2014 MANPOWER SURVEY REPORT

ELECTRONICS AND TELECOMMUNICATIONS INDUSTRIES

電子業及電訊業

2014 年人力調查報告

ELECTRONICS AND TELECOMMUNICATIONS TRAINING BOARD

VOCATIONAL TRAINING COUNCIL

職業訓練局

電子業及電訊業訓練委員會

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Executive Summary of the 2014 Manpower Survey Report of the Electronics and Telecommunications Industries

Introduction

The survey was conducted in April 2014 by the Electronics and Telecommunications Training Board of the Vocational Training Council (VTC) to collect up-to-date manpower information by principal job in the electronics and telecommunications industries.

2. The fieldwork of the manpower survey covered 709 establishments which were selected by means of a stratified random sampling method from a total of some 7 567 establishments. The survey data collected from the selected establishments were scaled up statistically to reflect the overall manpower situation of the two industries.

Survey Findings

3. The survey revealed that in April 2014, a total of 144 149 persons were employed in the Hong Kong electronics and telecommunications industries. Of the 144 149 employees, 62 599 were employed in principal jobs of electronics engineering and related disciplines in the two industries. The distribution of employees by job level and by sector of the electronics and telecommunications industries is as follows:

Table A : Distribution of Employees by Job Level and by Sector

Sector	Job Level				**Total**
	Technologist	Technician	Craftsman	Operative	
1. Manufacturing	797	2 158	352	1 367	**4 674 (7.5%)**
2. Trading and Services	9 847	23 113	4 295	1 021	**38 276 (61.1%)**
3. Telecommunications Services	2 302	4 602	614	142	**7 660 (12.2%)**
4. Wholesale	390	3 502	249	97	**4 238 (6.8%)**
5. Design Houses and Relevant Departments in Universities and Government	1 302	2 019	858	73	**4 252 (6.8%)**
6. Retail Shops for Electronics Products (8 large shops)	4	3 495	-	-	**3 499 (5.6%)**
Total (Percentage of Total Manpower)	**14 642 (23.4%)**	**38 889 (62.1%)**	**6 368 (10.2%)**	**2 700 (4.3%)**	**62 599 (100%)**

4. At the time of the survey, employers reported a total of 695 trainees and 1 388 vacancies in electronics engineering and related disciplines, representing 1.1% and 2.2% respectively of the total workforce. Besides, employers also forecasted that the two industries would require 64 007 workers by April 2015, an increase of 2.3% (1 408) of the workforce in April 2014.

Manpower Changes

5. The total manpower in principal jobs of electronics and related disciplines of the electronics and telecommunications industries shows an increase from 58 631 workers in 2012 to 62 599 in 2014. Table 2.1 reveals that the manpower of Sector 2 - Trading & Services (38 276) covered about 61.1%, a majority of the total manpower (62 599) of the two industries in 2014, while that of Sector 6 – Retail Shops for Electronics Products (3 499) held 5.6%, the least of manpower among all sectors. The two Sectors (2 and 6) accounted 66.7% (41 775) of the total manpower, achieving an annual manpower increase of 6.1%, or 4 646 workers, over the past two years. Table 2.1 shows that the remaining 33.3% (20 824) of the total manpower was contributed by the rest of the four Sectors (1, 3, 4 and 5), resulting an annual manpower decrease of 1.6%, or 678 workers, over the past two years.

6. As a detail of annual manpower changes by sector in the electronics and telecommunications industries over the past two years, Table 3.1 reveals a sharp annual manpower decrease of 12.1% in Sector 1 – Manufacturing and a very mild annual manpower decrease of 0.5% in Sector 5 – Design Houses and Relevant Departments in Universities and Government. On the other hand, it recorded an annual manpower increase of 2.6% in Sector 3 (Telecommunication Services). As a reference, Table 3.2 presents a significant annual manpower increase of 20.3% in Sector 6. For the close business and manpower nature of Sectors 2 and 4, an annual manpower increase of 5.0% was obtained in the two Sectors. Excluding Sector 6, Table 3.1 shows a 2.5% per annum increase of manpower in Sectors 1 to 5, from 56 215 workers in 2012 to 59 100 in 2014.

7. The followings attributed to the manpower changes by sector:

(i) The world economy declined in the past two years, which caused a substantial impact on Sector 1 that the number of large companies continued to decline, i.e. a total of 18 companies with employment size of 50 and over in 2014 comparing with 22 in 2012. On the other hand, there was a general decrease of manpower at the four job levels across the Sector. As a result, it recorded a shape annual manpower decrease of 12.1% in the Sector.

