative level was not collected in 2020
 (2) * Less than 0.05%

Business Outlook

The business outlook for the electronics and telecommunications industries in Hong Kong is characterised by steady growth and significant technological advancements. Please find below the key trends and insights shaping the industries:

The rollout of 5G Services

5.7 The introduction of 5G services is essential for both the telecommunications and electronics industries, as mobile operators expand their networks to enhance connectivity. This development enables businesses to optimise operations and drive innovation. The synergy between these sectors supports robust growth, driven by digital transformations in the Internet of Things (IoT) and artificial intelligence (AI), which improve service quality and operational efficiency.

5.8 As the demand for mobile services continues to grow, investment in infrastructure, such as cell towers and fiber optics, is expected to increase. This will facilitate greater access to services and stimulate the development of new electronic products and solutions. Overall, the expansion of the telecom and electronics industries presents a positive outlook, paving the way for further advancements and opportunities in the market.

Smart City Development

5.9 Smart city development in Hong Kong further supports the growth of the electronics and telecommunications industries by driving demand for advanced connectivity solutions, such as high-speed internet and IoT connectivity. These initiatives foster innovation, allowing electronics companies to develop smart technologies that seamlessly integrate with urban infrastructure. Government support plays a crucial role in this growth by providing funding and incentives for technology firms. This supportive framework cultivates a favorable environment for both startups and established enterprises, encouraging them to innovate and expand.

5.10 Furthermore, as consumers become increasingly environmentally conscious, there is a growing preference for energy-efficient and sustainable products. This trend opens new markets for electronics firms while promoting a more sustainable future, aligning business practices with consumer values.

5.11 Moreover, the integration of data analytics and artificial intelligence in smart city planning provides telecommunications companies with opportunities to offer valuable data services. This integration enhances their offerings and positions them as key players in the smart city ecosystem. Ultimately, smart city projects promote collaboration among

technology companies, government, and academia. This synergy leads to new business opportunities and innovative solutions that enhance the outlook of the industries in Hong Kong.

Aging Population

5.12 The aging population in Hong Kong presents business opportunities for the electronics and telecommunications industries, particularly in the realms of health technology and smart home solutions. As older adults increasingly seek innovative ways to manage their health, there is a growing demand for telehealth services, wearable health monitoring devices, and user-friendly communication tools that facilitate connectivity with family and caregivers.

5.13 Furthermore, government initiatives aimed at improving the quality of life for the elderly may drive investment in technologies tailored to this demographic. Companies that focus on developing products for seniors can position themselves to capitalise on this expanding market, ultimately enhancing both their competitiveness and contributions to societal well-being.

Growth of E-commerce

5.14 As online shopping gains traction due to shifting consumer preferences and a desire for convenience, businesses increasingly depend on robust digital infrastructure, increasing the demand for enhanced connectivity through advanced technologies like 5G, which enable high-speed transactions and efficient data transfer. This e-commerce expansion also necessitates secure digital payment solutions, creating opportunities for telecommunications companies to partner with fintech firms to develop innovative payment systems that enhance the overall customer experience.

5.15 Additionally, improvements in logistics and supply chain management are vital, as telecommunications technologies facilitate real-time tracking and communication, thereby boosting delivery efficiency and customer satisfaction. Small and medium-sized enterprises (SMEs) benefit greatly from this surge, as they can leverage online platforms to reach wider markets, providing telecommunications providers with the chance to offer tailored solutions that support these businesses in establishing and growing their online presence.

Strategic Policies

5.16 In 2024, the Hong Kong government introduced several strategic policies designed to strengthen the electronics and telecommunications industries. These initiatives focus on optimising industrial strategies, establishing the Third InnoHK Research Cluster, increasing research funding, and promoting investment in innovation and technology (I&T). Notably, the establishment of the AI Supercomputing Centre and the Hong Kong Microelectronics

Research and Development Institute will enhance research capabilities, facilitating collaboration between academia and industry to drive advancements in semiconductors and AI applications.

5.17 Increased funding for life and health technology research institutes demonstrates a commitment to innovation, empowering companies to develop technologies that meet evolving market demands. Additionally, the New Industrialisation Acceleration Scheme provides substantial financial support, encouraging enterprises to adopt cutting-edge solutions that improve efficiency and competitiveness.

5.18 The development plan for Shenzhen Park of Hetao Shenzhen -Hong Kong Science and Technology Innovation Co-operation Zone fosters an innovation-driven environment that appeals to both startups and established enterprises. By fostering a dynamic ecosystem that prioritises research and development, Hetao Park facilitates advancements in the electronics and telecommunications industries, thereby driving the growth of the industries. In addition, a strong focus on research and development aligns with broader objectives to enhance the region's technological capabilities. This commitment attracts talent and resources, enabling innovations in critical areas such as artificial intelligence, semiconductors, and telecommunications technologies. Collaboration opportunities are integral to the park's development, promoting partnerships among academia, industry, and government. Such collaborations yield groundbreaking advancements and customised solutions that meet the evolving demands of the electronics and telecommunications industries. Moreover, the park is dedicated to supporting emerging technologies, including 5G and the Internet of Things (IoT), thereby playing a crucial role in the overall growth of the industries.

5.19 Collectively, these measures enhance the business outlook for the electronics and telecommunication industries by providing structured support that fosters innovation, adaptability, and growth in a rapidly evolving market. Furthermore, attracting international start-up accelerators create a vibrant ecosystem that promotes cross-border collaboration, bringing diverse talent and fresh ideas to Hong Kong.

Low Altitude Economy

5.20 The development of the low altitude economy in Hong Kong is a key driver of growth and innovation in Hong Kong's electronics and telecommunications industries. The rising demand for drone technology in sectors such as logistics and surveillance drive the need for advanced electronic components. Effective drone operation relies on a robust telecommunications infrastructure, increasing demand for enhanced connectivity solutions like 5G networks.

5.21 This economy also encourages innovation across various applications, providing electronics companies with opportunities to develop specialised devices and software. The integration of drones into business operations promotes collaboration among technology firms, regulators, and industries, creating new market opportunities.

Navigating Challenges

5.22 Despite the ongoing geopolitical tensions and trade disputes between China and the US, manufacturers are finding ways to adapt and thrive in a challenging environment. Many companies are taking proactive steps to meet the needs of foreign clients by relocating production to Southeast Asia, with new factories emerging in countries like Vietnam and Malaysia. This strategic shift reflects a broader trend toward exploring new markets, particularly to ASEAN nations and the Middle East. This adaptability signals those local enterprises are resilient and capable of navigating the evolving trade landscape.

5.23 Furthermore, manufacturers are increasingly sourcing components from regions unaffected by US export restrictions. This approach not only fosters new partnerships but also diversifies supply chains, reducing dependency on any single market. While access to advanced technologies like AI tools and quantum computing remains limited, these challenges may encourage local industries to pursue innovative solutions and invest in homegrown technologies. By embracing new advancements and nurturing local talent, businesses can maintain and even enhance their competitive edge.

5.24 However, the disruption of the global supply chain continues to be a significant concern, especially regarding the stability of supplies for essential components such as semiconductors and chipsets. This reality may drive manufacturers to streamline processes and improve logistics. Addressing prolonged lead times and optimising supply chains will be crucial for meeting the growing demands of the electronics market.

Enhanced Talents Admission Schemes

5.25 The policies aimed at talent admission and workforce development are crucial for the future of Hong Kong's electronics and telecommunications industries. The Top Talent Pass Scheme (TTPS) has broadened its scope to encompass AI specialists, data scientists, and cybersecurity experts under the "innovation and technology" category. Meanwhile, the Technology Talent Admission Scheme (TechTAS) facilitates the entry of non-local technology professionals to participate in R&D activities in key areas such as microelectronics, robotics, data analytics, AI, and IoT in Hong Kong.

5.26 Additionally, the government has announced the introduction of a new channel under the General Employment Policy (GEP) and the Admission Scheme for Mainland Talents and

Professionals (ASMTP) from 30 June 2025 to allow outside individuals to apply for entry into Hong Kong to join eight skilled trades facing acute manpower shortage. The “Technical Professional List” covers eight specified skilled trades including new industrialisation technicians involving the scope of work in smart/automated manufacturing, robotics engineering, mechanical engineering, mechatronics engineering, and microelectronics engineering.

5.27 Moreover, the Immigration Arrangements for Non-local Graduates (IANG) would attract university graduates in the local workforce, while the newly introduced Vocational Professionals Admission Scheme (VPAS) targets vocational and technical talents, encouraging them to stay and work in Hong Kong.

5.28 Overall, these policies are crucial for developing a quality talent pool that supports the growth and competitiveness of the electronics and telecommunications industries in Hong Kong. By addressing labor shortages and attracting skilled professionals, Hong Kong can bolster its position as a leading hub for technology and innovation.

Product Trends

5.29 AI Deployment

- Enterprise Productivity Solutions: Tools leveraging AI for automation, predictive analytics, and enhanced decision-making, focusing on intelligent customer service.
- Consumer Electronics Innovations: Devices featuring advanced camera processing, adaptive user interfaces, health diagnostics, and predictive maintenance capabilities.
- Infrastructure for Innovation: Establishing high-performance computing, edge computing, and improved connectivity as the backbone for AI advancements.

5.30 Beyond 5G

- Low Altitude Economy: Utilisation of drones in logistics, surveillance, and precision agriculture, emphasising the need for ultra-reliable low-latency communication and massive machine-type communications.
- Non-Terrestrial Networks (NTN): Integration of satellite and terrestrial networks to provide universal coverage.
- Network Slicing and Edge Computing: Development of dedicated networks tailored for specific industrial and IoT applications.

5.31 Smart Site Safety (4S)

- Proactive Hazard Detection: Use of IoT sensors (wearables and environmental monitors) and AI-powered computer vision for real-time hazard detection in construction and manufacturing.
- Predictive Maintenance: AI-driven analysis to predict machinery and infrastructure failures, minimising downtime and costs.
- Real-Time Location Systems (RTLS): Enhancing safety through accurate location tracking of personnel and equipment.

5.32 Smart and Preventive Healthcare

- **AI-Driven Health Analysis:** Integration of wearables, genomics, electronic health records, and environmental data for comprehensive health insights.
- **Advanced Remote Patient Monitoring:** Transition from basic telehealth to sophisticated home monitoring systems for continuous patient care.
- **Innovative Diagnostics:** AI tools for analysing medical imaging, pathology slides, and genetic data to ensure faster and more accurate diagnoses.

5.33 Cybersecurity

- **Enhanced Data Protection:** Solutions focusing on safeguarding sensitive data and systems in response to rising threats from AI, IoT, and digital transactions.
- **AI in Cybersecurity:** Utilising AI to defend against sophisticated attacks, including those generated by AI systems.
- **Supply Chain Security:** Strengthening security measures to protect against vulnerabilities in supply chain processes.

Manpower Projection and Annual Additional Manpower Requirement

5.34 The manpower information (i.e. employees and vacancies) collected for the current and past manpower surveys was used to project the manpower trend of the industries in the next four years. (Please refer to *Appendix 8* for more details). The respective manpower projections from 2025 to 2028 were included as follows.

Table 5.3 Manpower Trend for 2025-2028

Year	Professional/Technologist	Technician	Craftsman
2024	19,169	37,795	8,560
2025	19,794 (3.3%)	37,871 (0.2%)	8,685 (1.5%)
2026	20,382 (3.0%)	37,868 (0.0%)	8,641 (-0.5%)
2027	20,933 (2.7%)	37,866 (0.0%)	8,607 (-0.4%)
2028	21,448 (2.5%)	37,864 (0.0%)	8,582 (-0.3%)

Notes: (1) Percentage in the bracket refer to the percentage of annual change of manpower over the preceding year.
(2) Retail sector was excluded in the figures.

Annual Training Requirement

5.35 The Annual Additional Manpower Requirement has taken into account the (i) projected manpower trend and (ii) wastage rate (i.e. percentage of employees leaving the industries permanently on annual basis). The Training Board agreed on the wastage rate of 2.0%, 2.5% and 3.0% for the job levels of Professional/Technologist, Technician, and Craftsman respectively. The estimated Annual Additional Manpower Requirement from 2025 to 2028 is shown in Table 5.4 below.

Table 5.4 Estimated Annual Additional Manpower Requirement from 2025 to 2028

Job Level	Wastage rate	Additional Annual Manpower Requirement		
		Manpower trend (a)	Industry leavers (b)	Total (a) + (b)
Professional/ Technologist	2.0%	570	406	976
Technician	2.5%	17	946	963
Craftsman	3.0%	6	257	263

Note: Retail sector was excluded in the figures

6 Recommendations

Government

Elevated Global Branding Initiative

6.1 The government is recommended to launch a comprehensive global branding campaign. This initiative would showcase Hong Kong's strengths in high-growth sectors, such as Artificial Intelligence and Smart City technologies within the electronics and telecommunications industries. A key strategy would involve engaging directly with important international markets and strategic investors through targeted outreach. To enhance investor acquisition and market penetration, the government is encouraged to organise high-level roadshows led by officials and industry leaders in major financial hubs abroad. These roadshows could effectively present Hong Kong's investment opportunities, highlight success stories from local companies, and facilitate networking sessions with potential investors.

Strategic Talent Development Fund with Industry Alignment

6.2 It is recommended to establish a strategic talent development fund to align with the future needs of the electronics and telecommunications industries. This fund should focus on addressing the skills gaps identified by industry leaders, particularly in areas such as advanced AI, quantum computing, and cybersecurity for IoT devices. Furthermore, creating programmes that facilitate job placements and mentorship opportunities would be beneficial. The emphasis should be on upskilling and reskilling the current workforce while also attracting new talent. This approach will help ensure that the industries are well-prepared for future demands.

Agile Regulatory Sandbox for Emerging Technologies

6.3 To foster innovation and maintain Hong Kong's competitive edge in the rapidly evolving technology landscape, it is recommended that the government establish an agile regulatory sandbox. This sandbox would provide a controlled environment for companies to experiment with and implement emerging technologies, such as artificial intelligence (AI), 5G applications, and the Internet of Things (IoT), without being limited by existing regulatory frameworks that may not be suitable for these innovations. The Agile Regulatory Sandbox would offer a valuable platform for companies to test and refine their innovative solutions, while also allowing regulators to better understand the potential benefits and risks associated with emerging technologies. This approach will facilitate the development of evidence-based regulatory frameworks that promote innovation and protect consumers, positioning Hong Kong as a leading hub for technological advancement.

Educational Institution

Curriculum Modernisation

6.4 Educational institutions are encouraged to adapt their curriculum to align with the rapidly evolving technology landscape. This includes integrating emerging technologies such as 5G, the Internet of Things, cybersecurity, embedded systems, telecommunications protocols, and sustainable technologies into core curriculum across various disciplines. This approach will ensure that graduates have a foundational understanding, regardless of their specialisation. Moreover, strengthening STEM education at all levels is essential, with an emphasis on hands-on learning, problem-solving skills, and critical thinking. Additionally, promoting interdisciplinary programmes that combine technology with fields like business and law will better prepare graduates to navigate the complexities of the industries and effectively apply technological solutions in regulatory and market contexts, enhancing their employability. Finally, incorporating courses focused on entrepreneurship will foster a culture of innovation, encouraging students to develop their own technology-based startups. This is vital for the growth of the electronics and telecommunications industries, as new startups are often key drivers of innovation.

Fostering Innovation and Research

6.5 Educational institutions are encouraged to take a proactive approach to cultivate innovation and research. It is essential for them to actively seek government funding to support research and development in key technology areas, securing the resources necessary for cutting-edge advancements. Institutions can establish technology incubators and accelerators to provide mentorship and resources for startups initiated by students and faculty. By promoting collaboration with industry through joint research projects, internships, and guest lectures, they can ensure that academic research remains relevant while offering students valuable practical experience. Implementing these strategies will significantly contribute to the advancement of Hong Kong's electronics and telecommunications industries.

Industry Collaboration and Partnerships

6.6 Educational institutions are recommended to sustain and strengthen robust partnerships with industry to ensure that education remains relevant and effectively prepares students for the workforce. This includes developing internship programmes with technology companies that provide real-world experience and familiarise students with the latest industry trends. Proactive engagement with industry can offer invaluable guidance on curriculum development, research priorities, and the evolving needs of the sector. Additionally, launching more continuing education programmes for professionals in the technology field will help them stay abreast of emerging technologies and trends. Finally, fostering a culture of

lifelong learning through online courses, workshops, and other resources will empower individuals to continuously enhance their skills, ensuring they remain competitive in the dynamic job market.

Employers

Strategic Talent Development

6.7 To maintain a competitive advantage in Hong Kong's rapidly evolving technology landscape, particularly within the electronics and telecommunications sectors, it is essential for employers to prioritise specialised training for their employees. Focusing on advanced semiconductor design, 5G technologies, the Internet of Things (IoT), and cybersecurity for telecom networks is crucial. Investing in these critical skills not only equips the workforce with the expertise necessary to drive innovation but also enhances their ability to adapt to emerging industry trends and challenges. By fostering a culture of continuous learning and development, organisations can empower their employees to stay ahead of technological advancements, ensuring they remain leaders in the industries. This strategic investment in human capital will ultimately result in improved operational efficiencies, increased competitiveness, and a strengthened position in the global market.

Attracting and Retaining Specialised Expertise

6.8 Attracting and securing top talent is best achieved through a strategic and targeted recruitment approach. Companies are encouraged to proactively seek professionals with specialised expertise in the electronics and telecommunications industries. Offering competitive compensation packages, along with opportunities for professional development and career advancement, is advisable. Establishing strong partnerships with universities is also recommended, as these collaborations can facilitate access to a pipeline of emerging talent. Furthermore, providing exposure to global projects may enhance the organisation's appeal and enrich the professional experience of engineers and researchers. By fostering an environment that emphasises innovation and collaboration, companies can effectively attract and retain highly skilled individuals, thereby reinforcing their competitive edge in the industries.

Enhancing Career Pathways Through Attachments and Partnerships

6.9 Industrial attachment opportunities enable students to experience the challenges of the real workplace. Employers should make good use of the attachment to find candidates with the right set of skills for future full-time jobs. On top of attachment opportunities, employers can help promote the industries to secondary school students through the Business-School Partnership Programme (BSPP). The BSPP is administered by the Education Bureau with the

aim of promoting better cooperation and closer alliances between the business sector and schools. Through the activities offered by the business sector such as workplace visits and career talks, students will be able to know about the different principal jobs of the electronics and telecommunications industries and understand the requirements of employers, enhance soft skills, develop the right work attitude and values. On the other hand, employers should collaborate with training institutions to arrange career and industrial talks which are an excellent way to get potential new talent.

Employees

Proactive Skill Development

6.10 Employees should take proactive steps to enhance their professional development by creating a personalised learning plan. This plan should identify key skills needed in the electronics and telecommunications industries, such as proficiency in emerging technologies (e.g., AI, IoT, cybersecurity). Engaging in networking opportunities, attending industry conferences, and participating in online courses can further expand knowledge and connections. Seeking mentorship from experienced professionals can also provide valuable insights and guidance. By actively pursuing these development opportunities, employees can enhance their skill sets, improve career prospects, and remain competitive in a rapidly changing job market.

Embrace Collaborative Innovation

6.11 Employees should actively engage in collaborative innovation by participating in cross-functional teams and projects. This involves sharing knowledge and expertise with colleagues from different departments, such as engineering, marketing, and customer service. By fostering a culture of collaboration, employees can contribute to the development of innovative solutions that address industry challenges and enhance product offerings. Additionally, participating in industry forums, workshops, and networking events can help employees stay informed about emerging trends and best practices, further driving the advancement of the electronics and telecommunications industries.

Building a Personal Brand

6.12 Employees should focus on building a personal brand that highlights their unique skills, experiences, and values within the electronics and telecommunications industries. This can be achieved by creating a professional online presence through platforms like LinkedIn, where they can showcase their achievements, share relevant content, and engage with industry discussions. Additionally, employees should consider writing articles or blogs on topics of

interest, participating in webinars, or speaking at industry events. By actively promoting their expertise and contributions, employees can enhance their visibility, attract new opportunities, and establish themselves as thought leaders in their field.

**Membership of the Electronics and Telecommunications Training Board
(as at 1 April 2024)**

Chairman

Mr Christopher TSE Hung-keung

Members

Ms Jessie CHAN Man-ching

Mr CHEUNG Chi-kin

Ir Henry CHEUNG Nin-sang

Dr Eddy CHIU

Mr Ricky CHOI Wai-kit

Ir KAN Kin-man

Mr Alvin LEE Wai-yip

Ir Arthur LEE Kam-hung

Ir LEUNG Ming-yan

Mr NG Chun-lun

Mr Peter NG Hon-yu

Dr Alfred NG Man-cheuk

Mr Steven PUN Chi-ho

Mr Rex SHAM Pui-sum

Ir Samson SUEN Kwok-wai

Mr Elvis WONG Yuen-keung

Mr Nelson WOO Young

Mr Rambo YU Wah-keung

Director of Electrical and Mechanical Services (or his / her representative)

Director-General of Communications (or his / her representative)

Director-General of Trade and Industry (or his / her representative)

Executive Director of the Vocational Training Council (or his representative)

Secretary

Dr Jimmy CHENG Chi-ho

**Membership of the Electronics and Telecommunications Training Board
(as at 1 April 2025)**

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Dr Alfred NG Man-cheuk

Members

Mr Eddy CHAN Shu-pang

Ir Henry CHEUNG Nin-sang

Mr Rex CHING Chit

Dr Eddy CHIU

Mr Ricky CHOI Wai-kit

Ir KAN Kin-man

Mr Alvin LEE Wai-yip

Mr Stephen LUI Chi-wan

Mr Herbert LUN Tat-kei

Mr NG Chun-lun

Mr Steven PUN Chi-ho

Mr Rex SHAM Pui-sum

Ir Samson SUEN Kwok-wai

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Mr Oscar WONG Ka-yu

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Mr Rambo YU Wah-keung

Director of Electrical and Mechanical Services (or his / her representative)

Director-General of Communications (or his / her representative)

Director-General of Trade and Industry (or his / her representative)

Executive Director of the Vocational Training Council (or his representative)

Secretary

Ms Venus WONG Szee-ving

Terms of Reference
Electronics and Telecommunications Training Board

1. To determine the manpower demand of the industry, including the collection and analysis of relevant manpower and student/trainee statistics and information on socio-economic, technological and labour market developments.
2. To assess and review whether the manpower supply for the industry matches with the manpower demand.
3. To recommend to the Vocational Training Council (the Council) the development of vocational and professional education and training (VPET) facilities to meet the assessed manpower demand.
4. To advise the Council on the strategic development and quality assurance of its programmes in the relevant disciplines.
5. To prescribe job specifications for the principal jobs in the industry defining the skills and knowledge and advise on relevant training programme specifying the time a trainee needs to spend on each skill element.
6. To tender advice in respect of skill assessments, trade tests and certification, if appropriate, for in-service workers, apprentices and trainees, for the purpose of ascertaining that the specified skill standards have been attained.
7. To advise on the conduct of skill competitions in key trades in the industry for the promotion of VPET as well as participation in international competitions.
8. To liaise with relevant bodies, including employers, employers' associations, trade unions, professional institutions, training and educational institutions and government departments, on matters pertaining to the development and promotion of VPET in the industry.
9. To organise seminars/conferences/symposia on VPET for the industry.
10. To advise on the publicity relating to the activities of the Training Board and relevant VPET programmes of the Council.
11. To submit to the Council an annual report on the Training Board's work and its recommendations on the strategies for programmes in the relevant disciplines.
12. To undertake any other functions delegated by the Council in accordance with Section 7 of the Vocational Training Council Ordinance.

Membership of the Working Party on Manpower Survey

Convener

Dr Alfred NG Man-cheuk

Members

Ms Jessie CHAN Man-ching

Ir Henry CHEUNG Nin-sang

Ir KAN Kin-man

Mr Alvin LEE Wai-yip

Mr NG Chun-lun

Mr Peter NG Hon-yu

Mr Steven PUN Chi-ho

Mr Rex SHAM Pui-sum

Mr Christopher TSE Hung-keung

Mr Basil WAI Siu-bong

Mr Nelson WOO Young

Mr Rambo YU Wah-keung

Mr CHAN Hor-yin

Dr George LAU Hing-keung

Dr LAM Tze-shan

Ir Billy CHOW Man-hon

Ir LAM Ka-fai

Mr Alex HON Sze-hung

Secretary

Dr Jimmy CHENG Chi-ho

Ms Venus WONG Szee-ving

Definition of Terms

Full-time employees	“Full-time employees” refers to persons who works at least 18 hours per week for four weeks or more and are under the payroll of the sampled company / company for the specified job, disregarding whether the full-time employees are deployed to work in other places (including the mainland of China).
Vacancies	“Vacancies” refers to those unfilled, immediately available job openings for which the company is actively trying to recruit personnel at the time of survey.
Vacancy rate	“Vacancy rate” refers to Vacancies as a percentage of the total number of full-time employees and Vacancies.
Turnover rate	“Turnover rate” refers to the number of full-time employees left as a percentage of the total number of full-time employees and Vacancies.
Average Monthly remuneration package	“Average Monthly remuneration package” refers to the average monthly remuneration package during the past 12 months before enumeration, including basic wages, regular overtime pays, cost of living allowance, meal allowance, housing allowance, travel allowance, commission and bonus etc. It is an average figure among full-time employees engaging in the same principal job.
Postgraduate degree	“Postgraduate degree” refers to a higher degree(s) (e.g. master degree) offered by local or non-local education institutions, or equivalent.
First Degree	“First degree” refers to the first degree(s) offered by local or non-local education institutions, or equivalent.
Sub-degree	“Sub-degree” refers to the Associate Degree, Higher Diploma, Professional Diploma, Higher Certificate, Endorsement Certificate, Associateship or equivalent programmes offered by local or non-local institutions.

Diploma / Certificate	“Diploma / Certificate” refers to technical and vocational education programmes, including Diploma / Certificate courses, Diploma of Foundation Studies, Diploma of Vocational Education and programmes at the craft level or equivalent.
Secondary 4 to 7	“Secondary 4 to 7” refers to the education programmes under the Hong Kong Certificate of Education Examination (HKCEE), the Hong Kong Diploma of Secondary Education (HKDSE) Examination, Diploma of Applied Education (DAE), or equivalent.
Secondary 3 or below	“Secondary 3 or below” refers to secondary 3 or below, or equivalent.

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Our Reference 本局檔號 MPS 2024

Your Reference 來函檔號



13 May 2024

Dear Sir/Madam,

**2024 Manpower Survey of the
Electronics and Telecommunications Industries**

The Electronics and Telecommunications Training Board (the Training Board) of the Vocational Training Council (VTC), is responsible for matters pertaining to manpower training in the industry. To collect the latest manpower information for formulating recommendations on future manpower training, the Training Board will conduct the above survey from **June to July 2024**. I am writing to enlist your kind assistance by providing the relevant information to the survey and your co-operation would be much appreciated.

I enclose the following documents for your reference and completion:

- (a) The Questionnaire;
- (b) Explanatory Notes (Appendix A)
- (c) Job Descriptions for Principal Jobs (Appendix B); and
- (d) Description for Skills (Appendix C)

The VTC has appointed **MOV Data Collection Center Ltd (MOV)** to conduct the above survey. During the survey period, the enumerator of **MOV Data Collection Center Ltd (MOV)** will contact your company for the survey and answer the questions you may have. If necessary, visit will be made to your company to assist in completing and collecting the questionnaire. Alternatively, you may return the copy of the completed questionnaire to **MOV Data Collection Center Ltd (MOV)** via fax (3900 1122) or email (vtc@mov.com.hk).

I wish to assure you that the information provided will be handled **in strict confidence** and published on an aggregate basis without reference to individual companies.

The salient findings and the survey report will be uploaded to the Manpower Survey Information System of the VTC after completion of the survey. The link is as follows:

<https://manpower-survey.vtc.edu.hk/>



If you have any queries, please feel free to contact the following hotline during 9:30 a.m. to 6:00 p.m. from Monday to Friday :

- ✧ For matters regarding completion and return of questionnaire(s), please contact **Ms. Polly CHAN of MOV** on 3900 1176.
- ✧ In case you want to approach the VTC directly, please contact **Mr. Boris TAM of the VTC Manpower Survey (Statistical Team)** on 3907 6865.

Yours faithfully,


Mr Christopher TSE Hung-keung
Chairman

CONFIDENTIAL
WHEN ENTERED WITH DATA

填入數據後即成
機密文件



VOCATIONAL TRAINING COUNCIL
職業訓練局

THE 2024 MANPOWER SURVEY OF THE ELECTRONICS AND TELECOMMUNICATIONS INDUSTRIES
電子及電訊業2024年人力調查

The 2024 Manpower Survey of the Electronics and Telecommunications Industries (EC) aims at collecting manpower information of the industries concerned for formulating recommendations on future manpower training. Please kindly provide the information of your establishment as at **1st June 2024** by answering the questionnaire. Thank you.

電子及電訊業2024年人力調查旨在蒐集業內人力情況的最新資料，並按此為未來人力訓練制訂適當建議。懇請貴機構根據**2024年6月1日**的人力情況填寫此問卷。多謝合作。

Establishment Information
機構資料

(For official use)
Industry Code _____

TOTAL NO. OF PERSONS ENGAGED (in Hong Kong) : _____
(於香港招聘的) 僱員總人數

NATURE OF BUSINESS in Hong Kong:
於香港的主要業務性質

- | | |
|---|---|
| <input type="checkbox"/> Manufacturing (Incl. companies having manufacturing operations in Hong Kong; or companies relocated the major manufacturing operations to their own factories in Mainland or overseas regions while maintaining their office or certain operations in Hong Kong; or companies manufacturing their own or clients' branded products through OEM / ODM)
製造 (包括於香港進行生產的公司; 或已遷移主要生產工序至內地或海外地區的自家廠房, 但仍保留辦公室或部分工序於香港的公司; 或透過代工廠生產自家或客戶品牌產品的公司) | <input type="checkbox"/> Engineering Services (e.g., Installation, maintenance and testing of telecommunication equipment, anti-burglar system, intercommunication system, and electronic equipment etc.)
工程服務 (例如: 電訊設備、防盜系統、閉路通訊系統、電子設備等的安裝、保養及測試) |
| <input type="checkbox"/> Telecommunications
電訊 | <input type="checkbox"/> Information Technology Services
資訊科技服務 |
| <input type="checkbox"/> Import and Export Trading 進出口貿易
<input type="checkbox"/> Trading-related 貿易相關
<input type="checkbox"/> Manufacturing-related (Companies operate in Hong Kong as import and export firms, and subcontract manufacturing processes to contractors or business partners in the Mainland or overseas regions. These companies can also provide manufacturing-related technical support services, e.g. product design, sample and mould making, and production planning, to the associated manufacturing firms in the Mainland.)
製造相關 (以進出口貿易公司形式在香港營運, 並透過分判製造工序予內地或海外地區的分判商或合作夥伴。這些公司亦可為在內地的有聯繫生產機構提供與製造業相關的技術支援服務, 例如產品設計、樣本及工模製造, 以及生產籌劃。) | |
| <input type="checkbox"/> Wholesale
批發 | <input type="checkbox"/> Retail
零售 |
| <input type="checkbox"/> Design Houses, R&D Institutions, Universities or Government
設計公司、研發機構、大學或相關政府部門 | <input type="checkbox"/> Public Utilities or Transportation Services
公用事業 或 交通運輸 |
| <input type="checkbox"/> Others, please specify:
其他, 請註明: _____ | |

- Please tick the box, if your establishment is / was an **Electronics and Telecommunications related Start-up Enterprise** funded by the "Hong Kong Science and Technology Parks" (HKSTP), "Hong Kong Cyberport", or other local "Start-ups Incubation Programmes or Funding Schemes".
如 貴機構 是 / 曾經是 "香港科技園公司"、"香港數碼港" 或其他本地 "初創企業培育計劃或資助計劃" 資助的 **電子及電訊相關初創企業**, 請在格內填上 "✓"號。

Please specify Year of Establishment : _____ ; and Name of Major Funding Body : _____
請註明 貴機構成立年份 及 主要資助機構的名稱

Serial No.

Details of Contact Person*

聯絡人資料*

NAME OF PERSON TO CONTACT: _____
聯絡人姓名

POSITION: _____
職位

TEL. NO. : _____ - _____
電話

FAX NO. : _____
圖文傳真

E-MAIL : _____
電郵

** The information provided will be used for the purpose of this and subsequent manpower surveys.
所提供資料將用作是次及日後人力調查之用。*

Part I – Manpower Information

第一部份 – 人力情況

Please complete columns 'B' to 'E' of the questionnaire according to the list of principal jobs by referring to Appendix B for the job description of individual jobs.

請根據列表中的主要職務，並參考附錄B有關各種職務的工作說明來填寫表內各欄‘B’至‘E’。

Principal Jobs (Full-time employees recruited in Hong Kong) 主要職務 (於香港招聘的全職僱員)

Job Code 職位編號 e.g.: 例子	(A) Principal Job 主要職務 (See Appendix B) (參閱附錄 B)	(B) No. of Employees as at Survey Reference Date (Excl. trainees [#]) 在統計日期的 僱員人數 (受訓者 [#] 除外)	(C) No. of Trainees [#] as at Survey Reference Date 在統計日期的 受訓者 [#] 人數	(D) No. of Vacancies as at Survey Reference Date 在統計日期的 空缺額	(E) Average Monthly Remuneration Package of Employees (Excl. trainees [#]) 僱員之每月 平均薪酬 (受訓者 [#] 除外)
	Code 編號 1 \$10,000 or below 或以下 2 \$10,001 - \$15,000 3 \$15,001 - \$20,000 4 \$20,001 - \$25,000 5 \$25,001 - \$30,000 6 \$30,001 - \$50,000 7 \$50,001 or above 或以上				
	Please enter a zero '0' in the box if no employees/ trainees/vacancies. 如沒有僱員/受訓者/空缺，請在方格內 填入 '0'。				
	Job Title A (3 employees, 1 Trainee and 2 vacancies) 職位甲(3名僱員, 1名受訓者及2個空缺)	3	1	2	6
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士/技師級					
A professional/technologist is a person who has the qualification and experience equivalent to that required for corporate membership of a professional institution. He/She should be competent in analysing and solving a wide range of technical problems. Furthermore, he/she should be able to assume personal responsibility for the development and application of engineering principles, exercise original thought and judgment, keep abreast of technology, apply the latest techniques and supervise/develop his/her subordinates. 專業人士/技師須具備相當於有關專業學會正式會員所需的資歷及經驗，並能分析及解決各類技術上的問題。此外，亦須負責發展及應用工程原理，具創見和判斷力；與科技發展並進，應用最新技術，以及督導和培訓下屬。					
101	Electronics Engineer ; Computer Engineer 電子工程師；電腦工程師 (Incl. Electronics Product / Project Engineer) (包括：電子產品/項目工程師)				
102	Telecommunications Engineer 電訊工程師 (Incl. Network Engineer / Mobile Network Engineer) (包括：網路/行動網路工程師)				
103	Electronics Sales / Support / Service Engineer 電子銷售/技術支援/服務工程師				
104	Electrical Engineer 電機工程師				
105	Mechanical Engineer / Designer 機械工程師/設計師				
106	Manufacturing Engineer ; Quality Assurance / Control Engineer 製造工程師；品質保證/控制工程師 (Incl. Industrial Engineer) (包括：工業工程師)				
107	Test Engineer (Electronic Product) 測試工程師 (電子產品)				
108	Chemical Engineer 化學工程師				
109	Product Designer ; Packaging / Graphic Designer 產品設計師；包裝/平面設計師				
110	Systems Analyst / Engineer 系統分析師/工程師 (Incl. Analyst Programmer) (包括：分析程式員)				

[#] "Trainees" refer to those employees undergoing any form of training, and include trainees and apprentices under a contract of apprenticeship.
「受訓者」指正在接受各種形式訓練的僱員，包括受訓者及根據學徒合約受聘的學徒。

Job Code 職位編號 e.g. 例子	(A) Principal Job 主要職務 (See Appendix B) (參閱附錄 B)	(B) No. of Employees as at Survey Reference Date (Excl. trainees [#]) 在統計日期的 僱員人數 (受訓者 [#] 除外)	(C) No. of Trainees [#] as at Survey Reference Date 在統計日期的 受訓者 [#] 人數	(D) No. of Vacancies as at Survey Reference Date 在統計日期的 空缺額	(E) Average Monthly Remuneration Package of Employees (Excl. trainees [#]) 僱員之每月 平均薪酬 (受訓者 [#] 除外)
	Code 編號 1 \$10,000 or below 或以下 2 \$10,001 - \$15,000 3 \$15,001 - \$20,000 4 \$20,001 - \$25,000 5 \$25,001 - \$30,000 6 \$30,001 - \$50,000 7 \$50,001 or above 或以上				
Please enter a zero '0' in the box if no employees/ trainees/vacancies. 如沒有僱員/受訓者/空缺，請在方格內 填入 '0'。					
	Job Title A (3 employees, 1 Trainee and 2 vacancies) 職位甲(3名僱員, 1名受訓者及2個空缺)	3	1	2	6
PROFESSIONAL/TECHNOLOGIST LEVEL (con't) 專業人士/技師級 (續)					
111	Software Developer / Engineer 軟件開發員/工程師 (Incl. Embedded Software / Firmware Engineer) (包括：嵌入式軟件/韌體工程師)				
112	UI / UX Designer 用戶界面/用戶體驗設計師				
113	Artificial Intelligence (AI) Engineer ; Machine Learning (ML) Engineer 人工智能工程師；機器學習工程師				
114	Internet of Things (IoT) Developer / Engineer 物聯網開發員/工程師				
115	Data Engineer ; Data Analyst ; Data Scientist 數據工程師；數據分析員；數據科學家				
116	Robotic System / Automation Engineer 機器人系統/自動化工程師				
117	Information Security / Cybersecurity Specialist 資訊科技保安/網絡安全專家				
TECHNICIAN LEVEL 技術員級					
A technician is a person who occupies a position between the professional/ technologist and the craftsman. His/Her education, training and practical experience enable him/her to apply proven techniques and procedures to carry out technical tasks, normally under the guidance of a technologist. 技術員的職級介乎專業人士/技師與技工之間，須具備相當學歷、工作經驗及曾接受訓練，一般可在專業人士/技師的督導下，運用已確立的技術和方法完成工作。					
201	Electronics Technician 電子技術員 (Incl. Maintenance Technician ; Service Technician ; Computer Technician ; Audio-Visual Technician ; Electronic Support Technician) (包括：保養技術員；維修技術員；電腦技術員；影音技術員；電子支援技術員)				
202	Telecommunications Technician 電訊技術員 (Incl. Network Technician) (包括：網絡技術員)				
203	Mechanical Technician 機械技術員				
204	Manufacturing Technician ; Quality Assurance / Control Technician 製造技術員；品質保證/控制技術員				
205	Draughtsman 繪圖員				
206	Electronics Testing Technician 電子測試技術員				

"Trainees" refer to those employees undergoing any form of training, and include trainees and apprentices under a contract of apprenticeship.
「受訓者」指正在接受各種形式訓練的僱員，包括受訓者及根據學徒合約受聘的學徒。

Job Code 職位 編號 e.g. 例子	(A) Principal Job 主要職務 (See Appendix B) (參閱附錄 B)	(B) No. of Employees as at Survey Reference Date (Excl. trainees [#]) 在統計日期的 僱員人數 (受訓者 [#] 除外)	(C) No. of Trainees [#] as at Survey Reference Date 在統計日期的 受訓者 [#] 人數	(D) No. of Vacancies as at Survey Reference Date 在統計日期的 空缺額	(E) Average Monthly Remuneration Package of Employees (Excl. trainees [#]) 僱員之每月 平均薪酬 (受訓者 [#] 除外)
	Code 編號 1 \$10,000 or below 或以下 2 \$10,001 - \$15,000 3 \$15,001 - \$20,000 4 \$20,001 - \$25,000 5 \$25,001 - \$30,000 6 \$30,001 - \$50,000 7 \$50,001 or above 或以上				
Please enter a zero '0' in the box if no employees/ trainees/vacancies. 如沒有僱員/受訓者/空缺，請在方格內 填入 '0'。					
	Job Title A (3 employees, 1 Trainee and 2 vacancies) 職位甲(3名僱員, 1名受訓者及2個空缺)	3	1	2	6
TECHNICIAN LEVEL (con't) 技術員級(續)					
207	Supervisor ; Foreman ; Leader 監督；管工；組長 (Incl. Junior Supervisor) 包括：初級監督				
208	Programmer ; Software Technician 程式編製員；軟件技術員				
209	Web Developer / Designer ; Computer Game Designer 網站開發員／設計員；電腦遊戲設計員				
210	Sales Technician 推銷技術員 (Incl. Electronic Sales Technician ; Electronic Merchandising Technician) (包括：電子推銷技術員；電子採購技術員)				
CRAFTSMAN LEVEL 技工級					
A craftsman is a skilled worker who is able to apply his/her skills to a wide range of jobs within his/her trade, with minimum direction and supervision. A craftsman possesses not only practical skills but also related theoretical knowledge which enables him/her to adapt himself/herself to new technologies. 技工是指熟練工人，能在有限度的指示及督導下，應用各種技能執行個別行業的職務。技工除須具備實際技能外，亦需有相關的理論知識，以便能適應日新月異的科技發展。					
301	High Speed Data Network & Wireless Data System Integrator ; Cable Joiner 高速資訊網絡及無線系統技工；電纜連接技 工				
302	Electronics Craftsman 電子技工 (Incl. Audio Visual Assistant ; Electronic Servicing Assistant ; Electronic System Installation Assistant ; Telecommunications and Surveillance Technical Assistant) (包括：影音助理；電子維修助理；電子系統安裝助 理；電訊及監控技術助理)				
303	Electrician 電氣技工				
304	Mechanic (Maintenance Mechanic / Fitter, Machinist, Mould / Tool and Die Maker and Repairer) 機械工（保養／裝配打磨工、機床工、工具／ 工模製造及修理工）				

"Trainees" refer to those employees undergoing any form of training, and include trainees and apprentices under a contract of apprenticeship.