(ii) An annual manpower increase of 5.0% was obtained in Sectors 2 and 4. It was due to an increase of basic construction work and special overseas project were carried by a few engineering services companies in Sector 2 in the past two years together with the continuous increase in tourists visiting Hong Kong in Sector 4 in 2014. As a result, more skilled manpower was required in the first three work levels. However, the operative level recorded an annual manpower decrease in 2014.

(iii) More and more people used their smartphones and computers for on-line purchase, communications, watching videos, movies and other entertainments via the Internet. In the meantime, more and more specific programmes and features were designed by the telecommunications and related companies in Sector 3 to suit such demands. As a result, additional skilled manpower was required in such companies to capture more market shares that a mild annual increase of 2.6% of manpower was surveyed in 2014 in Sector 3. Also, a general manpower increase happened across the four job levels.

(iv) The steady manpower engaged in the engineering departments of the universities and Government departments constituted the major manpower demand in Sector 5 in the past two years. On the other hand, it recorded a slight manpower drop in design houses. As a result, a very mild decrease of 0.5% of manpower was collected in Sector 5. In general, the manpower required by the whole Sector was stable.

(v) The sharp annual increase of manpower of 20.3% recorded in Sector 6 was the result of the number of companies surveyed from five in 2012 increased to eight in 2014 due to more companies in the Sector. Three new companies were included in 2014 to replace those were not engaged in business, with no technical manpower and sudden close of business in 2012. The survey also showed the same manpower situation as in 2012 that nearly the whole manpower in Sector 6 was at technician level and only a very few at technologist level.

Future Manpower Demand

8. Based on the manpower trend, business outlook of the electronics and telecommunications industries and employers' forecast of future manpower requirements, the Training Board believes that in the years ahead, well - trained technologists and technicians are required to maintain the development of the electronics and telecommunications industries. The demand for craftsman is steady and that for operatives (manufacturing) will be limited.

9. In view of the latest development of the two industries, the Training Board has also estimated the loss of manpower at different job levels due to workers leaving the electronics and telecommunications industries through retirement, migration to other industries and other causes. The Training Board has decided that the normal annual wastage rate of 3% be used for the loss of manpower at the technologist, technician and craftsman levels.

10. The Training Board has estimated, by using the Adaptive Filtering Method for the manpower projection for the technologist and technician levels. The additional manpower required by the electronics and telecommunications industries for 2015 – 2017 is summarized in Table B below. A breakdown of the manpower requirements into principal jobs is shown in Appendix 10.

Table B: Annual Manpower Demand in the Electronics and Telecommunications Industries from 2015 to 2017

Job Level	Annual Average Additional Demand for Employees	
	Total	±10% Range
Technologist	738	664 - 812
Technician	1 825	1 643 - 2 007
Craftsman	200	180 - 220

Recommendation

11. The Hong Kong electronics and telecommunications industries maintain the largest local merchandise export maker, contributing 58% of Hong Kong's total export in 2014. Hong Kong's economy is forecasted to maintain to grow by 2.8% to 3.5% in 2015. However, the continuous increase of the appreciation of Renminbi, rise in wage, taxes and duties together with up and down of oil price, interest rate and currencies causing fluctuation of prices of energy and materials, which have imposed a great challenge to the electronics and telecommunications industries. The shortage of workers in the Pearl River Delta and the effect on implementation of the Mainland's Labour Contract Law as well as Processing Trade Policy form another threat and essential operating cost items. On the other side, the existing benefit of zero imported tariffs in the Mainland since the implementation of the seventh phase of the Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA VII) in May 2012, the reveal of China 12th Five-Year Plan in March 2013 and the Supplement IX to CEPA signed on 29 June 2012, will continue to provide considerable opportunities for Hong Kong firms.

12. The world is facing a volatile economic situation. Recently, the Mainland delivered a report showing annual gross domestic product growth of 7.4% in 2014, a 24-year low record. The United States Federal Reserve ended its huge bond-buying programme in end of October 2014 as a response to its growing economy and improved employment rate. On the other side in Europe, the weak economic growth with high unemployment rate and just negative consumer index made the European Central Bank launch a bond-buying stimulus programme in January 2015. With the aims to boost the sagging economy and to avoid deflation in Euro Zone, the European Central Bank will pump 60 billion euros a month into the economy until the end of September 2016. All the above situations will impose certain effects on the electronics and telecommunications industries in the coming years. However, the reform and continuous development in Mainland will bring more business opportunities to the world as well as the industry in Hong Kong. In view of the above, the Training Board has a cautious optimistic view that the electronics and telecommunications industries will continue to grow steadily. Thus, the Training Board recommends the following measures for employers to consider coping with present situation and challenges ahead:

(i) To re-engineer, streamline and diversify business to make company more effective and efficient;

(ii) To develop more creative, trendy, value-added, cost effective and green products / services to increase competitive ability;

(iii) To further enhance the overall skill level and competency of the staff, especially the technical workforce, by providing them appropriate training leading to establish a much stronger and competitive organisation;

(iv) To carry on to explore new business in the most cost effective way to expand market share, i.e. the development of a smart city in Kowloon East as stated in the 2015 Policy Address; and

(v) To continue to maintain and to deepen strong partnership with key customers and to establish new partnership with other potential customers.

13. Regarding the strength of skill and competency of staff, the Training Board suggests that on top of the individual company's training needs, the "Skills Employees Need to Enhance" at Appendix 9 will be a good reference on various aspects of training for employers. In this particular situation, employers are recommended to step up their training efforts in order to ensure supply of well-equipped manpower to meet the challenges and business opportunities ahead. The Training Board also recommends Vocational Training Council and other training organizations to keep a close view on the above training needs of the electronics and telecommunications industries and provide such needs in time.

14. The Training Board will conduct another manpower survey of the electronics and telecommunications industries in 2016 to review and update the manpower requirements of the two industries.

SECTION I

INTRODUCTION

The Training Board

1.1 The Electronics and Telecommunications Training Board of the Vocational Training Council (VTC) is a statutory body appointed by the Government of the Hong Kong Special Administration Region (HKSAR) to be responsible for matters pertaining to manpower training in the electronics and telecommunications industries. The Training Board comprises members nominated by major trade associations, professional bodies, worker unions, training and educational institutions, as well as representatives from government departments. The membership and terms of reference of the Training Board are given in Annexes A and B respectively.

1.2 The Training Board is required by its terms of reference to determine the manpower needs of the electronics and telecommunications industries and to recommend to the VTC the development of vocational education and training facilities to meet such needs.

The Manpower Survey

1.3 The Training Board conducted a survey in April 2014 to collect up-to-date information on the manpower situation of the electronics and telecommunications industries. The survey was conducted with the assistance of the Census and Statistics Department of the HKSAR Government. Follow-up of the fieldwork finished in October 2014 and data processing was completed in November 2014.

1.4 The following manpower statistics and information were collected from the survey:

(i) number of employees in various principal jobs at the time of the survey;

(ii) number of existing vacancies;

(iii) number of trainees;

(iv) employers' forecast of the total number of employees by April 2015;

(v) average monthly income of employees; and

(vi) employers' views on the preferred education, training mode and training period of employees.

1.5 Employers were also requested to provide other information such as the number of technologists, technicians and craftsmen who had been promoted in the past 12 months, and also those who had been deployed to work for more than 6 months outside Hong Kong during the 12 months prior to the survey, as well as the skills employees needed to enhance.

Scope of Survey

1.6 The survey covered firms, relevant departments in the government and educational institutions in the following six sectors of the electronics and telecommunications industries:

Sector 1: Manufacturing

Manufacturers of :

(a) Computers and peripheral equipment (HSICs 262000, 281700, 952100);

(b) Audio and video equipment (HSICs 264000, 953100);

(c) Communications equipment and cables (HSICs 263000, 273100, 952200);

(d) Magnetic and optical media, and reproduction of recorded media (HSICs 182000, 268000);

(e) Electronic parts and components for computer and telecommunication equipment (HSIC 261100);

(f) Electronic parts and components not elsewhere classified (HSIC 261900);

(g) Electronic games and toys (HSIC 324500); and

(h) Electronic industrial apparatus, and measuring testing, navigating and control equipment (HSICs 265100, 331300).

Sector 2: Trading and Services

Establishments of :

(a) Anti-burglar system, intercommunication system, and telecommunications equipment, installation and maintenance (HSICs 432104, 432105, 432106);

(b) Imports and exports of:

(i) Scientific and professional instruments and apparatus (HSICs 451631, 452631)*;

(ii) Telecommunications equipment and parts (HSICs 451611, 452611)*;

(iii) Electrical goods (HSICs 451452, 452452)*;

(iv) Computers and computer peripherals and computer software (HSICs 451601, 451602, 452601, 452602)*;

(v) Office appliances and equipment (HSICs 451634, 452634)*;

(vi) Electronic parts (HSICs 451613, 452613)*

(c) Data processing, hosting and related activities (HSICs 620121, 620199, 620200, 620900, 631100)*; and

(d) Other electronics engineering services not included in (a) to (c).
(Appendix A)

Sector 3: Telecommunications Services

Establishments of :

(a) Telecommunications network operation services (HSIC 611000);

(b) Other miscellaneous telecommunications activities nowhere else classified (HSIC 619900);

(c) Internet access services (HSIC 619100); and

(d) Radio broadcasting, motion picture, video and television programming, and broadcasting activities (HSICs 591100, 601000, 602000).