「受訓者」指正在接受各種形式訓練的僱員，包括受訓者及根據學徒合約受聘的學徒。

Job Code 職位 編號	(A) Principal Job 主要職務 (See Appendix B) (參閱附錄 B)	(B)	(C)	(D)	(E)
		No. of Employees as at Survey Reference Date (Excl. trainees#) 在統計日期的 僱員人數 (受訓者#除外)	No. of Trainees# as at Survey Reference Date 在統計日期的 受訓者#人數	No. of Vacancies as at Survey Reference Date 在統計日期的 空缺額	Average Monthly Remuneration Package of Employees (Excl. trainees#) 僱員之每月 平均薪酬 (受訓者#除外)
					Code 編號 1 \$10,000 or below 或以下 2 \$10,001 - \$15,000 3 \$15,001 - \$20,000 4 \$20,001 - \$25,000 5 \$25,001 - \$30,000 6 \$30,001 - \$50,000 7 \$50,001 or above 或以上
		Please enter a zero '0' in the box if no employees/ trainees/vacancies. 如沒有僱員/受訓者/空缺，請在方格內 填入 '0'。			
e.g: 例子	Job Title A (3 employees, 1 Trainee and 2 vacancies) 職位甲(3名僱員, 1名受訓者及2個空缺)	3	1	2	6
OPERATIVE LEVEL 操作工級					
An operative is a person who performs tasks in the assembly of products in accordance with predetermined job instructions or operates machine(s) which have been set up by other persons. 操作工是指那些能按照既定的工作指示裝配配件使成製成品，或操作已由他人校妥的一種或多種機床之工人。					
401	Operator ; Quality Assurance / Control Operator ; General Worker 操作工；品質保證／控制工；雜工 Incl. Assembler, Soldering Worker, Aligner / Tester) (包括：裝配工、焊錫工、校整／測試工				
OTHER RELATED STAFF 其他相關員工					
For Official Use					

"Trainees" refer to those employees undergoing any form of training, and include trainees and apprentices under a contract of apprenticeship.

「受訓者」指正在接受各種形式訓練的僱員，包括受訓者及根據學徒合約受聘的學徒。

Part II
第二部份

Interns
實習生

1. Please indicate the number of interns* employed in your establishment in the past 12 months by their principal job description. (You could leave it blank if there is no intern in your establishment.)
請按 貴機構實習生的主要職務填寫在過去十二個月內的實習生*的數目。(如 貴機構沒有實習生，則不需回答此問題)

Principal Job Description 主要職務	No. of interns* 實習生*人數
Example: Assists in marketing activities 例子：協助推廣市場活動	2

Note:
* Refer to student employees who (i) are attending full-time accredited programmes being provided by local education institutions specified in the Minimum Wage Ordinance; or (ii) are residents in Hong Kong and enrolled in full-time education programmes for non-local academic qualification at degree or higher level.
* 指 (i) 正修讀《最低工資條例》指明的本地教育機構提供的全日制經評審課程 或 (ii) 居於香港，並修讀學位或更高程度的非本地學術資格的全日制教育課程的學生僱員。

Expected Change in Future
未來變化

2. When comparing with the current situation, please indicate your views on the expected change of the following in the next 12 months. (Please tick in the box as appropriate)
對於現在，請指出 貴機構預計在未來十二個月於下列之預期變化。(請在適當的格內填上“✓”號)

(i) Business volume
業務額

(a) Better
較佳

(b) Stable
穩定

(c) Worsen
較差

(d) Uncertain
不肯定

(ii) Number of Full-time employees
全職員工數目

(a) Increase
增加

(b) Same
不變

(c) Decrease
減少

Please indicate the reasons leading to **“better” or “worse”**
請說明引起較佳或較差的原因

3. Other than the principal jobs in Part I, please indicate the **new** job position(s) that will be introduced in the future (if any) to meet the emerging trends of the industry.
除第一部分所列出的主要職務外，請指出 貴機構未來將會引入的新職位(如有)，以配合行業的新興趨勢。

New Job title 新職位名稱	Job Descriptions 職位描述

Current Employees

現職僱員

4. Please indicate the age range distribution of **Full-time employees**.

請指出 貴機構全職僱員的年齡分布。

30 or below 30 歲或以下	31 – 45 31 至 45 歲	46 – 60 46 至 60 歲	61 or above 61 歲或以上
%	%	%	%
Please specify the average retirement age of full-time employees 請註明僱員平均的退休年齡： _____			

New Recruitment

新聘僱員

5. Please state the number of full-time employees who were **newly recruited** in the **past 12 months**.

(If there is no recruitment, please fill in “0” in the box)

請列出 貴機構在過去十二個月內新招聘的全職僱員人數。(如沒有招聘，請在方框內填上“0”)

	Professional/ Technologist Level 專業人士／技師級	Technician Level 技術員級	Craftsman Level 技工級	Operative Level 操作工級
(a) Total new recruits 新招聘總人數				
(b) Number of new recruits with the experience in electronics and telecommunications services 新招聘僱員中，具電子及電訊業的相關經驗				

Employees Leaving the Establishment

僱員離職

6. Please state the number of full-time employees who **left** in the **past 12 months**.

(If there are no employees left, please fill in “0” in the box)

請列出 貴機構在過去十二個月內離職的全職僱員人數。(如沒有員工離職，請在方框內填上“0”)

(a) Professional/Technologist Level
專業人士／技師級

(b) Technician Level
技術員級

(c) Craftsman Level
技工級

(d) Operative Level
操作工級

7. Please state the number of full-time employees who **will be retiring** in the **next 12 months**.

(If there are no employees retired, please fill in “0” in the box)

請列出 貴機構預計在未來十二個月內退休的全職僱員人數。(如沒員工退休，請在方框內填上“0”)

(a) Professional/Technologist Level
專業人士／技師級

(b) Technician Level
技術員級

(c) Craftsman Level
技工級

(d) Operative Level
操作工級

Recruitment Difficulties

招聘困難

8. Please indicate the difficulties encountered in the recruitment of full-time employees in your establishment in the past 12 months.
請指出 貴機構在過去十二個月招聘全職僱員時所遇到的困難。

<u>Reasons</u> 原因	Professional/ Technologist Level 專業人士／技師級	Technician Level 技術員級	Craftsman Level 技工級	Operative Level 操作工級
(a) No recruitment was taken place 沒有招聘				
(i) Lack of suitable candidates in the market (incl. due to long-term recruitment failure) 市場上缺乏適合的求職者 (包括因長期未能成功招聘)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) No demand for such level of staff in the establishment 機構對相關職級員工沒有需求	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Recruitment took place and did not encounter difficulties 有招聘，但 沒有遇到 招聘困難	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Recruitment was taken place and the difficulties encountered were: (You may tick “✓” one or more options.) 有招聘，所遇到的困難是：（可剔“✓”選多於一 項。）				
(i) Lack of candidates with relevant experience 缺乏具相關經驗的求職者	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) Lack of candidates with relevant training / academic or professional qualifications in the related disciplines 缺乏具相關訓練／學歷或專業資格的求職者	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) Terms of employment could not meet candidates’ expectations 聘用條件未能符合求職者的要求	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) Working conditions could not meet candidates’ expectations (e.g. shift work, outdoor work, physically demanding work) 工作條件未能符合求職者的要求（例如：輪 班工作、戶外工作、體力勞動工作）	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(v) Limited career prospects 晉升機會有限	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vi) Alternative offers in the market 市場上有其他選擇	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vii) Others (please specify) 其他（請說明）	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Please indicate the **top three factors** that your establishment considers useful to attract new entrants to the industry.
(Please tick in the box as appropriate)

請指出 貴機構認為最能吸引新入行的**首三個**因素。(請在適當的格內填上“√”號)

- Clear career progression pathway
清晰事業晉升階梯
- Professional image of the industry
行業專業形象
- Attractive remuneration package
吸引的薪酬及條件
- Government subsidised training programmes leading to the relevant qualifications for new entrants
有政府資助相關符合入行資格的培訓課程
- Compliance with safety regulations
符合安全條例
- Application of new technology to smoothen operation and enhance safety
應用新科技令運作暢順及加強安全
- Job security
工作穩定
- Others, please specify :
其他, 請說明

Preferred Level of Education and Years of Experience of Employees

僱員宜有的教育程度及相關年資

10. Please choose preferred Level of Education and Years of Experience of full-time employees.

請選擇**全職僱員宜有**的教育程度及相關年資。

Job level 職級	Professional/ Technologist Level 專業人士/技師級	Technician Level 技術員級	Craftsman Level 技工級	Operative Level 操作工級
(a) Level of Education (Please tick “√” 1 box for each job level) 教育程度 (每職級請剔“√” 選一項)				
(i) Postgraduate Degree 研究生學位	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) First Degree 學士學位	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) Sub-degree (e.g. Higher Diploma) 副學位 (例如高級文憑)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) Diploma/Certificate 文憑/證書	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(v) Secondary 4 to 7 中四至中七	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vi) Secondary 3 or below 中三或以下	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Years of Experience (Please tick “√” 1 box for each job level) 相關年資 (每職級請剔“√” 選一項)				
(i) 10 years or more 十年或以上	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) 6 years to less than 10 years 六年至十年以下	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) 3 years to less than 6 years 三年至六年以下	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) 1 year to less than 3 years 一年至三年以下	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(v) Less than 1 year 一年以下	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vi) No experience 無經驗	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>No such level of staff</i> 沒有相關職級員工				

Training of Employees

僱員的訓練

11. Please choose preferred Training Mode of current full-time employees. (You may tick “✓” one or more options.)
請選擇全職在職僱員宜有的訓練模式。(可剔“✓”選多於一項)

	Professional/ Technologist Level 專業人士／技師級	Technician Level 技術員級	Craftsman Level 技工級	Operative Level 操作工級
(a) Company's in-house training 公司內部培訓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Outside training provider 外間培訓機構	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Graduate traineeship 工科畢業生訓練	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) On-the-job training 在職培訓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Apprenticeship 學徒訓練	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) Professional qualification and certification 專業資格及證書	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) Short course 短期課程	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) Online training 網上培訓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No such level of staff 沒有相關職級員工	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Training Needs

培訓需要

12. By referring to Appendix C, please indicate the skills that should be enhanced for full-time employees.
(You may wish to tick “✓” more than 1 skill for each job level)
請參考附錄 C，並指出 貴機構的全職僱員需要加強培訓的技能。(每職級可剔“✓”選多於一項技能)

Skill 技能	Professional/ Technologist Level 專業人士／技師級	Technician Level 技術員級	Craftsman Level 技工級	Operative Level 操作工級
A. Strategic Planning and Management Skill 策略規劃及管理技巧				
(i) Business Continuity Management 業務持續性管理	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) Quality Management 質量管理	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) Project Management 項目管理	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) Risk Management 風險管理	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(v) Strategy Planning and Implementation 戰略規劃及推行	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vi) Others (please specify): 其他(請說明): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Training Needs (Continued)

培訓需要 (續)

Skill 技能	Professional/ Technologist Level 專業人士／技師級	Technician Level 技術員級	Craftsman Level 技工級	Operative Level 操作工級
B. Technical Skills 技術性技能				
(i) Automation System 自動化系統	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) Smart Manufacturing 智能製造	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) Robotics 機械人	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) Internet of Things (IoT) 物聯網技術	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(v) Artificial Intelligence 人工智能	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vi) Big Data Analytics 大數據分析	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vii) Cloud Technology 雲端技術	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(viii) User Experience / User Interface (UX/UI) Design 用戶體驗／用戶界面設計	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ix) Programming / Software Development 程式編製 / 軟件開發	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(x) Maintenance 保養	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xi) Manufacturing and Operations 製造與運營	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xii) Network Technology Management 網絡技術管理	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xiii) Production Management 生產管理	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xiv) Product Development and Testing 產品開發與測試	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xv) Productivity and Innovation 生產力與創新	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xvi) System Integration 系統整合	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xvii) Information Security 資訊保安	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xviii) Environment, Social and Governance (ESG) 環境、社會和企業管治	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(xix) Others (please specify): 其他 (請說明) : _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Soft Skills 軟性技巧				
(i) Business Network Building 商業網絡建立	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) Organisational Development 組織發展	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) Design Thinking 設計思維	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) Problem-solving 解難技巧	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(v) Leadership / Supervisory Skill 領導 / 督導技巧	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(vi) Others (please specify): 其他 (請說明) : _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>No such level of staff</i> <i>沒有相關職級員工</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End of Questionnaire. Thank You for Your Co-operation.

問卷完，多謝合作。

The 2024 Manpower Survey of the Electronics and Telecommunications Industries
電子及電訊業 2024 年人力調查

Explanatory Notes
附註

Part I
第一部份

1. Principal Jobs - Column 'A'
主要職務——‘A’欄

- (a) Please go through column 'A' and mark those principal jobs applicable to your establishment. For detailed job descriptions for principal jobs, please refer to Appendix B.
請瀏覽‘A’欄，選取適用於貴機構的主要職務。有關詳細的工作說明，請參閱附錄 B。
- (b) Please note that some of the job titles may not be the same as those used in your establishment. Please classify an employee according to his/her major duty and supply the required information if the jobs have similar or related functions.
調查表內部分職稱可能有別於貴機構所採用。請根據僱員的主要職責分類。若員工職責與表內某職務的職責相近，可視作相同職務，請提供所需資料。
- (c) In the event that an employee's duties in your establishment are split between two or more job titles, please use the job title that best describes his/her principal responsibility.
如貴機構有員工身兼多項職責，請選用最能反映其主要職責的職稱。
- (d) Please add in column 'A' titles of any principal jobs not mentioned in job descriptions (Appendix B); briefly describe them with respect of the appropriate job categories.
如貴機構另有電子及電訊業的主要職務未載於工作說明（附錄 B），請一併填入‘A’欄內，並簡述其所屬的職務類別及等級。

2. Number of Employees as at Survey Reference Date (Excl. trainees) - Column 'B'
在統計日期的僱員人數（受訓者除外）——‘B’欄

For each principal job, please fill in the total number of full-time employees (excluding trainees) as at the survey reference date.

“Full-Time Employees” refer to those working full-time (i.e. at least 4 weeks a month, and not less than 18 hours each week) under the payroll of the establishment. These include proprietors and partners working full-time for the establishment. These definitions also apply to ‘full-time employee(s)’ appearing in other parts of the questionnaire.
請填寫貴機構於統計日期僱用的每個主要職務的全職僱員總數（受訓者除外）。

「全職僱員」指在貴機構內全職工作（即每月最少四週、每週不少於十八小時）的受薪人員，其中包括在機構內全職工作的東主及合夥人。調查表內所出現的「全職僱員」等詞，定義亦同。

3. Number of Trainees as at Survey Reference Date - Column 'C'
在統計日期的受訓者人數——‘C’欄

Please fill in the total number of employees undergoing any form of training. This includes trainees and apprentices under a contract of apprenticeship.

請填寫正在接受各種形式訓練的僱員，包括受訓者及根據學徒合約受聘的學徒。

4. Number of Vacancies as at Survey Reference Date - Column 'D'

在統計日期的全職空缺額 ——‘D’欄

Please fill in the number of existing full-time vacancies as at the Survey Reference Date. 'Existing Vacancies' refer to those unfilled, immediately available job openings for which the establishment is actively trying to recruit personnel as at the survey reference date.

請填上在統計日期每一主要職務的全職空缺額。「現有空缺額」是指該職位於統計參考日期仍懸空，須立刻填補，而現正積極招聘人員填補。

5. Average Monthly Remuneration Package of Employees (Excl. trainees) - Column 'E'

僱員之每月平均薪酬（受訓者除外） ——‘E’欄

Please enter the code of the average monthly remuneration package during the past 12 months for each principal job of a full-time employee(s). This should include basic salary, overtime pay, cost of living allowance, meal allowance, housing allowance, travel allowance, commission and bonus. If you have more than one employee doing the same job, please enter the average range.

請在‘E’欄填入每個主要職務的全職僱員過去12個月每月平均薪酬的編號。這包括底薪、逾時工作津貼、生活津貼、膳食津貼、房屋津貼、旅行津貼、佣金及花紅。如貴機構有多於一名僱員擔任同一主要職務，則請取平均收入。

Part II

第二部份

6. Question 1 - Interns

問題1 — 實習生

Please indicate the number of interns* employed in your establishment in the past 12 months by their principal job description.

請按 貴機構實習生的主要職務填寫在過去十二個月內的實習生*的數目。

Note:
註：

* Refer to student employees who (i) are attending full-time accredited programmes being provided by local education institutions specified in the Minimum Wage Ordinance; or (ii) are resident in Hong Kong and enrolled in full-time education programmes for non-local academic qualification at degree or higher level.
指 (i)正修讀《最低工資條例》指明的本地教育機構提供的全日制經評審課程 或 (ii)居於香港，並修讀學位或更高程度的非本地學術資格的全日制教育課程的學生僱員。

7. Question 2 - Expected Change in Future

問題2 — 未來變化

When comparing with the current situation, please indicate your views on the expected change in the next 12 months. 相對於現在，請指出 貴機構預計在未來十二個月之預期變化。

- (i) Business volume and provide the reasons leading to the better or worse.
業務額及指出引起較佳或較差的原因。
- (ii) Number of Full-time employees
全職員工數目

8. Question 3 – New Job Position

問題3 — 新職位

Other than the principal jobs in Part I, please indicate the new job position(s) that will be introduced in the future (if any) to meet the emerging trends of the industry.

除第一部分所列出的職位外，請指出 貴公司未來將會引入的新職位(如有)，以配合行業的新興趨勢。

9. Question 4 - Age Distribution of Employees

問題 4 — 僱員年齡分布

Please indicate the age range distribution of Full-time employees.

請指出 貴機構全職僱員的年齡分布

10. Question 5 - New Recruitment

問題 5 — 新聘僱員

◆ Please fill in the total number of full-time employees who were newly recruited in the past 12 months.

請填寫 貴機構在過去十二個月內新招聘的全職僱員總人數。

◆ Please fill in the number of new recruits with experience in electronics and telecommunications services.