Sector 4: Wholesale

Establishments of wholesale of :

(a) Telecommunications equipment and parts (HSIC 460611);

(b) Electrical goods (excluding machinery, office and telecommunications equipment and appliances) (HSIC 460452);

(c) Computers and computer peripheral equipment (HSICs 460601, 460602); and

(d) Office machines, appliances and equipment (excluding computer, furniture and fixtures) (HSIC 460634).

Sector 5: Design Houses and Relevant Departments in Universities and Government

(a) Electronics design houses;

(b) Relevant educational institutions; and

(b) Relevant government departments.

Sector 6: Retail Shops for Electronics Products (8 large shops)

Notes: *(1) HSIC denotes Hong Kong Standard Industrial Classification*

*(2) * Excluding those establishments with an employment size below 10 as they are unlikely to have a significant number of technical staff.*

1.7 Prior to the survey, the Census and Statistics Department recorded some 7 567 establishments in the above six sectors of the electronics and telecommunications industries in Hong Kong. In view of the limited resources available, a stratified random sampling method was adopted and a total of 709 samples were selected to be surveyed. The data collected were then processed and scaled up statistically to give an overall picture of the manpower situation of the two industries.

Method of the Survey

1.8 Two weeks before the survey, relevant survey documents including questionnaire (Annex D), explanatory notes (Annex E) and list of principal jobs (Annex F) were mailed to the 709 establishments. Prior publicity was also given through the local press and relevant trade and industrial organizations to solicit employers' co-operation in the survey.

1.9 During the survey period, interviewing officers of the Census and Statistics Department visited all 709 establishments to collect the completed questionnaires and, where required, to assist employers in completing them. All returned questionnaires were scrutinized and where necessary, cross checked with the respondents.

Response to the Survey

1.10 Of the 709 establishments, 487 completed the questionnaires and 33 refused to supply information. The remaining 189 establishments had either moved, closed and could not be traced, or no longer engaged in the trade. The effective response rate was 93.7%.

1.11 During the survey, some of the establishments just provided the rough manpower information and did not give details of their employees' monthly income, number of trainees or number of vacancies at the date of survey. The reasons were that they were too busy and not willing to provide confidential information of their organizations.

The Report

1.12 After follow-up of the fieldwork and data processing, the Training Board compiled in November 2014 a statistical report which presented the main manpower data collected from the survey. The statistical report was subsequently mounted onto the VTC website for public information.

1.13 This report presents all the findings of the survey together with the Training Board's forecast of the training needs of the electronics and telecommunications industries and recommendations on measures to meet these needs. In the report, the terms "employees", "workers" and "manpower" refer to the total number of persons employed in the principal jobs at the time of the survey but excluding trainees and apprentices. The term "trainees" means all persons receiving any form of training including those registered apprentices under a contract of apprenticeship.

SECTION II

SUMMARY OF SURVEY FINDINGS

Number of Persons Employed

2.1 The survey revealed that in April 2014, a total of 144 149 persons were employed in the electronics and telecommunications industries in Hong Kong. Of them, 62 599 were engaged in the principal jobs of electronics engineering and related disciplines. The following paragraphs present only the manpower statistics of those employees employed in the principal jobs.

Distribution of Employees by Job Level and by Sector

2.2 The distribution of employees by job level and by sector of the electronics and telecommunications industries is shown in Table 2.1, Figure 2.1 and Figure 2.2.

Table 2.1 : Distribution of Employees by Job Level and by Sector

Sector	Job Level				**Total (% of Total MP)**
	Technologist	Technician	Craftsman	Operative	
1. Manufacturing	797	2 158	352	1 367	**4 674 (7.5%)**
2. Trading and Services	9 847	23 113	4 295	1 021	**38 276 (61.1%)**
3. Telecommunications Services	2 302	4 602	614	142	**7 660 (12.2%)**
4. Wholesale	390	3 502	249	97	**4 238 (6.8%)**
5. Design Houses and Relevant Departments in Universities and Government	1 302	2 019	858	73	**4 252 (6.8%)**
6. Retail Shops for Electronics Products (8 large shops)	4	3 495	-	-	**3 499 (5.6%)**
Total (Percentage (%) of Total Manpower (MP))	**14 642 (23.4%)**	**38 889 (62.1%)**	**6 368 (10.2%)**	**2 700 (4.3%)**	**62 599 (100%)**

Figure 2.1 : Distribution of Employees by Job Level

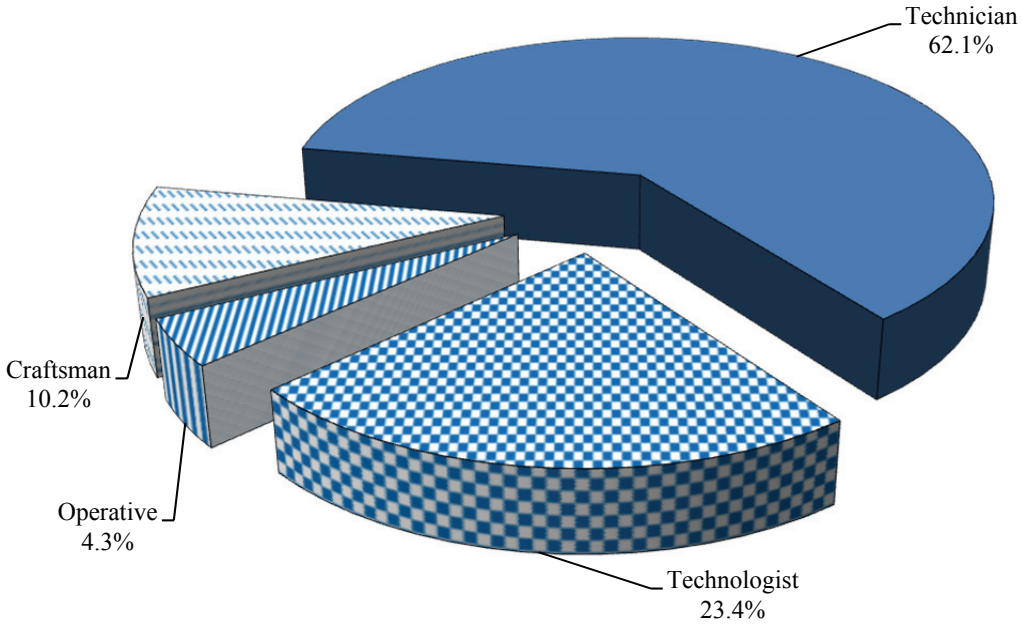
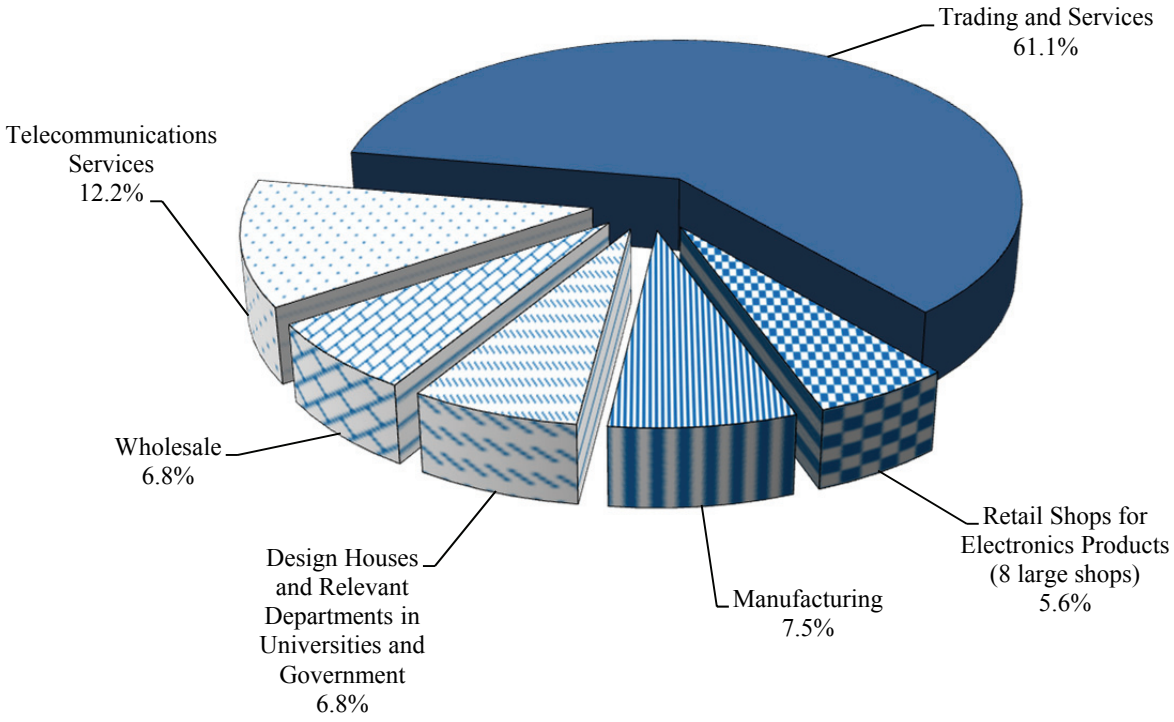