請填寫 貴機構的新招聘中，具電子及電訊業相關經驗的僱員人數。

11. Question 6 – Employees who had left the Establishment

問題 6 — 已離職僱員

Please fill in the number of full-time employees who had left in the past 12 months.

請填寫 貴機構過去十二個月內，全職僱員的離職人數。

12. Question 7 – Expected number of employees who will be retiring

問題 7 — 退休僱員

Please fill in the number of full-time employees who will be retiring in the coming 12 months.

請填寫 貴機構未來十二個月內，全職僱員的退休人數。

13. Question 8 – Recruitment Difficulties

問題 8 — 招聘困難

Please indicate the difficulties encountered in the recruitment of full-time employees of your establishment in the past 12 months.

請指出 貴機構在過去十二個月在招聘全職僱員時遇到的困難。

14. Question 9 - Top three factors to attract new entrants to the industry

問題 9 — 最能吸引新人入行的首三個因素

Please indicate the top three factors that your establishment considers useful to attract new entrants to the industry

請指出 貴機構認為最能吸引新人入行的首三個因素

Part II (continued)

第二部份 (續)

15. Question 10 – Preferred Level of Education and Years of Experience of Full-Time Employees

問題 10 — 全職僱員宜有的教育程度及相關年資

Please indicate the preferred level of education and years of experience of full-time employees.

請選擇全職僱員宜有的教育程度及相關年資。

Definition of Preferred Level of Education:

宜有教育程度的定義：

- ◆ “Postgraduate Degree” refers to higher degrees (e.g. master degrees) offered by local or non-local education institutions, or equivalent.
「研究生學位」是指本地或非本地教育機構提供的高等學位（如碩士學位），或同等教育程度。
- ◆ “First Degree” refers to first degrees offered by local or non-local education institutions, or equivalent.
「學士學位」是指本地或非本地教育機構提供的學士學位，或同等教育程度。
- ◆ “Sub-degree” refers to Associate Degrees, Higher Diplomas, Professional Diplomas, Higher Certificates, Endorsement Certificates, Associateship or equivalent programmes offered by local or non-local education institutions.
「副學位」是指本地或非本地教育機構提供的副學士、高級文憑、專業文憑、高級證書、增修證書、院士銜或同等課程。
- ◆ “Diploma/Certificate” refers to technical and vocational education programmes including Diploma/Certificate courses, Diploma of Foundation Studies, Diploma of Vocational Education and programmes at the craft level, or equivalent.
「文憑／證書」是指技術及職業教育課程之文憑／證書、基礎課程文憑、職專文憑及技工程度的課程，或同等教育程度。
- ◆ “Secondary 4 to 7” refers to Secondary 4-7, covering the education programmes in relation to the Hong Kong Certificate of Education Examination (HKCEE), the Hong Kong Diploma of Secondary Education Examination, Diploma of Applied Education (DAE), or equivalent.
「中四至中七」是指中四至中七（包括與香港中學會考、香港中學文憑考試、應用教育文憑等相關的教育課程）或同等教育程度。
- ◆ “Secondary 3 or below” refers to Secondary 3 or below, or equivalent.
「中三或以下」是指中三或以下，或同等教育程度。

16. Question 11 – Training Mode of Current Full-time Employees

問題 11 — 全職在職僱員宜有的訓練模式

Please indicate the preferred training mode of current full-time employees.

請選擇全職在職僱員宜有的訓練模式。

17. Question 12 – Training Needs

問題 12 — 培訓需要

By referring to Appendix C, please indicate the skills that should be enhanced for full-time employees.

請參考附錄 C，並指出 貴機構的全職僱員需要加強培訓的技能。

2024 Manpower Survey of the Electronics and Telecommunications Industries**電子及電訊業 2024 年人力調查**Description for the Principal JobsThe Electronics and Telecommunications Industries

電子及電訊業主要職務工作說明

Code 編號	Principal Job 主要職務	Job Description 工作說明
PROFESSIONAL / TECHNOLOGIST LEVEL 專業人士／技師級		
101	Electronics Engineer ; Computer Engineer 電子工程師；電腦 工程師 (Incl. Electronics Product / Project Engineer) (包括：電子產品／ 項目工程師)	Designs and develops electronic equipment and systems, components and products; researches electronic engineering problems; plans and supervises the development, production, construction, installation, operation and maintenance. Usually specialises in one or more of the following: (i) computer systems; (ii) consumer electronic products; (iii) electronic instruments and equipment; (iv) semiconductor and electronic components; (v) multimedia electronics, audio-visual and entertainment systems; (vi) robotics engineering system; and (vii) other electronic engineering fields. 負責電子設備及系統、零件及產品的設計及開發工作；研究電子工程方面的問題；策劃及督導電子設備及系統、零件及產品的發展、生產、構造、安裝、操作及保養工作。通常與下列專門範疇有關： (i) 電腦系統； (ii) 電子消費產品； (iii) 電子儀器及設備； (iv) 半導體及電子零件； (v) 多媒體電子、影音及娛樂系統； (vi) 機器人工程系統；或 (vii) 電子工程其他方面的工作。
102	Telecommunications Engineer 電訊工程師 (Incl. Network Engineer / Mobile Network Engineer) (包括：網路／行動 網路工程師)	Plans, designs and manages telecommunication or mobile network infrastructure; designs, installs and configures new networks and services; analyses current and planned network usages; and recommends solutions to solve network problems. 策劃、設計及管理電信及行動網路基礎設施和通訊軟件；設計、安裝和設定新網絡及服務；分析現時及已策劃的網絡使用情況；建議方案解決網絡問題。

Code 編號	Principal Job 主要職務	Job Description 工作說明
PROFESSIONAL /TECHNOLOGIST LEVEL (Continued) 專業人士／技師級 (續)		
103	Electronics Sales / Support / Service Engineer 電子銷售／技術支 援／服務工程師	<p>Provides technical support and advice on electronic equipment and systems to sales team for pre-sales and after-sales services to customers; conducts demonstrations and pre-sales presentations on the supported products and solutions; provides engineering services for on-site installation, maintenance and repair services, hardware and software modification.</p> <p>為銷售團隊提供電子設備和系統方面的技術支援和建議，為客戶提供售前和售後服務；進行產品和解決方案的示範和售前簡報；提供現場安裝、保養及維修服務、硬體和軟體更新的工程服務。</p>
104	Electrical Engineer 電機工程師	<p>Designs and advises on electrical equipment and systems; plans, and supervises their development, construction, installation, operation, maintenance and repair.</p> <p>設計電器及電機系統，並就該方面提供意見；策劃及監督電器及電機系統的發展、構造、安裝、操作、保養及維修。</p>
105	Mechanical Engineer / Designer 機械工程師／設計 師	<p>Designs and advises on the plant, mechanical parts, moulds and equipment, machinery and tools; plans and supervises their development, construction, installation, operation, maintenance and repair.</p> <p>設計廠房、機械配件、工模及設備、機器及工具，並就該方面提供意見；策劃與監督其中的發展、構造、安裝、操作、保養及維修。</p>
106	Manufacturing Engineer ; Quality Assurance / Control Engineer 製造工程師；品質 保證／控制工程師 (Incl. Industrial Engineer) (包括：工業工程師)	<p>Carries out one or more of the following activities:</p> <p>(i) Plans, directs and supervises all technical aspects of the manufacturing process to ensure the most efficient and economical means of operation and the maintenance of quality standards;</p> <p>(ii) Plans, directs and supervises the quality assurance / control at all phases of manufacturing, including testing and measurement, of incoming materials and parts, work-in-progress, and finished products to ensure compliance with standards, specifications, safety and environmental regulations.</p> <p>擔任以下一項或多項工作：</p> <p>(i) 策劃、指導及監督製造程序的各種技術工作，確保採用最快捷經濟的生產方式，並且保持品質標準；</p> <p>(ii) 策劃、指導及監督各製造階段的品質保證／控制工作，包括測試及量度交來物料與配件、半製成品及製成品，確保產品符合標準、規格、安全與環保條例。</p>
107	Test Engineer (Electronic Product) 測試工程師 (電子產 品)	<p>Designs test plans and creates test cases for the electronic product and systems; determines product testing parameters with product design team; conducts and designs performance tests in accordance with company and industry test procedures and standards; prepares test reports.</p> <p>為電子產品和系統設計測試計劃，建立測試案例；與產品設計團隊確定產品測試參數；根據公司和行業測試程序及標準進行和設計性能測試；準備測試報告。</p>
108	Chemical Engineer 化學工程師	<p>Designs and advises on manufacturing processes in which chemical changes occur; plans and supervises their development, construction, installation, operation and maintenance to ensure compliance with standards, specifications, and safety and environmental regulations.</p> <p>設計能產生化學變化的製造程序，並就該方面提供意見；策劃及監督其發展、構造、安裝、操作及保養，確保符合標準、規格、安全與環保條例。</p>

Code 編號	Principal Job 主要職務	Job Description 工作說明
PROFESSIONAL / TECHNOLOGIST LEVEL (Continued) 專業人士／技師級(續)		
109	Product Designer ; Packaging / Graphic Designer 產品設計師；包裝 ／平面設計師	<p>Originates and develops ideas to design, create, modify and arrange the form of manufactured products, layouts and containers for the products based on factors such as design function relationship, knowledge of design, art concepts, market and pricing characteristics, client specifications, method and cost of production to achieve aesthetically pleasing and functional effect for the products.</p> <p>根據設計與功能的關係、設計知識、美術概念、市場與價格特性、顧客規格、生產方法及成本等因素進行創作，並加以發揮，以便設計、創作、修改及安排製成品的形狀、結構及包裝，務求產品既美觀又實用。</p>
110	Systems Analyst / Engineer 系統分析師／工程 師 (Incl. Analyst Programmer) (包括：分析程式員)	<p>Collects, studies and analyses user requirements and identified problems; conducts process review and system improvement; designs, develops, enhances, implements, configures, tests and manages application systems / IT solutions including associated hardware, software, network and system configurations; conducts system integration test and diagnosis; prepares the technical document and liaises with users and vendors.</p> <p>收集、研究及分析用戶需求及已識別的問題；進行流程審查及系統改良；設計、開發、提升、實施、設定、測試和管理應用系統／資訊科技解決方案，包括相關的硬件、軟件、網路和系統配置；進行系統整合測試和診斷；準備技術文件，並協調用戶和供應商。</p>
111	Software Developer / Engineer 軟件開發員／工程 師 (Incl. Embedded Software / Firmware Engineer) (包括：嵌入式軟件 ／韌體工程師)	<p>Designs and develops system firmware / software using high level and/or assembler languages for electronic products, microprocessors, microcomputers and embedded systems in accordance with hardware architecture, product or system specifications; performs software and firmware design, coding and testing for IoT and AI products and systems.</p> <p>依據硬體架構、產品或系統規格，使用高階語言及／或匯編語言，為電子產品、微處理器、微型電腦及嵌入式系統設計軟件及／或系統軟件；為物聯網和人工智慧產品及系統進行軟件及韌體設計、編碼和測試。</p>
112	UI / UX Designer 用戶界面／用戶體 驗設計師	<p>Design user interfaces. Translates and documents the functional requirements based on user/customer requirements; performs system studies, analysis, design and implementation of computer systems and software applications to meet user/customer business and operational needs, providing user-friendly and optimised interfacing experience.</p> <p>設計用戶界面。根據用戶／客戶要求，制定及記錄功能規格；對電腦系統和軟件應用程式進行系統研究、分析、設計和實施，滿足用戶／客戶的業務和營運需要，提供使用者友好和優化的介面體驗。</p>

Code 編號	Principal Job 主要職務	Job Description 工作說明
PROFESSIONAL /TECHNOLOGIST LEVEL (Continued) 專業人士／技師級(續)		
113	Artificial Intelligence (AI) Engineer ; Machine Learning (ML) Engineer 人工智能工程師；機器學習工程師	<p>Works closely with software developers, data analysts and product / project engineers to develop and deploy innovative AI applications or solutions to enhance functionality of products / systems, and effectiveness and efficiency of operation processes; designs, develops, implements, tests and maintains AI and ML solutions using appropriate algorithms, techniques and tools to ensure high-quality and reliable performance of AI applications.</p> <p>與軟件開發員、資料分析師及產品／項目工程師緊密合作，開發和部署創新的人工智能應用或解決方案，以增強產品／系統的功能性，以及營運流程的有效性和效率；使用適當的演算法、技術和工具，設計、開發、實施、測試和維護人工智能和機器學習解決方案，以確保人工智能應用程式的高品質和可靠性。</p>
114	Internet of Things (IoT) Developer / Engineer 物聯網開發員／工程師	<p>Designs, develops, and tests IoT applications and solutions with integration of hardware and software components; works on IoT connectivity protocols, data processing, and communication standards to ensure IoT device and server data synchronization and integrity; executes IoT device integration by selecting, configuring and integrating hardware into software solutions for compatibility and reliability.</p> <p>透過硬體和軟體組件的整合，設計、開發及測試物聯網應用程式及解決方案；研究物聯網連接協定、資料處理和通訊標準，確保物聯網設備和伺服器資料同步和完整性；透過選擇、設定硬體，將其整合到軟件方案中來執行物聯網設備整合，以實現相容性和可靠性。</p>
115	Data Engineer ; Data Analyst ; Data Scientist 數據工程師；數據分析員；數據科學家	<p>Carries out one or more of the following activities:</p> <p>(i) Designs, builds, and maintains data pipelines to collect, transmit and transform data from various sources to a data warehouse for use of data analyst; develops, optimises and maintains ETL (extract, transform, load) processes to ensure data quality and data infrastructure reliability;</p> <p>(ii) finds and interprets data sources, manages large amounts of data, merges data sources, ensures consistency of data sets, and creates visualisations to aid in understanding data; builds mathematical models using data, presents and communicates data insights and findings to specialists or if required to a non-expert audience, and recommends ways to apply the data.</p> <p>進行以下一項或多項工作：</p> <p>(i) 設計、建構和維護數據管道，以收集、傳輸數據，從各源頭轉換數據到數據庫，供數據分析師使用；開發、最佳化和維護擷取、轉換、載入流程，確保資料品質和資料基礎設施的可靠性；</p> <p>(ii) 尋找和解釋數據源，管理大量數據，合併數據源，確保數據集的一致性，並創建可視化以幫助理解數據；使用數據構建數學模型，向專家展示和交流數據見解和發現，如果需要，向大眾展示和交流數據見解和發現，並推薦應用數據的方法。</p>
116	Robotic System / Automation Engineer 機器人系統／自動化工程師	<p>Installs and services robotics products and automation systems; designs and develops applications and solutions on robotic / automation products or projects with functions of machine vision, data acquisition, sensing and actuating, human-machine collaboration, and other IoT or AI applications; configures, programmes, tests and maintains the developed robotics / automation systems and products.</p> <p>安裝機器人產品和自動化系統並提供服務；設計和開發機器人／自動化產品或項目的應用程式和解決方案，具備機器視覺、數據採集、感測和驅動、人機協作功能，以及其他物聯網或人工智能的應用；設定、程式設計、測試和維護的機器人／自動化系統和產品。</p>

Code 編號	Principal Job 主要職務	Job Description 工作說明
PROFESSIONAL / TECHNOLOGIST LEVEL (Continued) 專業人士／技師級(續)		
117	Information Security / Cybersecurity Specialist 資訊科技保安／網 絡安全專家	<p>Undertakes IT security risk assessment, audit and review on IT / network security, firewalls and intrusion detection; deploys security systems; drafts and implements information security standards, policy and procedures; provides security operation support and controls to protect customer's computers and network systems from potential hackers and cyber-attacks.</p> <p>負責資訊科技安全風險評估、審核及檢討資訊／網絡保安、防火牆及侵入偵察；部署安全系統；擬定及執行資訊保安標準、政策及程序；提供安全營運支援和控制，保護客戶的電腦和網路系統免受潛在的駭客和網路攻擊。</p>
TECHNICAL LEVEL 技術員級		
201	Electronics Technician 電子技術員 (Incl. Maintenance Technician ; Service Technician ; Computer Technician ; Audio-Visual Technician ; Electronic Support Technician) (包括：保養技術員；維修技術員；電腦技術員；影音技術員；電子支援技術員)	<p>Performs technical tasks, normally under the direction and supervision of an electronics / computer / product / project engineer, contributes to design, development, manufacture, technical support, construction, installation, operation, maintenance and repair of:</p> <p>(i) Electronic and electrical products, equipment and systems, such as consumer electronics, home appliances, healthcare electronics, toys, and watches / clocks;</p> <p>(ii) Computer and multimedia networks, systems and peripherals;</p> <p>(iii) Audio visual, entertainment and associated equipment and systems.</p> <p>通常在電子／電腦／產品／項目工程師的督導下擔任技術工作，如參與設計、發展、製造、技術支援、構造、安裝、操作、保養、修理：</p> <p>(i) 電子及電機產品、器材及系統，例如消費電子產品、家居電器、保健電子產品、玩具及鐘錶；</p> <p>(ii) 電腦及多媒體網絡、系統及周邊設備；</p> <p>(iii) 影音、娛樂及附屬設備與系統。</p>
202	Telecommunications Technician 電訊技術員 (Incl. Network Technician (包括：網絡技術員)	<p>Performs technical tasks, normally under the direction and supervision of a telecommunications / networks engineer, and contributes to the plan, design, development, technical support, construction, installation, operation, maintenance and repair of telecommunication / network systems and equipment, such as telephone, digital broadcasting, high-definition electronic media, wireless / microwave / satellite communication, mobile communication and data communication systems.</p> <p>通常在電訊／網絡工程師的督導下擔任技術工作，如參與籌劃、設計、發展、技術支援、構造、安裝、操作、保養、修理電訊及網絡系統及器材，例如電話、數碼廣播、高清電子媒體、無線電／微波／衛星通訊、流動通訊及數據通訊系統。</p>
203	Mechanical Technician 機械技術員	<p>Performs technical tasks, normally under the direction and supervision of a mechanical engineer, contributes to the design, development, construction, installation, operation, maintenance and repair of plant, mechanical parts and equipment, machinery and tools.</p> <p>通常在機械工程師的督導下擔任技術工作，如參與設計、發展、構造、安裝、操作、保養、修理廠房、機械配件及設備、機器及工具。</p>

Code 編號	Principal Job 主要職務	Job Description 工作說明
TECHNICAL LEVEL (Continued) 技術員級 (續)		
204	Manufacturing Technician ; Quality Assurance / Control Technician 製造技術員；品質保證／控制技術員	<p>Performs technical tasks, normally under the direction and supervision of a manufacturing / industrial or a quality assurance / control engineer, and contributes to:</p> <p>(i) The efficient and economical operation of the manufacturing process and the maintenance of quality standards;</p> <p>(ii) Quality assurance / control at all phases of manufacturing including testing and measurement of incoming materials and parts, work-in-progress, and finished products to ensure compliance with standards and specifications, and safety and environmental regulations.</p> <p>通常在製造／工業或品質保證／控制工程師的監督下擔任：</p> <p>(i) 製造程序中的技術工作，協助以最快捷經濟的方式運作，並且維持產品質素；</p> <p>(ii) 技術工作，協助各製造階段的品質保證／控制事項，包括測試及量度來料與配件、半製成品及製成品，確保產品符合標準、規格、安全與環保條例。</p>
205	Draughtsman 繪圖員	<p>Prepares detail and assembly drawings and circuit diagrams according to design specifications.</p> <p>按照設計規格繪製明細圖、裝配圖及線路圖。</p>
206	Electronics Test Technician 電子測試技術員	<p>Performs technical tasks, normally under the direction and supervision of a test engineer, contributes to conducting and designing performance tests in accordance with company and industry test procedures and standards, and drafts test reports.</p> <p>通常在測試工程師的督導下擔任技術工作，如參與根據公司和行業測試程序及標準進行和設計性能測試，以及草擬測試報告。</p>
207	Supervisor ; Foreman ; Leader 監督；管工；組長 (Incl. Junior Supervisor) 包括：初級監督)	<p>Performs supervisory duties, contributes to the planning and allocation of tasks to workers, trainees and technical sales, and the production, inspection, installation, operation, maintenance and repair of components, products, equipment and systems; including the training for technical sales.</p> <p>OR</p> <p>Organises and takes charge of a group or groups of operatives in a section, normally under the direction of a supervisor / foreman.</p> <p>擔任監督工作，如參與策劃、向工人及受訓者分配工作，以及參與生產、檢查、安裝、操作、保養、修理零件、產品、器材與系統；及提供訓練與推銷技術員</p> <p>或</p> <p>通常在監督／管工指導下，安排及主管部門內一組或多組操作工的工作。</p>
208	Programmer ; Software Technician 程式編製員；軟件技術員	<p>Develops computer programmes and systems to implement embedded systems / software design, normally under the direction and supervision of a software engineer / system analyst.</p> <p>通常在軟件工程師／系統分析員的督導下研究嵌入式系統／電腦程式，以便推行電腦系統及軟件設計。</p>

Code 編號	Principal Job 主要職務	Job Description 工作說明
TECHNICAL LEVEL (Continued) 技術員級 (續)		
209	Web Developer / Designer ; Computer Game Designer 網站開發員／設計 員；電腦遊戲設計員	<p>In the mixed technical and creative works, uses tool set to design and create web pages / sites, 2D / 3D graphics and animation and/or other multimedia contents and computer games for integration to IT applications according to business requirement, strategy and direction.</p> <p>按照業務要求、策略及方向，結合科技與創作，使用工具套設計及製作網頁／網站、二維／三維圖像動畫或其他多媒體內容，以便配合電腦應用軟件使用。</p>
210	Sales Technician 推銷技術員 (Incl. Electronic Sales Technician ; Electronic Merchandising Technician) (包括：電子推銷技 術員；電子採購技術 員)	<p>Updates / studies / analyses electronic, technical and functional knowledge as well as contemporary trends and development of products, systems, equipment and components from the demands of the electronics market, proposes and demonstrates suggestions / follows up orders according to the needs of clients and customers, and liaises with departments and suppliers to provide suitable alternatives in view of the market. Usually involves one or more of the following:</p> <p>(i) consumer electronics, home appliance and healthcare electronics; (ii) telecommunication systems and equipment; (iii) computer and multimedia networks, systems and peripherals; (iv) audio-visual, entertainment and associated equipment and systems.</p> <p>更新／學習／分析電子、技術及功能知識，以及市面上的潮流時興新穎的產品、系統、設備及零件；因應顧客需要而提供意見、示範產品及跟進訂單；與其他部門及供應商聯繫以提供適當意見。通常會與下列範疇有關：</p> <p>(i) 消費電子產品、家居電器及保健電子產品； (ii) 電訊系統及器材； (iii) 電腦及多媒體網絡、系統及周邊設備； (iv) 影音、娛樂及附屬設備與系統。</p>

Code 編號	Principal Job 主要職務	Job Description 工作說明
CRAFTSMAN LEVEL 技工級		
301	High Speed Data Network & Wireless Data System Integrator ; Cable Joiner 高速資訊網絡及無線系統技工；電纜連接技工	Lays, joints, connects, terminates and maintains underground, submarine, surface and aerial telecommunication cables and wires. 敷設、接駁、端接及保養地底、海底、地面及架空電訊電纜。
302	Electronics Craftsman 電子技工 (Incl. Audio Visual Assistant ; Electronic Servicing Assistant ; Electronic System Installation Assistant ; Telecommunications and Surveillance Technical Assistant) (包括：影音助理；電子維修助理；電子系統安裝助理；電訊及監控技術助理)	Carries out one or more of the following activities: (i) Installs, services and maintains consumer electronics, audio-visual products, multimedia and entertainment electronic equipment and systems, In-building Coaxial Cable Distribution System, telecommunications and surveillance systems; (ii) Diagnoses, locates and repairs faults in the maintenance of electronic devices and products, systematically records these faults and recommends changes to minimise such occurrences; (iii) Installs, inspects, tests, repairs, calibrates and maintains electronic, electrical and mechanical instruments, meters, equipment and systems. 擔任以下一項或多項工作： (i) 安裝、保養及及維修消費電子產品、影音產品、多媒體和娛樂電子設備與系統、大廈內同軸電纜分配系統、電訊及監控系統； (ii) 在維修電子裝置及產品的過程中，查出及修理所出現的毛病，有系統地記錄下來，並且建議如何盡量減少毛病出現； (iii) 安裝、查驗、測試、修理、校準及保養電子、電機及機械儀器、儀錶、設備及系統
303	Electrician 電氣技工	Installs, maintains, tests and repairs electrical wiring, devices and equipment, and building services in buildings and other structures in accordance with regulations and specifications. 按照條例及規格安裝、保養、測試及修理屋宇電線、電器及其他設備。
304	Mechanic (Maintenance Mechanic / Fitter, Machinist, Mould / Tool and Die Maker and Repairer) 機械工（保養／裝配打磨工、機床工、工具／工模製造及修理工）	Carries out one or more of the following activities: (i) Fits, assembles, installs, repairs and maintains plant and machinery and makes replacement parts when required; (ii) Sets up and operates machine tools to produce components according to specifications; (iii) Makes, maintains and repairs press tools, dies, cutting tools, gauges, jigs and fixtures according to drawings and other specifications; (iv) Makes, maintains and repairs moulds and dies for plastics processing machines according to drawings and other specifications. 擔任以下一項或多項工作： (i) 打磨、裝配、安裝、修理、保養廠房及機器，並於需要時製作更換配件； (ii) 按照規格裝設及操作機床，以生產零件； (iii) 按照圖則及其他規格，製造及維修啤孔工具、工模、切削工具、量規及夾具； (iv) 按照圖則及其他規格，製造及修理塑膠機的工模。

Code 編號	Principal Job 主要職務	Job Description 工作說明
OPERATIVE LEVEL 操作工級		
401	Operator ; Quality Assurance / Control Operator ; General Worker 操作工；品質保證／控制工；雜工 (Incl. Assembler, Soldering Worker, Aligner / Tester) (包括：裝配工、焊錫工、校整／測試工)	Carries out any one of the operative jobs in an assembly line in the areas of: (i) Assembles parts in the manufacture of electronics components (semiconductor, computer memory plane etc.) or assembles parts and components into printed circuit boards, modules and finished products, prepares materials by cutting, coating and paints protective or decorative materials onto parts or components; (ii) Performs proper soldering at all solder joints by hand or machine; (iii) Aligns, tests and inspects electronics products on production lines; (iv) Assists the quality assurance / control technician in the inspection of incoming parts and finished products before packaging according to a predetermined quality standard; (v) Operates various previously set-up processing machines, fixtures, continuous plating and etching baths, polishing machines coil winding machines, etc; (vi) Packs finished products into boxes, crates or other containers; (vii) Handles components, and parts issued to and returned from assembly line. (viii) Sets, operates and controls data processing and/or data-switching systems, including all peripheral units according to operating instructions; operates data entry machines, which translate manually prepared data into computer readable format and store them into media, verifies / corrects entry data according to standard procedure; (ix) handles odd jobs and undertakes other manual work. 擔任以下一項或多項工作： (i) 裝配各種零件以製造電子元件（半導體、記憶板等等）或將零件及元件裝配在印刷線路板、模組及製成品上；切割材料；塗膠及髹保護或裝飾塗料於零件或元件上； (ii) 用手或機器焊接所有焊點； (iii) 校整、測試及檢查生產線上的電子產品； (iv) 協助品質保證／控制技術員，依照預定的品質標準檢查交來配件，並在包裝前檢查製成品； (v) 操作各類已調校妥當的加工機械、夾具、連續運作電鍍及蝕刻設備、磨光機及繞線機等等； (vi) 以木箱、紙盒或其他容器包裝製成品； (vii) 負責搬運裝配工場的元件及零件； (viii) 根據工作指示，調校、操作及控制數據處理及／或數據交換系統，包括周邊設備；操作數據輸入機（可將人手編製的數據翻譯為可供電腦閱讀的資料，並將數據貯存在電腦卡、磁帶、紙帶或磁盤內）；根據標準程序核對／更正輸入的數據； (ix) 擔任雜務及其他勞力工作。

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電子及電訊業 2024 年人力調查

Description for Skills
培訓技能說明

Skills 技能	Description 說明
A. Strategic Planning and Management Skill 策略規劃及管理技巧	
(i) Business Continuity Management 業務持續性管理	Business Continuity Management includes business continuity planning and crises management, covering the techniques to execute business impact analysis, risk analysis, testing and exercising to ensure the currency of the organisation's business continuity plans and identify crisis response and recovery activities as well as implement the recovery and business continuity strategies to minimise the impact of disruptive events to the organisation. 業務持續性管理包括業務持續性計劃和危機情況管理，涵蓋執行業務影響分析，風險分析，測試和演練的技術，以確保組織業務持續性計劃的通行性，確定危機響應和恢復活動以及實施恢復和業務持續性策略，以最大程度地減少破壞性事件對組織的影響。
(ii) Quality Management 質量管理	Quality Management includes audit management, failure analysis, material qualification, parametric testing, quality control and assurance, quality process control, quality system management and yield analysis, covering the techniques to assess organisational objectives, policies, procedures, structure, control and system for the verification of efficient management of the organisation's activities, examine the evidence to verify the causes of failure as well as identify the failure modes, manage quality of materials to ensure material specifications conform to product requirements, implement parametric tests and parametric data analysis to drive process and yield improvements, implement testing processes for the measurement and assurance of product quality and services to meet consumer expectations. 質量管理包括審核管理、故障分析、材料鑑定、參數測試、質量控制和保證、質量過程控制、質量系統管理和產量分析，涵蓋了評估組織目標、政策、程序、結構、控制和系統的技術 驗證組織活動的有效管理，檢查證據以確認失敗原因並確定失敗模式，管理材料質量以確保材料規格符合產品要求，實施參數測試和參數數據分析以推動流程和提高產量，實施測試過程以測量和保證產品質量和服務，以滿足消費者的期望。
(iii) Project Management 項目管理	Project management covers gathering requirements, managing project design process, defining team responsibilities, identifying milestones, scoping timelines, and staging deliverables. 項目管理包括收集所需資料；管理項目設計過程；釐清小組權責；確定發展重點；製訂時間表；分階段完成目標。
(iii) Risk Management 風險管理	Risk Management includes enterprise risk management and risk appetite and goal setting, covering the techniques to develop and implement risk management strategies to support business operations and manage productive practices to allow for effective and efficient management of work by making changes for continuous improvements in the organisation. 風險管理包括企業風險管理、風險偏好和目標設定，涵蓋制定和實施風險管理策略的技術，以支持業務運營和管理生產實踐，通過進行更改以實現組織的持續改進，從而有效地進行工作管理。

Skills 技能	Description 說明
(iv) Strategy Planning and Implementation 戰略規劃及推行	<p>Strategy Planning and Implementation includes business planning, organisational analysis and organisational strategising, covering the techniques to develop business plans by reviewing existing resources to identify growth opportunities to achieve sustainable competitive advantage leading to a high exit valuation, evaluate factors that can affect the organization's performance as well as strategically assessing the organisation's resources and potential for improvement and provide an overall strategic direction to the organization to support the achievement of strategic needs of the organisation.</p> <p>戰略計劃與實施包括業務計劃、組織分析和組織戰略制定，涵蓋通過審查現有資源來確定增長機會以實現可持續競爭優勢從而導致較高的退出估值的業務計劃制定技術，並評估可能影響組織績效的因素，以及從戰略上評估組織自身的資源和改進潛力，並為組織提供總體戰略指導，以支持實現組織的戰略需求。</p>
B. Technical Skills 技術性技能	
(i) Automation Management 自動化管理	<p>Automation Management includes automated operation monitoring, automated system design, automation process control and automation system maintenance, covering the techniques to ensure smooth automation operations by maintaining and monitoring the automated systems and manufacturing process flows, designing and commissioning automated systems as well as evaluate the system design specification against functional requirements, apply automation process control to monitor performance metrics and quality of manufacturing outputs to determine the optimal settings as well as productivity improvement strategies and maintain automation systems to meet operation requirements as well as propose strategies for the automation systems performance improvement.</p> <p>自動化管理包括自動化操作監視、自動化系統設計、自動化過程控制和自動化系統維護，涵蓋了通過維護和監視自動化系統和製造流程，確保自動化系統設計和調試以及評估系統來確保平穩自動化操作的技術。根據功能要求設計規範，應用自動化過程控制來監視性能指標和製造輸出的質量，以確定最佳設置以及生產率提高策略，並維護自動化系統以滿足操作要求，並提出提高自動化系統性能的策略。</p>
(ii) Smart Manufacturing 智能製造	<p>Smart manufacturing encompasses computer-integrated manufacturing with high levels of adaptability and agile design optimizations, digital information and data analytics to promote more flexible technology productivity.</p> <p>智能製造涵蓋具備高度自適應性、並能靈敏改善設計的計算機集成製造技術，結合數碼化信息與數據分析，以促進更具柔性的技術生產力。</p>
(iii) Robotics 機械人	<p>Robotics includes the configuration of computer software, or the emulation and integration of human interactions with digital systems to execute a business process, covering the techniques to capture data, interpret, trigger responses and communicate with other systems to perform a vast variety of repetitive tasks.</p> <p>機械人包括通過配置計算機軟件或模仿和集成人與數字系統之間的交互行為，從而自動化業務流程，涵蓋了收集數據、識別、觸發反應並與其他系統進行通訊，以執行各種重複性任務。</p>
(iv) Internet of Things (IoT) 物聯網技術	<p>Internet of Things (IoT) enables the provision of communications platforms and services for interconnected devices to generate, exchange and consume data with minimal human intervention, covers planning, designing and maintaining IoT systems with a special focus on applications, and adopting IoT solutions.</p> <p>物聯網提供通訊平台及服務讓各式各樣的互聯智能裝置，無須經人手操作而能自動產生、交換和處理數據，涵蓋了計劃、設計和維護 IoT 系統及其應用，並採用 IoT 解決方案。</p>

Skills 技能	Description 說明
(v) Artificial Intelligence 人工智能	<p>Artificial Intelligence covers how to master fundamental concepts of Machine Learning and Deep Learning and how to utilize Machine Learning and Deep Learning libraries applied to industry problems involving object recognition and computer vision, image and video processing, text analytics, Natural Language Processing, recommender systems, and other types of classifiers.</p> <p>人工智能包括如何掌握機器學習和深度學習的基本概念以及如何利用機器學習和深度學習庫協助行業解決問題，例如涉及對象識別和計算機視覺、圖像和視頻的，文字分析，自然語言處理，推薦系統和其他類型的分類器。</p>
(vi) Big Data Analytics 大數據分析	<p>Big Data Analytics includes data analytics system design and data synthesis, covering the techniques to integrate the use of data analytics in the production environment for the identification of bottlenecks and system improvements and analysing factory automation and manufacturing data to monitor the manufacturing processes for operations and product or process flow optimisation.</p> <p>大數據分析包括數據分析系統設計和數據綜合，涵蓋了將數據分析在生產環境中的使用集成在一起的技術，以識別瓶頸和系統改進，並分析工廠自動化和製造數據以監控運營和產品的製造過程或流程優化。</p>
(vii) Cloud Technology 雲端技術	<p>Cloud technology is the virtualisation of computer programs through an Internet connection rather than installing applications on every office computer, covers data storage and archive, and big data analytics.</p> <p>雲端技術是電腦程序通過互聯網的連接虛擬化，而不是每一個辦公室的電腦上安裝應用程序，涵蓋了資料儲存、封存及大數據分析。</p>
(viii) User Experience / User Interface (UX/UI) Design 用戶體驗／用戶界面設計	<p>User experience / user interface design includes translation and documentation of the functional requirements based on user / customer requirements, and covers the techniques to perform system studies, analysis, design and implementation of computer systems to meet user / customer business and operational needs.</p> <p>用戶體驗／用戶界面設計包括根據用戶／客戶要求，制定及記錄功能規格、負責電腦系統的研究、分析、設計及推行，以應付用戶／客戶的業務／運作需要。</p>
(ix) Programming / Software Development 程式編製／軟件開發	<p>Programming / Software development includes the design and development of new custom applications or to modify or enhance customised or packaged applications, covers the development and testing of computer programs to meet business needs according to the requirements laid down by the functional and systems specifications.</p> <p>程式編製／軟件開發包括設計和開發新的應用軟件，亦有用於修改和改良專門或套裝應用軟件，涵蓋了根據功能及系統規格，開發及測試電腦程式的技術，以應付業務需要。</p>
(x) Maintenance 保養	<p>Maintenance includes equipment maintenance and facilities maintenance, covering the techniques to maintain tools and equipment to meet operation requirements, proposing strategies for tools and equipment performance improvement and managing facility systems maintenance as well as proposing strategies for performance enhancement.</p> <p>保養包括設備維護和設施維護，涵蓋維護工具和設備以滿足操作要求的技術，提出改善工具和設備性能的策略，管理設施系統維護的策略以及提出提高性能的策略。</p>

Skills 技能	Description 說明
(xi) Manufacturing and Operations 製造與運營	<p>Manufacturing and Operations include defect density monitoring, electrostatic discharge control, factory system management, good manufacturing practices implementation, manufacturing process management, metrology management, operation management and production shut-down and re-start, covering the techniques to monitor the manufacturing process defect density metrics and manage deviations, analyse defect density issues and recommend corrective actions, implement precautionary measures required to avoid damage to sensitive electronic components as well as adopt proper components handling techniques and the use of appropriate personal grounding device, manage different factory system applications to ensure optimum manufacturing operations performance.</p> <p>製造和運營包括缺陷密度監控、靜電放電控制、工廠系統管理、良好製造規範實施、製造過程管理、計量管理、運營管理以及生產停產和重新啟動，涵蓋了監視製造過程缺陷密度的技術度量和管理偏差，分析缺陷密度問題並建議糾正措施，採取必要的預防措施以避免損壞敏感的電子組件，並採用適當的組件處理技術和使用適當的個人接地設備，管理不同的工廠系統應用程序以確保最佳製造運營績效。</p>
(xii) Network Technology Management 網絡技術管理	<p>Network Technology Management covers the techniques to interrelate computing devices, equipment and machines' data in a networked environment to provide specific solutions.</p> <p>網絡技術管理涵蓋了在聯網環境中將計算設備，設備和機器的數據相互關聯以提供特定解決方案的技術。</p>
(xiii) Production Management 生產管理	<p>Production Management includes production performance management, production planning and production resource management, covering the techniques to plan and manage resources to optimise production performance, manage production constraints and improve manufacturing efficiency, establish and execute the production plan to meet production targets and cycle time indices and plan and control capacity and quality issues to meet organisational needs as well as schedule resources to synchronise production processes.</p> <p>生產管理包括生產績效管理、生產計劃和生產資源管理，涵蓋計劃和管理資源以優化生產績效，管理生產約束和提高生產效率，建立和執行生產計劃以滿足生產目標和周期時間指標的技術，計劃和控制產能和質量問題，以滿足組織需求，並安排資源以同步生產過程。</p>
(xiv) Product Development and Testing 產品開發與測試	<p>Product Development and Testing includes manufacturing process design, new product introduction, product testing and research and development, covering the techniques to analyse the design of the product to identify potential manufacturing risks and problems for the reduction of manufacturing costs, support new production by validating build plan to achieve cost-effective production and assembly, meet design specifications, formulate test programme structure based on product specifications as well as develop a systematic approach in resolving test issues and optimising manufacturing processes, material developments and development of new product line.</p> <p>產品開發與測試包括製造過程設計、新產品介紹、產品測試和研發，涵蓋分析產品設計的技術，以識別潛在的製造風險和問題以降低製造成本，並通過驗證製造來支持新產品計劃，實現具有成本效益的生產和組裝，符合設計規範，根據產品規範制定測試程序結構，並開發系統的方法來解決測試問題並優化製造流程，材料開發和新產品系列的開發。</p>