Figure 2.2 : Distribution of Employees by Job Sector



Number of Trainees

2.3 At the time of the survey, there were 695 trainees in the electronics and telecommunications industries. Their distribution by job level is shown in Table 2.2:

Table 2.2 : Distribution of Trainees by Job Level

Job Level	No. of Trainees (a)	No. of Employees (b)	Percentage $\frac{(a)}{(b)} \times 100\%$
Technologist	92	14 642	0.6%
Technician	304	28 889	0.8%
Craftsman	295	6 368	4.6%
Operative	4	2 700	0.1%
Total	**695**	**62 599**	**1.1%**

Number of Vacancies at Time of Survey and Forecast Manpower by April 2015

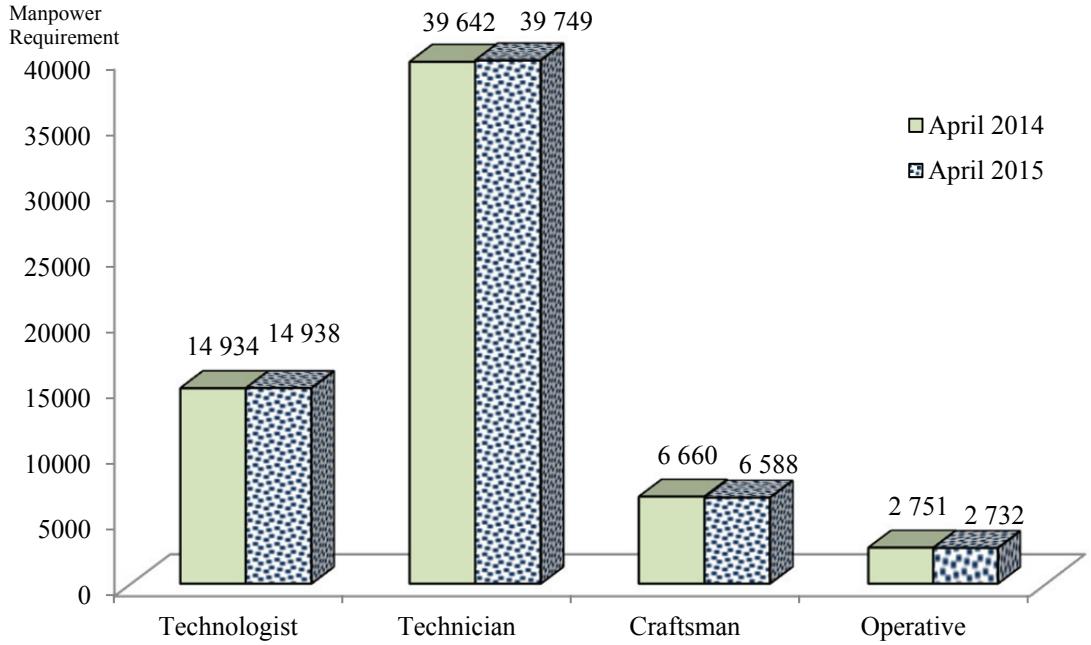
2.4 The total number of job vacancies was 1 388, or 2.2% of the total number employed in the electronics and telecommunications industries at the time of the survey. Employers also forecast that there would be 64 007 employees in the two industries by April 2015, which is 1 408 employees (+2.2%) more than that in April 2014.

2.5 A comparison of the manpower requirement at the time of survey and the employers' forecast of the number of employees by April 2015 are shown in Table 2.3 and Figure 2.3:

Table 2.3 : Comparison of Manpower Requirement by April 2014 and April 2015

Job Level	At Time of Survey (April 2014)			Forecast Total No. of Employees by April 2015	Forecast Increase/Decrease in Manpower Requirement
	No. of Employees	No. of Vacancies	Total Manpower Requirement		
Technologist	14 642	292	14 934	14 938	+0.03%
Technician	38 889	753	39 642	39 749	+0.3%
Craftsman	6 368	292	6 660	6 588	-1.1%
Operative	2 700	51	2 751	2 732	-0.7%
Total	**62 599**	**1 388**	**63 987**	**64 007**	**+0.03%**