Skills 技能	Description 說明
(xv) Productivity and Innovation 生產力與創新	<p>Productivity and Innovation include continuous process improvement, innovation management and solutions, covering the techniques to apply continuous improvement processes to improve products, services or processes seeking incremental improvement over time or breakthrough improvement all at once, responding to external or internal opportunities and apply creativity to introduce new ideas, processes or products and generate solutions by systematic analysis of the problem, proposing preventive and corrective measures as well as evaluating the effectiveness of the measures from different perspectives.</p> <p>生產力與創新包括持續的過程改進、創新管理和解決方案，涵蓋了應用持續改進過程來改進產品、服務或過程的技術，這些產品、服務或過程尋求隨著時間的推移逐步改進或突破性改進，應對外部或內部機會並將創造應用於通過對問題的系統分析，提出預防和糾正措施以及從不同角度評估措施的有效性，引入新的想法，過程或產品並生成解決方案。</p>
(xvi) System Integration 系統整合	<p>System Integration includes embedded system integration and process integration, covering the techniques to implement control systems to perform pre-defined tasks and real-time monitoring for the real world and integrate process loops and architecture to optimise process interactions between and within process modules as well as formulate strategies for yield performance improvements.</p> <p>系統整合包括嵌入式系統整合和過程整合，涵蓋了實現控制系統以執行預定義任務和對現實世界進行實時監控的技術，並整合了過程循環和體系結構以優化過程模塊之間以及過程模塊之間以及內部的過程交互，制定提高產量性能的策略。</p>
(xvii) Information Security 資訊保安	<p>This category comprises technologies for Internet Commerce security (such as encryption standards, authentication, public key scheme, and digital signature), anti-virus protection for Windows systems, and security for Wireless LAN and servers.</p> <p>資訊保安包括互聯網業務保安（例如加密標準、核實、公鑰方案、數碼簽名等）、視窗系統防病毒技術、無線 LAN 及服務器的保安。</p>
(xviii) Environment, Social and Governance (ESG) 環境、社會和企業管治	<p>Environment, Social and Governance are the non-financial standards that assess the corporates' overall performance and alignment with sustainable development goals. ESG covers environmental protection, social responsibility and corporate governance as the indicators to evaluate the corporates' operations.</p> <p>環境、社會和企業管治是企業營運及是否符合可持續發展目標的非財務性標準，以環境保護、社會責任和企業管治三個範疇為指標，評估企業的整體營運表現。</p>
C. Soft Skills 軟性技巧	
(i) Business Network Building 商業網絡建立	<p>Business Network Building covers the techniques to establish mutually beneficial relationships with other business stakeholders and potential clients and customers.</p> <p>商業網絡建立涵蓋與其他業務利益相關者以及潛在客戶和客戶建立互惠關係的技術。</p>

Skills 技能	Description 說明
(ii) Organisational Development 組織發展	<p>Organisational Development includes change management conflict management and learning and development, covering the techniques to implement organisational change smoothly as well as managing reactions to ensure seamless transition during change, performing conflict management within the organisation to assist staff members in resolving grievances and disputes and plan employees' learning and development activities to maximise employee contribution as well as building a skilled workforce.</p> <p>組織發展包括變更管理衝突管理和學習與發展，涵蓋了平滑實施組織變更以及管理響應以確保變更期間無縫過渡的技術，在組織內執行沖突管理以協助員工解決申訴和糾紛併計劃員工開展學習和發展活動，以最大程度地提高員工的貢獻並培養熟練的員工隊伍。</p>
(iii) Design Thinking 設計思維	<p>Design thinking is the non-linear, iterative process that researchers and developers use to understand user behaviour, and user expectations, challenge different assumptions, redefine problems and create innovative solutions to prototype and test. In general, it involves the five phases—Empathize, Define, Ideate, Prototype and Test.</p> <p>設計思維是研究人員和開發人員用來理解用戶行為，用戶期望，挑戰不同假設，重新定義問題並創建用於原型和測試的創新解決方案的非線性迭代過程。通常，它涉及五個階段包括同理心、定義、構思、原型和測試。</p>
(iv) Problem-solving 解難技巧	<p>Problem-solving skills include active listening, the ability to gather and analyse facts, clearly define the problem to be solved, creatively formulate different approaches in solving the problem, communicating ideas to others clearly, making decisions objectively, working dependably with others in implementing the agreed solutions and evaluate the outcome of the solution.</p> <p>解決問題的技能包括積極聆聽，收集和分析事實的能力，清楚地定義要解決的問題，創造性地制定解決問題的不同方法，清晰地將想法傳達給其他人，客觀地做出決定，可靠地執行已協商之解決方案及評估解決方案的結果。</p>
(v) Leadership / Supervisory Skill 領導／督導技巧	<p>Leadership and supervisory skills cover leading and motivating a team in the context of managing and leading an organisation in accomplishing unprecedented and extraordinary goals and tasks.</p> <p>領導／督導技巧涵蓋了在處於機構的管理和領導地位時，帶領和激發隊員完成嶄新和非凡的目標和任務。</p>

Quality Control Measures

Prior to fieldwork preparation

- Collect contact information of the sampled companies
- Group sampled companies to the same business organisation

Thorough training of fieldwork staff

- Industry briefing workshop by VTC
- Intensive briefing and training sessions by MOV in consultation with VTC

Monitoring of the fieldwork execution

- Well-trained enumerators who are experienced in conducting company surveys
- Closely monitor fieldwork progress and work of enumerators
- Debriefing sessions twice a week

Measures to increase the response rate

- Strategic directions given by VTC
- Assistance from the Training Boards and trade associations, etc.

Checking of the completed questionnaires

- Sample check of completed questionnaires by an independent team of QC checkers
- 100% vetting of the completed questionnaires by VTC

Double data entry and data validation

- Double data entry system
- Validation of collected data via computer programming and systems

Data analysis by VTC

- Comparison of survey findings with last round
- Benchmarking with relevant manpower information (if deemed appropriate)

Response Profile

Sector	(a) No. of valid cases*	(b) No. of companies successfully enumerated	(b)/(a) Effective response rate
Manufacturing	48	47	97.9%
Telecommunications	55	42	76.4%
Engineering Services	102	97	95.1%
Information Technology Services	91	86	94.5%
Import and Export Trading	94	89	94.7%
Wholesale and Retail	74	73	98.6%
Design Houses, R&D / Educational Institutes & Public Bodies	16	16	100.0%
Overall	480	450	93.8%

Note: * Excluding companies which had ceased operation, had not employed any relevant technical staff, etc. at the time of survey.

Manpower Projection Methodology

Adaptive Filtering Method

1. The Adaptive Filtering Method is a forecasting method which rested on the principle of “Weighted Exponential Smoothing”. In this method, past manpower data are weighted and heavier weightings are given to the more recent data. The forecast is more dependent on the recent manpower information. The degree of emphasis on the more recent survey data can be varied by adjusting the weighting factor (A). Thus, the higher the value of ‘A’, the heavier the weightings of the more recent data.

2. The forecast may also be optimised to suit the decisions made by the Training Boards based on the factors such as the market trends, technological developments, social-economic factors, future expectations, etc. The method is illustrated in Figure 1 below.

Figure 1 Adaptive Filtering Method

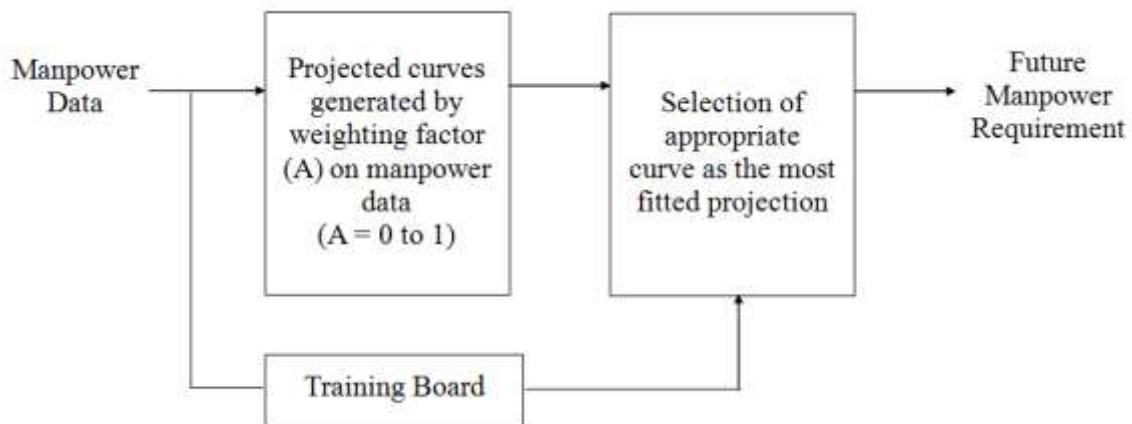


Table 9.1 Manpower statistics by Job Level (Overall)
表 9.1 按職級劃分的人力統計 (總計)

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的空缺額
Professional/ Technologist Level 專業人士/技師級				
101	Electronics Engineer ; Computer Engineer (Incl. Electronics Product / Project Engineer) 電子工程師；電腦工程師 (包括：電子產品/項目工程師)	6114	21	57
102	Telecommunications Engineer (Incl. Network Engineer / Mobile Network Engineer) 電訊工程師 (包括：網路/行動網路工程師)	1952	30	139
103	Electronics Sales / Support / Service Engineer 電子銷售/技術支援/服務工程師	1713	24	53
104	Electrical Engineer 電機工程師	1772	27	84
105	Mechanical Engineer / Designer 機械工程師/設計師	1360	2	19
106	Manufacturing Engineer ; Quality Assurance / Control Engineer (Incl. Industrial Engineer) 製造工程師；品質保證/控制工程師 (包括：工業工程師)	272	2	6
107	Test Engineer (Electronic Product) 測試工程師 (電子產品)	142	0	3
108	Chemical Engineer 化學工程師	19	4	2
109	Product Designer ; Packaging / Graphic Designer 產品設計師；包裝/平面設計師	160	0	2
110	Systems Analyst / Engineer (Incl. Analyst Programmer) 系統分析師/工程師 (包括：分析程式員)	2851	0	102
111	Software Developer / Engineer (Incl. Embedded Software / Firmware Engineer) 軟件開發員/工程師 (包括：嵌入式軟件/韌體工程師)	973	12	16
112	UI / UX Designer 用戶界面/用戶體驗設計師	351	1	3
113	Artificial Intelligence (AI) Engineer ; Machine Learning (ML) Engineer 人工智能工程師；機器學習工程師	252	2	9
114	Internet of Things (IoT) Developer / Engineer 物聯網開發員/工程師	43	0	0
115	Data Engineer ; Data Analyst ; Data Scientist 數據工程師；數據分析員；數據科學家	121	4	8
116	Robotic System / Automation Engineer 機器人系統/自動化工程師	163	0	2
117	Information Security / Cybersecurity Specialist 資訊科技保安/網絡安全專家	383	1	29
Sub-Total 小計		18641	130	534
Technician Level 技術員級				
201	Electronics Technician (Incl. Maintenance Technician ; Service Technician ; Computer Technician ; Audio-Visual Technician ; Electronic Support Technician) 電子技術員 (包括：保養技術員；維修技術員；電腦技術員；影音技術員；電子支援技術員)	10099	95	91
202	Telecommunications Technician (Incl. Network Technician) 電訊技術員 (包括：網絡技術員)	3131	46	57
203	Mechanical Technician 機械技術員	2241	144	33
204	Manufacturing Technician ; Quality Assurance / Control Technician 製造技術員；品質保證/控制技術員	474	0	0
205	Draughtsman 繪圖員	125	0	3
206	Electronics Testing Technician 電子測試技術員	209	7	14
207	Supervisor ; Foreman ; Leader (Incl. Junior Supervisor) 監督；管工；組長 (包括：初級監督)	2851	154	77
208	Programmer ; Software Technician 程式編製員；軟件技術員	4530	0	41
209	Web Developer / Designer ; Computer Game Designer 網站開發員/設計師；電腦遊戲設計師	656	0	0
210	Sales Technician (Incl. Electronic Sales Technician ; Electronic Merchandising Technician) 推銷技術員 (包括：電子推銷技術員；電子採購技術員)	14689	3	67
299	Other relevant staff (Technician Level) 其他相關員工 (技術員級)	20	0	3
Sub-Total 小計		39025	449	386

Table 9.1 Manpower statistics by Job Level (Overall)

表 9.1 按職級劃分的人力統計 (總計)

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的空缺額
Craftsman Level 技工級				
301	High Speed Data Network & Wireless Data System Integrator ; Cable Joiner 高速資訊網絡及無線系統技工；電纜連接技工	595	0	8
302	Electronics Craftsman (Incl. Audio Visual Assistant ; Electronic Servicing Assistant ; Electronic System Installation Assistant ; Telecommunications and Surveillance Technical Assistant) 電子技工 (包括：影音助理；電子維修助理；電子系統安裝助理；電訊及監控技術助理)	6059	32	37
303	Electrician 電氣技工	1355	164	52
304	Mechanic (Maintenance Mechanic / Fitter, Machinist, Mould / Tool and Die Maker and Repairer) 機械工 (保養／裝配打磨工、機床工、工具／工模製造及修理工)	693	112	50
Sub-Total 小計		8702	308	147
Operative Level 操作工級				
401	Operator ; Quality Assurance / Control Operator ; General Worker (Incl. Assembler, Soldering Worker, Aligner / Tester) 操作工；品質保證／控制工；雜工 (包括：裝配工、焊錫工、校整／測試工)	1037	2	13
Sub-Total 小計		1037	2	13
Total 總數		67405	889	1080

Table 9.2 Manpower statistics by Job Level (Manufacturing)

表 9.2 按職級劃分的人力統計（製造業）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的空缺額
Professional/ Technologist Level 專業人士/技師級				
101	Electronics Engineer ; Computer Engineer (Incl. Electronics Product / Project Engineer) 電子工程師；電腦工程師 (包括：電子產品/項目工程師)	174	0	2
102	Telecommunications Engineer (Incl. Network Engineer / Mobile Network Engineer) 電訊工程師 (包括：網路/行動網路工程師)	62	0	0
103	Electronics Sales / Support / Service Engineer 電子銷售/技術支援/服務工程師	9	0	0
104	Electrical Engineer 電機工程師	1	0	0
105	Mechanical Engineer / Designer 機械工程師/設計師	110	0	1
106	Manufacturing Engineer ; Quality Assurance / Control Engineer (Incl. Industrial Engineer) 製造工程師；品質保證/控制工程師 (包括：工業工程師)	129	1	0
107	Test Engineer (Electronic Product) 測試工程師 (電子產品)	37	0	0
108	Chemical Engineer 化學工程師	4	2	2
109	Product Designer ; Packaging / Graphic Designer 產品設計師；包裝/平面設計師	6	0	0
110	Systems Analyst / Engineer (Incl. Analyst Programmer) 系統分析師/工程師 (包括：分析程式員)	10	0	0
111	Software Developer / Engineer (Incl. Embedded Software / Firmware Engineer) 軟件開發員/工程師 (包括：嵌入式軟件/韌體工程師)	143	0	0
112	UI / UX Designer 用戶界面/用戶體驗設計師	0	0	0
113	Artificial Intelligence (AI) Engineer ; Machine Learning (ML) Engineer 人工智能工程師；機器學習工程師	1	0	0
114	Internet of Things (IoT) Developer / Engineer 物聯網開發員/工程師	0	0	0
115	Data Engineer ; Data Analyst ; Data Scientist 數據工程師；數據分析員；數據科學家	0	0	0
116	Robotic System / Automation Engineer 機器人系統/自動化工程師	0	0	0
117	Information Security / Cybersecurity Specialist 資訊科技保安/網絡安全專家	1	0	0
Sub-Total 小計		687	3	5
Technician Level 技術員級				
201	Electronics Technician (Incl. Maintenance Technician ; Service Technician ; Computer Technician ; Audio-Visual Technician ; Electronic Support Technician) 電子技術員 (包括：保養技術員；維修技術員；電腦技術員；影音技術員；電子支援技術員)	960	0	2
202	Telecommunications Technician (Incl. Network Technician) 電訊技術員 (包括：網絡技術員)	25	0	0
203	Mechanical Technician 機械技術員	7	0	0
204	Manufacturing Technician ; Quality Assurance / Control Technician 製造技術員；品質保證/控制技術員	161	0	0
205	Draughtsman 繪圖員	1	0	0
206	Electronics Testing Technician 電子測試技術員	2	0	0
207	Supervisor ; Foreman ; Leader (Incl. Junior Supervisor) 監督；管工；組長 (包括：初級監督)	73	0	0
208	Programmer ; Software Technician 程式編製員；軟件技術員	62	0	0
209	Web Developer / Designer ; Computer Game Designer 網站開發員/設計員；電腦遊戲設計員	0	0	0
210	Sales Technician (Incl. Electronic Sales Technician ; Electronic Merchandising Technician) 推銷技術員 (包括：電子推銷技術員；電子採購技術員)	119	0	0
299	Other relevant staff (Technician Level) 其他相關員工 (技術員級)	0	0	0
Sub-Total 小計		1410	0	2

Table 9.2 Manpower statistics by Job Level (Manufacturing)

表 9.2 按職級劃分的人力統計（製造業）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的空缺額
Craftsman Level 技工級				
301	High Speed Data Network & Wireless Data System Integrator ; Cable Joiner 高速資訊網絡及無線系統技工；電纜連接技工	28	0	0
302	Electronics Craftsman (Incl. Audio Visual Assistant ; Electronic Servicing Assistant ; Electronic System Installation Assistant ; Telecommunications and Surveillance Technical Assistant) 電子技工(包括：影音助理；電子維修助理；電子系統安裝助理；電訊及監控技術助理)	588	0	0
303	Electrician 電氣技工	0	0	0
304	Mechanic (Maintenance Mechanic / Fitter, Machinist, Mould / Tool and Die Maker and Repairer) 機械工(保養/裝配打磨工、機床工、工具/工模製造及修理工)	11	0	0
Sub-Total 小計		627	0	0
Operative Level 操作工級				
401	Operator ; Quality Assurance / Control Operator ; General Worker (Incl. Assembler, Soldering Worker, Aligner / Tester) 操作工；品質保證/控制工；雜工(包括：裝配工、焊錫工、校整/測試工)	417	0	0
Sub-Total 小計		417	0	0
Total 總數		3141	3	7

Table 9.3 Manpower statistics by Job Level (Telecommunications)

表 9.3 按職級劃分的人力統計（電訊）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的 僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的 受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的 空缺額
Professional/ Technologist Level 專業人士/技師級				
101	Electronics Engineer ; Computer Engineer (Incl. Electronics Product / Project Engineer) 電子工程師；電腦工程師(包括：電子產品/項目工程師)	1557	8	3
102	Telecommunications Engineer (Incl. Network Engineer / Mobile Network Engineer) 電訊工程師(包括：網路/行動網路工程師)	1221	30	126
103	Electronics Sales / Support / Service Engineer 電子銷售/技術支援/服務工程師	596	24	16
104	Electrical Engineer 電機工程師	21	0	0
105	Mechanical Engineer / Designer 機械工程師/設計師	0	0	0
106	Manufacturing Engineer ; Quality Assurance / Control Engineer (Incl. Industrial Engineer) 製造工程師；品質保證/控制工程師(包括：工業工程師)	27	0	0
107	Test Engineer (Electronic Product) 測試工程師(電子產品)	6	0	0
108	Chemical Engineer 化學工程師	0	0	0
109	Product Designer ; Packaging / Graphic Designer 產品設計師；包裝/平面設計師	90	0	0
110	Systems Analyst / Engineer (Incl. Analyst Programmer) 系統分析師/工程師(包括：分析程式員)	988	0	56
111	Software Developer / Engineer (Incl. Embedded Software / Firmware Engineer) 軟件開發員/工程師(包括：嵌入式軟件/韌體工程師)	107	6	0
112	UI / UX Designer 用戶界面/用戶體驗設計師	47	0	0
113	Artificial Intelligence (AI) Engineer ; Machine Learning (ML) Engineer 人工智能工程師；機器學習工程師	18	0	0
114	Internet of Things (IoT) Developer / Engineer 物聯網開發員/工程師	0	0	0
115	Data Engineer ; Data Analyst ; Data Scientist 數據工程師；數據分析員；數據科學家	55	4	8
116	Robotic System / Automation Engineer 機器人系統/自動化工程師	1	0	0
117	Information Security / Cybersecurity Specialist 資訊科技保安/網絡安全專家	184	0	0
Sub-Total 小計		4918	72	209
Technician Level 技術員級				
201	Electronics Technician (Incl. Maintenance Technician ; Service Technician ; Computer Technician ; Audio-Visual Technician ; Electronic Support Technician) 電子技術員(包括：保養技術員；維修技術員；電腦技術員；影音技術員；電子支援技術員)	2138	0	1
202	Telecommunications Technician (Incl. Network Technician) 電訊技術員(包括：網絡技術員)	1116	46	45
203	Mechanical Technician 機械技術員	16	0	0
204	Manufacturing Technician ; Quality Assurance / Control Technician 製造技術員；品質保證/控制技術員	68	0	0
205	Draughtsman 繪圖員	45	0	0
206	Electronics Testing Technician 電子測試技術員	12	0	0
207	Supervisor ; Foreman ; Leader (Incl. Junior Supervisor) 監督；管工；組長(包括：初級監督)	45	0	1
208	Programmer ; Software Technician 程式編製員；軟件技術員	539	0	4
209	Web Developer / Designer ; Computer Game Designer 網站開發員/設計員；電腦遊戲設計員	39	0	0
210	Sales Technician (Incl. Electronic Sales Technician ; Electronic Merchandising Technician) 推銷技術員(包括：電子推銷技術員；電子採購技術員)	625	0	0
299	Other relevant staff (Technician Level) 其他相關員工(技術員級)	0	0	0
Sub-Total 小計		4643	46	51