Figure 2.3 : Comparison of Manpower Requirement by April 2014 and April 2015



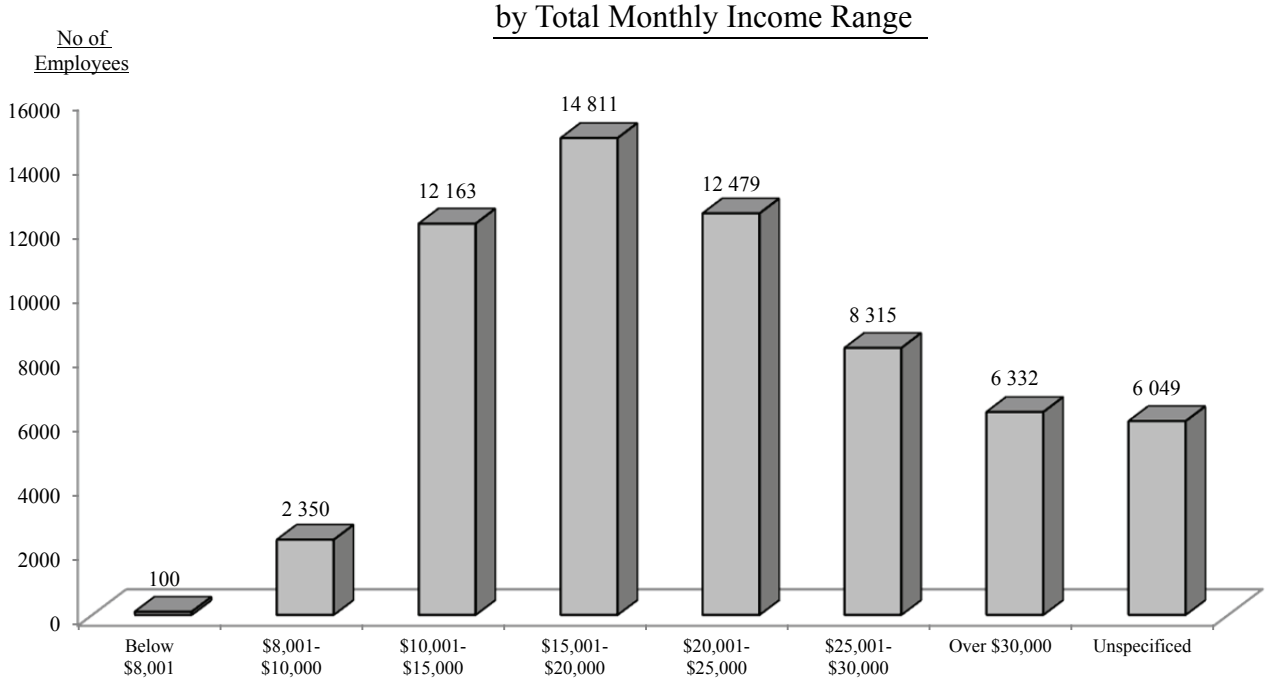
Total Monthly Income Range of Employees

2.6 The distribution of employees by total monthly income range in the electronics and telecommunications industries is shown in Table 2.4 and Figure 2.4:

Table 2.4 : Distribution of Employees by Total Monthly Income Range

Job Level	Below $8,001	$8,001-$10,000	$10,001-$15,000	$15,001-$20,000	$20,001-$25,000	$25,001-$30,000	Over $30,000	Un-specified
Technologist	-	-	38	977	2 476	4 522	4 846	1 783
Technician	-	235	7 734	12 616	9 341	3 793	1 486	3 684
Craftsman	-	218	4 020	1 182	662	-	-	286
Operative	100	1 897	371	36	-	-	-	296
Total	**100**	**2 350**	**12 163**	**14 811**	**12 479**	**8 315**	**6 332**	**6 049**

Figure 2.4 : Distribution of Employees by Total Monthly Income Range



Preferred Education, Mode of Training and Period of Training of Employees

2.7 The majority views of employers on the preferred education, mode of training and period of training of their technologists, technicians and craftsmen are shown in Table 2.5:

Table 2.5 : Preferred Education, Mode of Training and Period of Training of Employees

Job Level	Preferred Education	Preferred Mode of Training	Preferred Period of Training
Technologist	Degree/ Associateship or equivalent	On-the-job Training	4 years or above
Technician	Secondary 4 to 7/ Hong Kong Diploma of Secondary Education or equivalent	On-the-job Training	1 to less than 2 years
Craftsman	Craft Certificate	On-the-job Training	3 to less than 4 years