Table 9.3 Manpower statistics by Job Level (Telecommunications)

表 9.3 按職級劃分的人力統計（電訊）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的 僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的 受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的 空缺額
Craftsman Level 技工級				
301	High Speed Data Network & Wireless Data System Integrator ; Cable Joiner 高速資訊網絡及無線系統技工；電纜連接技工	238	0	2
302	Electronics Craftsman (Incl. Audio Visual Assistant ; Electronic Servicing Assistant ; Electronic System Installation Assistant ; Telecommunications and Surveillance Technical Assistant) 電子技工(包括：影音助理；電子維修助理；電子系統安裝助理；電訊及監控技術助理)	3038	0	1
303	Electrician 電氣技工	324	0	0
304	Mechanic (Maintenance Mechanic / Fitter, Machinist, Mould / Tool and Die Maker and Repairer) 機械工(保養/裝配打磨工、機床工、工具/工模製造及修理工)	3	0	0
Sub-Total 小計		3603	0	3
Operative Level 操作工級				
401	Operator ; Quality Assurance / Control Operator ; General Worker (Incl. Assembler, Soldering Worker, Aligner / Tester) 操作工；品質保證/控制工；雜工(包括：裝配工、焊錫工、校整/測試工)	7	0	0
Sub-Total 小計		7	0	0
Total 總數		13171	118	263

Table 9.4 Manpower statistics by Job Level (Engineering Services)

表 9.4 按職級劃分的人力統計（工程服務）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的空缺額
Professional/ Technologist Level 專業人士/技師級				
101	Electronics Engineer ; Computer Engineer (Incl. Electronics Product / Project Engineer) 電子工程師；電腦工程師 (包括：電子產品/項目工程師)	691	0	13
102	Telecommunications Engineer (Incl. Network Engineer / Mobile Network Engineer) 電訊工程師 (包括：網路/行動網路工程師)	171	0	0
103	Electronics Sales / Support / Service Engineer 電子銷售/技術支援/服務工程師	13	0	0
104	Electrical Engineer 電機工程師	125	0	10
105	Mechanical Engineer / Designer 機械工程師/設計師	125	0	10
106	Manufacturing Engineer ; Quality Assurance / Control Engineer (Incl. Industrial Engineer) 製造工程師；品質保證/控制工程師 (包括：工業工程師)	20	0	0
107	Test Engineer (Electronic Product) 測試工程師 (電子產品)	61	0	3
108	Chemical Engineer 化學工程師	0	0	0
109	Product Designer ; Packaging / Graphic Designer 產品設計師；包裝/平面設計師	2	0	0
110	Systems Analyst / Engineer (Incl. Analyst Programmer) 系統分析師/工程師 (包括：分析程式員)	21	0	0
111	Software Developer / Engineer (Incl. Embedded Software / Firmware Engineer) 軟件開發員/工程師 (包括：嵌入式軟件/韌體工程師)	4	0	0
112	UI / UX Designer 用戶界面/用戶體驗設計師	0	0	0
113	Artificial Intelligence (AI) Engineer ; Machine Learning (ML) Engineer 人工智能工程師；機器學習工程師	0	0	0
114	Internet of Things (IoT) Developer / Engineer 物聯網開發員/工程師	8	0	0
115	Data Engineer ; Data Analyst ; Data Scientist 數據工程師；數據分析員；數據科學家	0	0	0
116	Robotic System / Automation Engineer 機器人系統/自動化工程師	0	0	0
117	Information Security / Cybersecurity Specialist 資訊科技保安/網絡安全專家	2	0	0
Sub-Total 小計		1243	0	36
Technician Level 技術員級				
201	Electronics Technician (Incl. Maintenance Technician ; Service Technician ; Computer Technician ; Audio-Visual Technician ; Electronic Support Technician) 電子技術員 (包括：保養技術員；維修技術員；電腦技術員；影音技術員；電子支援技術員)	1492	9	46
202	Telecommunications Technician (Incl. Network Technician) 電訊技術員 (包括：網絡技術員)	327	0	6
203	Mechanical Technician 機械技術員	64	0	0
204	Manufacturing Technician ; Quality Assurance / Control Technician 製造技術員；品質保證/控制技術員	101	0	0
205	Draughtsman 繪圖員	10	0	0
206	Electronics Testing Technician 電子測試技術員	156	7	10
207	Supervisor ; Foreman ; Leader (Incl. Junior Supervisor) 監督；管工；組長 (包括：初級監督)	79	0	0
208	Programmer ; Software Technician 程式編製員；軟件技術員	60	0	0
209	Web Developer / Designer ; Computer Game Designer 網站開發員/設計員；電腦遊戲設計員	0	0	0
210	Sales Technician (Incl. Electronic Sales Technician ; Electronic Merchandising Technician) 推銷技術員 (包括：電子推銷技術員；電子採購技術員)	188	0	0
299	Other relevant staff (Technician Level) 其他相關員工 (技術員級)	15	0	3
Sub-Total 小計		2492	16	65

Table 9.4 Manpower statistics by Job Level (Engineering Services)

表 9.4 按職級劃分的人力統計（工程服務）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的 僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的 受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的 空缺額
Craftsman Level 技工級				
301	High Speed Data Network & Wireless Data System Integrator ; Cable Joiner 高速資訊網絡及無線系統技工；電纜連接技工	63	0	6
302	Electronics Craftsman (Incl. Audio Visual Assistant ; Electronic Servicing Assistant ; Electronic System Installation Assistant ; Telecommunications and Surveillance Technical Assistant) 電子技工(包括：影音助理；電子維修助理；電子系統安裝助理；電訊及監控技術助理)	1098	0	25
303	Electrician 電氣技工	32	2	2
304	Mechanic (Maintenance Mechanic / Fitter, Machinist, Mould / Tool and Die Maker and Repairer) 機械工（保養／裝配打磨工、機床工、工具／工模製造及修理工）	18	0	0
Sub-Total 小計		1211	2	33
Operative Level 操作工級				
401	Operator ; Quality Assurance / Control Operator ; General Worker (Incl. Assembler, Soldering Worker, Aligner / Tester) 操作工；品質保證／控制工；雜工(包括：裝配工、焊錫工、校整／測試工)	40	2	0
Sub-Total 小計		40	2	0
Total 總數		4986	20	134

Table 9.5 Manpower statistics by Job Level (Information Technology Services)

表 9.5 按職級劃分的人力統計（資訊技術服務）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的空缺額
Professional/ Technologist Level 專業人士/技師級				
101	Electronics Engineer ; Computer Engineer (Incl. Electronics Product / Project Engineer) 電子工程師；電腦工程師 (包括：電子產品/項目工程師)	1389	3	0
102	Telecommunications Engineer (Incl. Network Engineer / Mobile Network Engineer) 電訊工程師 (包括：網路/行動網路工程師)	299	0	0
103	Electronics Sales / Support / Service Engineer 電子銷售/技術支援/服務工程師	836	0	36
104	Electrical Engineer 電機工程師	1	0	0
105	Mechanical Engineer / Designer 機械工程師/設計師	170	1	0
106	Manufacturing Engineer ; Quality Assurance / Control Engineer (Incl. Industrial Engineer) 製造工程師；品質保證/控制工程師 (包括：工業工程師)	31	0	0
107	Test Engineer (Electronic Product) 測試工程師 (電子產品)	1	0	0
108	Chemical Engineer 化學工程師	0	0	0
109	Product Designer ; Packaging / Graphic Designer 產品設計師；包裝/平面設計師	11	0	0
110	Systems Analyst / Engineer (Incl. Analyst Programmer) 系統分析師/工程師 (包括：分析程式員)	1007	0	12
111	Software Developer / Engineer (Incl. Embedded Software / Firmware Engineer) 軟件開發員/工程師 (包括：嵌入式軟件/韌體工程師)	432	2	0
112	UI / UX Designer 用戶界面/用戶體驗設計師	245	1	0
113	Artificial Intelligence (AI) Engineer ; Machine Learning (ML) Engineer 人工智能工程師；機器學習工程師	201	0	5
114	Internet of Things (IoT) Developer / Engineer 物聯網開發員/工程師	31	0	0
115	Data Engineer ; Data Analyst ; Data Scientist 數據工程師；數據分析員；數據科學家	29	0	0
116	Robotic System / Automation Engineer 機器人系統/自動化工程師	67	0	2
117	Information Security / Cybersecurity Specialist 資訊科技保安/網絡安全專家	104	0	28
Sub-Total 小計		4854	7	83
Technician Level 技術員級				
201	Electronics Technician (Incl. Maintenance Technician ; Service Technician ; Computer Technician ; Audio-Visual Technician ; Electronic Support Technician) 電子技術員 (包括：保養技術員；維修技術員；電腦技術員；影音技術員；電子支援技術員)	1988	0	0
202	Telecommunications Technician (Incl. Network Technician) 電訊技術員 (包括：網絡技術員)	1555	0	5
203	Mechanical Technician 機械技術員	1	0	0
204	Manufacturing Technician ; Quality Assurance / Control Technician 製造技術員；品質保證/控制技術員	61	0	0
205	Draughtsman 繪圖員	25	0	0
206	Electronics Testing Technician 電子測試技術員	38	0	4
207	Supervisor ; Foreman ; Leader (Incl. Junior Supervisor) 監督；管工；組長 (包括：初級監督)	213	0	0
208	Programmer ; Software Technician 程式編製員；軟件技術員	3132	0	23
209	Web Developer / Designer ; Computer Game Designer 網站開發員/設計員；電腦遊戲設計員	529	0	0
210	Sales Technician (Incl. Electronic Sales Technician ; Electronic Merchandising Technician) 推銷技術員 (包括：電子推銷技術員；電子採購技術員)	2145	2	6
299	Other relevant staff (Technician Level) 其他相關員工 (技術員級)	2	0	0
Sub-Total 小計		9689	2	38

Table 9.5 Manpower statistics by Job Level (Information Technology Services)

表 9.5 按職級劃分的人力統計（資訊技術服務）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的空缺額
Craftsman Level 技工級				
301	High Speed Data Network & Wireless Data System Integrator ; Cable Joiner 高速資訊網絡及無線系統技工；電纜連接技工	0	0	0
302	Electronics Craftsman (Incl. Audio Visual Assistant ; Electronic Servicing Assistant ; Electronic System Installation Assistant ; Telecommunications and Surveillance Technical Assistant) 電子技工(包括：影音助理；電子維修助理；電子系統安裝助理；電訊及監控技術助理)	336	0	0
303	Electrician 電氣技工	215	0	0
304	Mechanic (Maintenance Mechanic / Fitter, Machinist, Mould / Tool and Die Maker and Repairer) 機械工(保養/裝配打磨工、機床工、工具/工模製造及修理工)	0	0	0
Sub-Total 小計		551	0	0
Operative Level 操作工級				
401	Operator ; Quality Assurance / Control Operator ; General Worker (Incl. Assembler, Soldering Worker, Aligner / Tester) 操作工；品質保證/控制工；雜工(包括：裝配工、焊錫工、校整/測試工)	0	0	0
Sub-Total 小計		0	0	0
Total 總數		15094	9	121

Table 9.6 Manpower statistics by Job Level (Import and Export Trading)

表 9.6 按職級劃分的人力統計（進出口貿易）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的空缺額
Professional/ Technologist Level 專業人士/技師級				
101	Electronics Engineer ; Computer Engineer (Incl. Electronics Product / Project Engineer) 電子工程師；電腦工程師 (包括：電子產品/項目工程師)	1320	0	9
102	Telecommunications Engineer (Incl. Network Engineer / Mobile Network Engineer) 電訊工程師 (包括：網路/行動網路工程師)	81	0	9
103	Electronics Sales / Support / Service Engineer 電子銷售/技術支援/服務工程師	248	0	1
104	Electrical Engineer 電機工程師	45	0	1
105	Mechanical Engineer / Designer 機械工程師/設計師	101	0	0
106	Manufacturing Engineer ; Quality Assurance / Control Engineer (Incl. Industrial Engineer) 製造工程師；品質保證/控制工程師 (包括：工業工程師)	32	1	0
107	Test Engineer (Electronic Product) 測試工程師 (電子產品)	37	0	0
108	Chemical Engineer 化學工程師	1	0	0
109	Product Designer ; Packaging / Graphic Designer 產品設計師；包裝/平面設計師	41	0	0
110	Systems Analyst / Engineer (Incl. Analyst Programmer) 系統分析師/工程師 (包括：分析程式員)	168	0	1
111	Software Developer / Engineer (Incl. Embedded Software / Firmware Engineer) 軟件開發員/工程師 (包括：嵌入式軟件/韌體工程師)	108	0	2
112	UI / UX Designer 用戶界面/用戶體驗設計師	42	0	0
113	Artificial Intelligence (AI) Engineer ; Machine Learning (ML) Engineer 人工智能工程師；機器學習工程師	15	0	0
114	Internet of Things (IoT) Developer / Engineer 物聯網開發員/工程師	0	0	0
115	Data Engineer ; Data Analyst ; Data Scientist 數據工程師；數據分析員；數據科學家	2	0	0
116	Robotic System / Automation Engineer 機器人系統/自動化工程師	0	0	0
117	Information Security / Cybersecurity Specialist 資訊科技保安/網絡安全專家	48	0	0
Sub-Total 小計		2289	1	23
Technician Level 技術員級				
201	Electronics Technician (Incl. Maintenance Technician ; Service Technician ; Computer Technician ; Audio-Visual Technician ; Electronic Support Technician) 電子技術員 (包括：保養技術員；維修技術員；電腦技術員；影音技術員；電子支援技術員)	2034	0	0
202	Telecommunications Technician (Incl. Network Technician) 電訊技術員 (包括：網絡技術員)	52	0	0
203	Mechanical Technician 機械技術員	208	4	10
204	Manufacturing Technician ; Quality Assurance / Control Technician 製造技術員；品質保證/控制技術員	54	0	0
205	Draughtsman 繪圖員	27	0	0
206	Electronics Testing Technician 電子測試技術員	0	0	0
207	Supervisor ; Foreman ; Leader (Incl. Junior Supervisor) 監督；管工；組長 (包括：初級監督)	168	0	0
208	Programmer ; Software Technician 程式編製員；軟件技術員	58	0	0
209	Web Developer / Designer ; Computer Game Designer 網站開發員/設計員；電腦遊戲設計員	83	0	0
210	Sales Technician (Incl. Electronic Sales Technician ; Electronic Merchandising Technician) 推銷技術員 (包括：電子推銷技術員；電子採購技術員)	7500	1	19
299	Other relevant staff (Technician Level) 其他相關員工 (技術員級)	0	0	0
Sub-Total 小計		10184	5	29

Table 9.6 Manpower statistics by Job Level (Import and Export Trading)

表 9.6 按職級劃分的人力統計（進出口貿易）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的空缺額
Craftsman Level 技工級				
301	High Speed Data Network & Wireless Data System Integrator ; Cable Joiner 高速資訊網絡及無線系統技工；電纜連接技工	52	0	0
302	Electronics Craftsman (Incl. Audio Visual Assistant ; Electronic Servicing Assistant ; Electronic System Installation Assistant ; Telecommunications and Surveillance Technical Assistant) 電子技工(包括：影音助理；電子維修助理；電子系統安裝助理；電訊及監控技術助理)	157	0	0
303	Electrician 電氣技工	0	0	0
304	Mechanic (Maintenance Mechanic / Fitter, Machinist, Mould / Tool and Die Maker and Repairer) 機械工(保養/裝配打磨工、機床工、工具/工模製造及修理工)	4	0	0
Sub-Total 小計		213	0	0
Operative Level 操作工級				
401	Operator ; Quality Assurance / Control Operator ; General Worker (Incl. Assembler, Soldering Worker, Aligner / Tester) 操作工；品質保證/控制工；雜工(包括：裝配工、焊錫工、校整/測試工)	472	0	0
Sub-Total 小計		472	0	0
Total 總數		13158	6	52

Table 9.7 Manpower statistics by Job Level (Wholesale and Retail)

表 9.7 按職級劃分的人力統計（批發及零售）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的空缺額
Professional/ Technologist Level 專業人士/技師級				
101	Electronics Engineer ; Computer Engineer (Incl. Electronics Product / Project Engineer) 電子工程師；電腦工程師 (包括：電子產品/項目工程師)	164	0	0
102	Telecommunications Engineer (Incl. Network Engineer / Mobile Network Engineer) 電訊工程師 (包括：網路/行動網路工程師)	1	0	0
103	Electronics Sales / Support / Service Engineer 電子銷售/技術支援/服務工程師	7	0	0
104	Electrical Engineer 電機工程師	18	0	4
105	Mechanical Engineer / Designer 機械工程師/設計師	0	0	0
106	Manufacturing Engineer ; Quality Assurance / Control Engineer (Incl. Industrial Engineer) 製造工程師；品質保證/控制工程師 (包括：工業工程師)	0	0	0
107	Test Engineer (Electronic Product) 測試工程師 (電子產品)	0	0	0
108	Chemical Engineer 化學工程師	0	0	0
109	Product Designer ; Packaging / Graphic Designer 產品設計師；包裝/平面設計師	7	0	0
110	Systems Analyst / Engineer (Incl. Analyst Programmer) 系統分析師/工程師 (包括：分析程式員)	27	0	0
111	Software Developer / Engineer (Incl. Embedded Software / Firmware Engineer) 軟件開發員/工程師 (包括：嵌入式軟件/韌體工程師)	5	0	0
112	UI / UX Designer 用戶界面/用戶體驗設計師	0	0	0
113	Artificial Intelligence (AI) Engineer ; Machine Learning (ML) Engineer 人工智能工程師；機器學習工程師	0	0	0
114	Internet of Things (IoT) Developer / Engineer 物聯網開發員/工程師	0	0	0
115	Data Engineer ; Data Analyst ; Data Scientist 數據工程師；數據分析員；數據科學家	1	0	0
116	Robotic System / Automation Engineer 機器人系統/自動化工程師	0	0	0
117	Information Security / Cybersecurity Specialist 資訊科技保安/網絡安全專家	3	0	0
Sub-Total 小計		233	0	4
Technician Level 技術員級				
201	Electronics Technician (Incl. Maintenance Technician ; Service Technician ; Computer Technician ; Audio-Visual Technician ; Electronic Support Technician) 電子技術員 (包括：保養技術員；維修技術員；電腦技術員；影音技術員；電子支援技術員)	527	0	4
202	Telecommunications Technician (Incl. Network Technician) 電訊技術員 (包括：網絡技術員)	23	0	0
203	Mechanical Technician 機械技術員	0	0	0
204	Manufacturing Technician ; Quality Assurance / Control Technician 製造技術員；品質保證/控制技術員	0	0	0
205	Draughtsman 繪圖員	0	0	0
206	Electronics Testing Technician 電子測試技術員	1	0	0
207	Supervisor ; Foreman ; Leader (Incl. Junior Supervisor) 監督；管工；組長 (包括：初級監督)	78	0	0
208	Programmer ; Software Technician 程式編製員；軟件技術員	159	0	1
209	Web Developer / Designer ; Computer Game Designer 網站開發員/設計員；電腦遊戲設計員	2	0	0
210	Sales Technician (Incl. Electronic Sales Technician ; Electronic Merchandising Technician) 推銷技術員 (包括：電子推銷技術員；電子採購技術員)	4082	0	42
299	Other relevant staff (Technician Level) 其他相關員工 (技術員級)	0	0	0
Sub-Total 小計		4872	0	47

Table 9.7 Manpower statistics by Job Level (Wholesale and Retail)

表 9.7 按職級劃分的人力統計（批發及零售）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的 僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的 受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的 空缺額
Craftsman Level 技工級				
301	High Speed Data Network & Wireless Data System Integrator ; Cable Joiner 高速資訊網絡及無線系統技工；電纜連接技工	0	0	0
302	Electronics Craftsman (Incl. Audio Visual Assistant ; Electronic Servicing Assistant ; Electronic System Installation Assistant ; Telecommunications and Surveillance Technical Assistant) 電子技工(包括：影音助理；電子維修助理；電子系統安裝助理；電訊及監控技術助理)	412	0	6
303	Electrician 電氣技工	3	0	0
304	Mechanic (Maintenance Mechanic / Fitter, Machinist, Mould / Tool and Die Maker and Repairer) 機械工(保養/裝配打磨工、機床工、工具/工模製造及修理工)	0	0	0
Sub-Total 小計		415	0	6
Operative Level 操作工級				
401	Operator ; Quality Assurance / Control Operator ; General Worker (Incl. Assembler, Soldering Worker, Aligner / Tester) 操作工；品質保證/控制工；雜工(包括：裝配工、焊錫工、校整/測試工)	42	0	0
Sub-Total 小計		42	0	0
Total 總數		5562	0	57

Table 9.8 Manpower statistics by Job Level (Design Houses, R&D / Educational Institutes & Public Bodies)

表 9.8 按職級劃分的人力統計（設計公司、研發機構、大學和政府及公用事業和運輸服務）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的 僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的 受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的 空缺額
Professional/ Technologist Level 專業人士/技師級				
101	Electronics Engineer ; Computer Engineer (Incl. Electronics Product / Project Engineer) 電子工程師；電腦工程師 (包括：電子產品/項目工程師)	819	10	30
102	Telecommunications Engineer (Incl. Network Engineer / Mobile Network Engineer) 電訊工程師 (包括：網路/行動網路工程師)	117	0	4
103	Electronics Sales / Support / Service Engineer 電子銷售/技術支援/服務工程師	4	0	0
104	Electrical Engineer 電機工程師	1561	27	69
105	Mechanical Engineer / Designer 機械工程師/設計師	854	1	8
106	Manufacturing Engineer ; Quality Assurance / Control Engineer (Incl. Industrial Engineer) 製造工程師；品質保證/控制工程師 (包括：工業工程師)	33	0	6
107	Test Engineer (Electronic Product) 測試工程師 (電子產品)	0	0	0
108	Chemical Engineer 化學工程師	14	2	0
109	Product Designer ; Packaging / Graphic Designer 產品設計師；包裝/平面設計師	3	0	2
110	Systems Analyst / Engineer (Incl. Analyst Programmer) 系統分析師/工程師 (包括：分析程式員)	630	0	33
111	Software Developer / Engineer (Incl. Embedded Software / Firmware Engineer) 軟件開發員/工程師 (包括：嵌入式軟件/韌體工程師)	174	4	14
112	UI / UX Designer 用戶界面/用戶體驗設計師	17	0	3
113	Artificial Intelligence (AI) Engineer ; Machine Learning (ML) Engineer 人工智能工程師；機器學習工程師	17	2	4
114	Internet of Things (IoT) Developer / Engineer 物聯網開發員/工程師	4	0	0
115	Data Engineer ; Data Analyst ; Data Scientist 數據工程師；數據分析員；數據科學家	34	0	0
116	Robotic System / Automation Engineer 機器人系統/自動化工程師	95	0	0
117	Information Security / Cybersecurity Specialist 資訊科技保安/網絡安全專家	41	1	1
Sub-Total 小計		4417	47	174
Technician Level 技術員級				
201	Electronics Technician (Incl. Maintenance Technician ; Service Technician ; Computer Technician ; Audio-Visual Technician ; Electronic Support Technician) 電子技術員 (包括：保養技術員；維修技術員；電腦技術員；影音技術員；電子支援技術員)	960	86	38
202	Telecommunications Technician (Incl. Network Technician) 電訊技術員 (包括：網絡技術員)	33	0	1
203	Mechanical Technician 機械技術員	1945	140	23
204	Manufacturing Technician ; Quality Assurance / Control Technician 製造技術員；品質保證/控制技術員	29	0	0
205	Draughtsman 繪圖員	17	0	3
206	Electronics Testing Technician 電子測試技術員	0	0	0
207	Supervisor ; Foreman ; Leader (Incl. Junior Supervisor) 監督；管工；組長 (包括：初級監督)	2195	154	76
208	Programmer ; Software Technician 程式編製員；軟件技術員	520	0	13
209	Web Developer / Designer ; Computer Game Designer 網站開發員/設計員；電腦遊戲設計員	3	0	0
210	Sales Technician (Incl. Electronic Sales Technician ; Electronic Merchandising Technician) 推銷技術員 (包括：電子推銷技術員；電子採購技術員)	30	0	0
299	Other relevant staff (Technician Level) 其他相關員工 (技術員級)	3	0	0
Sub-Total 小計		5735	380	154

Table 9.8 Manpower statistics by Job Level (Design Houses, R&D / Educational Institutes & Public Bodies)

表 9.8 按職級劃分的人力統計（設計公司、研發機構、大學和政府及公用事業和運輸服務）

Job Code 職務編號	Job Title 職稱	Number of Employees as at Survey Reference Date 在統計日期的僱員人數	Number of Trainees as at Survey Reference Date 在統計日期的受訓者人數	Number of Vacancies as at Survey Reference Date 在統計日期的空缺額
Craftsman Level 技工級				
301	High Speed Data Network & Wireless Data System Integrator ; Cable Joiner 高速資訊網絡及無線系統技工；電纜連接技工	214	0	0
302	Electronics Craftsman (Incl. Audio Visual Assistant ; Electronic Servicing Assistant ; Electronic System Installation Assistant ; Telecommunications and Surveillance Technical Assistant) 電子技工 (包括：影音助理；電子維修助理；電子系統安裝助理；電訊及監控技術助理)	430	32	5
303	Electrician 電氣技工	781	162	50
304	Mechanic (Maintenance Mechanic / Fitter, Machinist, Mould / Tool and Die Maker and Repairer) 機械工 (保養／裝配打磨工、機床工、工具／工模製造及修理工)	657	112	50
Sub-Total 小計		2082	306	105
Operative Level 操作工級				
401	Operator ; Quality Assurance / Control Operator ; General Worker (Incl. Assembler, Soldering Worker, Aligner / Tester) 操作工；品質保證／控制工；雜工 (包括：裝配工、焊錫工、校整／測試工)	59	0	13
Sub-Total 小計		59	0	13
Total 總數		12293	733	446

Table 9.9 Percentage distribution of average monthly remuneration package of full-time employees by principal job
表 9.9 按每月平均收入幅度劃分的全職僱員分佈

Job Code 職務 編號	Job Title 職稱	\$10,000 or below 或以下	\$10,001 - \$15,000	\$15,001 - \$20,000	\$20,001 - \$25,000	\$25,001 - \$30,000	\$30,001 - \$50,000	\$50,001 or above 或以上	Total number of full-time employees 全職僱員 人數
Professional/ Technologist Level 專業人士/技師級									
101	Electronics Engineer ; Computer Engineer (Incl. Electronics Product / Project Engineer) 電子工程師；電腦工程師(包括：電子產品/項目工程師)	0.0%	0.1%	0.0%	1.6%	19.7%	57.7%	21.0%	6114
102	Telecommunications Engineer (Incl. Network Engineer / Mobile Network Engineer) 電訊工程師(包括：網路/行動網路工程師)	0.0%	0.0%	0.0%	0.1%	24.1%	70.1%	5.7%	1952
103	Electronics Sales / Support / Service Engineer 電子銷售/技術支援/服務工程師	0.0%	0.0%	0.2%	0.1%	8.5%	78.7%	12.5%	1713
104	Electrical Engineer 電機工程師	0.0%	0.0%	0.0%	0.1%	33.5%	25.9%	40.5%	1772
105	Mechanical Engineer / Designer 機械工程師/設計師	0.0%	0.1%	0.0%	0.6%	20.0%	26.2%	53.1%	1360
106	Manufacturing Engineer ; Quality Assurance / Control Engineer (Incl. Industrial Engineer) 製造工程師；品質保證/控制工程師(包括：工業工程師)	0.0%	0.0%	0.0%	0.0%	14.1%	74.9%	11.0%	272
107	Test Engineer (Electronic Product) 測試工程師(電子產品)	0.0%	0.0%	0.0%	47.6%	1.2%	51.2%	0.0%	142
108	Chemical Engineer 化學工程師	0.0%	0.0%	0.0%	10.5%	73.7%	15.8%	0.0%	19
109	Product Designer ; Packaging / Graphic Designer 產品設計師；包裝/平面設計師	0.0%	0.7%	1.3%	2.0%	94.8%	1.3%	0.0%	160
110	Systems Analyst / Engineer (Incl. Analyst Programmer) 系統分析師/工程師(包括：分析程式員)	0.0%	0.0%	0.0%	0.0%	20.0%	75.6%	4.3%	2851
111	Software Developer / Engineer (Incl. Embedded Software / Firmware Engineer) 軟件開發員/工程師(包括：嵌入式軟件/韌體工程師)	0.0%	0.3%	0.0%	0.4%	6.8%	84.2%	8.2%	973
112	UI / UX Designer 用戶界面/用戶體驗設計師	0.0%	0.3%	0.3%	0.3%	16.2%	82.8%	0.0%	351
113	Artificial Intelligence (AI) Engineer ; Machine Learning (ML) Engineer 人工智能工程師；機器學習工程師	0.0%	0.0%	0.0%	0.0%	8.1%	81.7%	10.2%	252
114	Internet of Things (IoT) Developer / Engineer 物聯網開發員/工程師	0.0%	0.0%	0.0%	74.4%	0.0%	25.6%	0.0%	43
115	Data Engineer ; Data Analyst ; Data Scientist 數據工程師；數據分析員；數據科學家	0.0%	0.0%	0.0%	1.9%	21.5%	72.9%	3.7%	121
116	Robotic System / Automation Engineer 機器人系統/自動化工程師	0.0%	0.0%	0.0%	0.6%	25.9%	73.4%	0.0%	163
117	Information Security / Cybersecurity Specialist 資訊科技保安/網絡安全專家	0.0%	0.0%	0.0%	28.7%	3.1%	63.0%	5.3%	383
Sub-Total 小計		0.0%	0.1%	0.0%	1.7%	19.9%	60.6%	17.8%	18641
Technician Level 技術員級									
201	Electronics Technician (Incl. Maintenance Technician ; Service Technician ; Computer Technician ; Audio-Visual Technician ; Electronic Support Technician) 電子技術員(包括：保養技術員；維修技術員；電腦技術員；影音技術員；電子支援技術員)	0.0%	0.0%	11.0%	44.0%	19.9%	25.1%	0.0%	10099
202	Telecommunications Technician (Incl. Network Technician) 電訊技術員(包括：網絡技術員)	0.0%	3.0%	6.0%	36.1%	52.3%	2.6%	0.0%	3131
203	Mechanical Technician 機械技術員	0.0%	0.0%	0.3%	20.3%	58.9%	20.5%	0.0%	2241
204	Manufacturing Technician ; Quality Assurance / Control Technician 製造技術員；品質保證/控制技術員	0.0%	0.0%	17.2%	50.4%	32.4%	0.0%	0.0%	474
205	Draughtsman 繪圖員	0.0%	0.0%	36.0%	50.4%	13.6%	0.0%	0.0%	125
206	Electronics Testing Technician 電子測試技術員	0.0%	0.0%	33.3%	61.1%	5.6%	0.0%	0.0%	209
207	Supervisor ; Foreman ; Leader (Incl. Junior Supervisor) 監督；管工；組長(包括：初級監督)	0.0%	0.0%	0.0%	14.0%	79.0%	3.5%	3.5%	2851
208	Programmer ; Software Technician 程式編製員；軟件技術員	0.0%	0.0%	1.7%	49.1%	44.9%	4.4%	0.0%	4530
209	Web Developer / Designer ; Computer Game Designer 網站開發員/設計師；電腦遊戲設計師	0.0%	0.0%	0.0%	47.9%	52.1%	0.0%	0.0%	656
210	Sales Technician (Incl. Electronic Sales Technician ; Electronic Merchandising Technician) 推銷技術員(包括：電子推銷技術員；電子採購技術員)	0.0%	0.0%	18.7%	40.6%	40.6%	0.1%	0.0%	14689
299	Other relevant staff (Technician Level) 其他相關員工(技術員級)	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	20
Sub-Total 小計		0.0%	0.3%	10.9%	38.8%	41.3%	8.5%	0.3%	39025

Table 9.9 Percentage distribution of average monthly remuneration package of full-time employees by principal job
表 9.9 按每月平均收入幅度劃分的全職僱員分佈

Job Code 職務 編號	Job Title 職稱	\$10,000 or below 或以下	\$10,001 - \$15,000	\$15,001 - \$20,000	\$20,001 - \$25,000	\$25,001 - \$30,000	\$30,001 - \$50,000	\$50,001 or above 或以上	Total number of full-time employees 全職僱員 人數
Craftsman Level 技工級									
301	High Speed Data Network & Wireless Data System Integrator ; Cable Joiner 高速資訊網絡及無線系統技工；電纜連接技工	0.0%	0.0%	10.6%	88.3%	1.1%	0.0%	0.0%	595
302	Electronics Craftsman (Incl. Audio Visual Assistant ; Electronic Servicing Assistant ; Electronic System Installation Assistant ; Telecommunications and Surveillance Technical Assistant) 電子技工 (包括：影音助理；電子維修助理；電子系統安裝助理；電訊及監 控技術助理)	0.0%	1.7%	35.4%	57.0%	5.9%	0.0%	0.0%	6059
303	Electrician 電氣技工	0.0%	1.0%	23.8%	72.5%	2.7%	0.0%	0.0%	1355
304	Mechanic (Maintenance Mechanic / Fitter, Machinist, Mould / Tool and Die Maker and Repairer) 機械工 (保養／裝配打磨工、機床工、工具／工模製造及修理工)	0.0%	0.0%	2.0%	89.8%	8.2%	0.0%	0.0%	693
Sub-Total 小計		0.0%	1.3%	27.6%	65.9%	5.3%	0.0%	0.0%	8702
Operative Level 操作工級									
401	Operator ; Quality Assurance / Control Operator ; General Worker (Incl. Assembler, Soldering Worker, Aligner / Tester) 操作工；品質保證／控制工；雜工 (包括：裝配工、焊錫工、校整／測試工)	0.0%	13.9%	82.9%	3.3%	0.0%	0.0%	0.0%	1037
Sub-Total 小計		0.0%	13.9%	82.9%	3.3%	0.0%	0.0%	0.0%	1037
Total 總數		0.0%	0.5%	10.4%	30.3%	31.0%	22.5%	5.3%	67405

Table 9.10 Percentage distribution and ranking of skills should be enhanced for full-time employees by job level
表 9.10 按職級劃分的全職僱員需要加強培訓的技能的分布及排名

Skills 技能	Percentage 百分比				Ranking 排名			
	Professional/ Technologist Level 專業人士/ 技師級	Technician Level 技術員級	Craftsman Level 技工級	Operative Level 操作工級	Professional/ Technologist Level 專業人士/ 技師級	Technician Level 技術員級	Craftsman Level 技工級	Operative Level 操作工級
A. Strategic Planning and Management Skill 策略規劃及管理技巧								
(i) Business Continuity Management 業務持續性管理	40.6%	3.0%	0.0%	0.0%	4	23	26	15
(ii) Quality Management 質量管理	51.0%	4.3%	0.1%	1.1%	2	17	23	9
(iii) Project Management 項目管理	55.7%	7.8%	0.0%	0.0%	1	10	26	15
(iv) Risk Management 風險管理	50.1%	7.4%	0.1%	1.1%	3	12	23	9
(v) Strategy Planning and Implementation 戰略規劃及推行	32.9%	3.6%	0.0%	0.0%	7	20	26	15
(vi) Others 其他	0.1%	0.0%	0.0%	0.0%	29	31	26	15
B. Technical Skills 技術性技能								
(i) Automation System 自動化系統	12.9%	7.6%	3.9%	4.4%	15	11	6	4
(ii) Smart Manufacturing 智能製造	2.2%	0.5%	1.1%	0.0%	27	28	13	15
(iii) Robotics 機械人	1.2%	0.1%	0.2%	0.0%	28	30	19	15
(iv) Internet of Things (IoT) 物聯網技術	13.6%	8.9%	2.3%	1.1%	13	6	9	9
(v) Artificial Intelligence 人工智能	9.3%	1.3%	3.2%	0.0%	22	27	7	15
(vi) Big Data Analytics 大數據分析	32.1%	10.5%	2.7%	0.0%	8	4	8	15
(vii) Cloud Technology 雲端技術	13.2%	3.7%	1.1%	0.0%	14	19	13	15
(viii) User Experience / User Interface (UX/UI) Design 用戶體驗 / 用戶界面設計	9.2%	1.6%	0.7%	0.0%	23	26	15	15
(ix) Programming / Software Development 程式編製 / 軟件開發	7.2%	8.1%	1.3%	0.0%	24	9	11	15
(x) Maintenance 保養	9.7%	17.6%	46.6%	16.5%	21	2	2	3
(xi) Manufacturing and Operations 製造與運營	12.7%	14.3%	5.4%	2.2%	16	3	5	6
(xii) Network Technology Management 網絡技術管理	12.4%	8.8%	1.2%	1.1%	18	7	12	9
(xiii) Production Management 生產管理	24.0%	2.6%	0.5%	2.2%	10	24	17	6
(xiv) Product Development and Testing 產品開發與測試	34.3%	8.2%	8.6%	1.1%	6	8	4	9
(xv) Productivity and Innovation 生產力與創新	6.6%	4.3%	0.1%	0.0%	25	16	23	15
(xvi) System Integration 系統整合	11.1%	4.0%	1.6%	1.1%	19	18	10	9
(xvii) Information Security 資訊保安	9.9%	9.9%	12.5%	46.2%	20	5	3	2
(xviii) Environment, Social and Governance (ESG) 環境、社會和企業管治	2.3%	1.9%	0.5%	2.2%	26	25	17	6
(xix) Others 其他	0.0%	0.3%	0.2%	0.0%	31	29	19	15
C. Soft Skills 軟性技巧								
(i) Business Network Building 商業網絡建立	23.9%	4.7%	0.0%	0.0%	11	15	26	15
(ii) Organisational Development 組織發展	18.8%	3.1%	0.2%	3.3%	12	22	19	5
(iii) Design Thinking 設計思維	12.7%	7.4%	0.7%	0.0%	17	13	15	15
(iv) Problem-solving 解難技巧	35.4%	52.8%	54.5%	82.4%	5	1	1	1
(v) Leadership / Supervisory Skill 領導 / 督導技巧	26.4%	6.6%	0.2%	0.0%	9	14	19	15
(vi) Others 其他	0.1%	3.2%	0.0%	0.0%	30	21	26	15
No training requirement 沒有培訓需要	0.0%	0.0%	0.0%	0.0%				
Number of companies with such level of full-time employees 具有此職級全職僱員的公司數目	1 574	5 937	841	96				

Note:
Percentages are calculated on the basis of total number of companies with such level of full-time employees

註：
百分比是以具有此職級全職僱員的公司數目為基準計算。