Internal Promotion

2.8 In the twelve months prior to the survey, a total of 463 employees were promoted to higher level jobs in their own companies. Their distributions in each job level are shown below:

Table 2.6 : Internal Promotion

Internal Promotion	No. of Employees Promoted (a)	Total No. of Employees at the Promoted Level (b)	Percentage $\frac{(a)}{(b)} \times 100\%$
From Technician to Technologist	149	14 642	1.0%
From Craftsman to Technician	268	38 889	0.7%
From Other Levels to Craftsman	46	6 368	0.7%
Total	**463**	**59 899**	**0.8%**

Employees Deployed to Work Outside Hong Kong

2.9 Employers reported the following number of employees who had been deployed to work outside Hong Kong for more than 6 months during the 12 months prior to the survey:

Table 2.7 : No. of Employees Deployed to Work Outside Hong Kong

Job Level	No. of Employees Deployed to Work Outside Hong Kong (a)	Total No. of Employees at Same Job Level (b)	Percentage $\frac{(a)}{(b)} \times 100\%$
Technologist	607	14 642	4.1%
Technician	280	38 889	0.7%
Craftsman	41	6 368	0.6%
Total	**928**	**59 899**	**1.6%**

Skills Employees Need to Enhance

2.10 The three most important skills that employees need to enhance are shown in Table 2.8:

Table 2.8 : No. of Employees by Skills Need to Enhance

Job Level	The 3 most important skills that employees need to enhance			
	Order	Code	Skills/ Knowledge/ Attributes	No. of Employees
Technologist	1.	107	Leadership skills	3 291
	2.	401	Problem solving	2 400
	3.	103	Project management	2 193
Technician	1.	401	Problem solving	7 534
	2.	411	Customer services skills	7 327
	3.	406	Time management skills	6 512
Craftsman	1.	413	Ability to learn/adapt new skills/knowledge	2 369
	2.	411	Customer services skills	1 482
	3.	404	Communication skills	1 356

Statistical Tables

2.11 Detailed manpower statistics analysed by principal job and by sector of the electronics and telecommunications industries are shown in Appendices 1 to 7. The distribution of employees by their monthly income range is shown in Appendix 8 and the number of employees by skills need to enhance is shown in Appendix 9.

SECTION III

CONCLUSIONS

3.1 The Training Board has carefully examined the survey findings and is of the view that they generally reflect the employment situation of the electronics and telecommunications industries at the time of the survey.

3.2 The total manpower in principal jobs of electronics and related disciplines of the two industries has increased by 3.3% per annum from 58 631 workers in 2012 to 62 599 in 2014. An analysis of the manpower changes by sector and by skill level is detailed in the following paragraphs. In Sector 6 (Retail Shops for Electronics Products), surveyed for the second time and it was not a full survey on the sector as only the manpower of 8 Retail Shops for electronics products was surveyed. Thus, for a better and direct manpower comparison, Sector 6 is not included in the analysis but the 2012 and 2014 manpower of the Sector are shown separately in Table 3.2 for reference purpose. Because of the close business and manpower nature of Sector 2 (Trading & Services) and Sector 4 (Wholesale), they are combined for manpower comparison and analysis purpose. As a whole, the distribution and comparison of manpower in 2014 and 2012 by skill level and by sector is summarized in Table 3.1 below:

Table 3.1 : Comparison of Manpower in 2014 by Skill Level and by Sector with the Manpower in 2012 (shown in bracket)

Skill Level	Sector 1	Sectors 2 & 4	Sector 3	Sector 5	Total	
	Manufacturing	Trading, Services and Wholesale	Telecom Services	Design Houses & Relevant Dept in Universities & Gov't		**Annual Change**
Technologist	797 (956)	10 237 (7 914)	2 302 (2 200)	1 302 (904)	14 638 (11 974)	**+10.6%**
Technician	2 158 (2 432)	26 615 (25 026)	4 602 (4 337)	2 019 (2 333)	35 394 (34 128)	**+1.8%**
Craftsman	352 (551)	4 544 (4 088)	614 (609)	858 (962)	6 368 (6 210)	**+1.3 %**
Operative	1 367 (2 113)	1 118 (1 562)	142 (133)	73 (95)	2 700 (3 903)	**-16.8%**
Total	4 674 (6 052)	42 514 (38 590)	7 660 (7 279)	4 252 (4 294)	59 100 (56 215)	**+2.5%**
Annual Change	**-12.1%**	**+5.0%**	**+2.6%**	**-0.5%**	**+2.5%**	

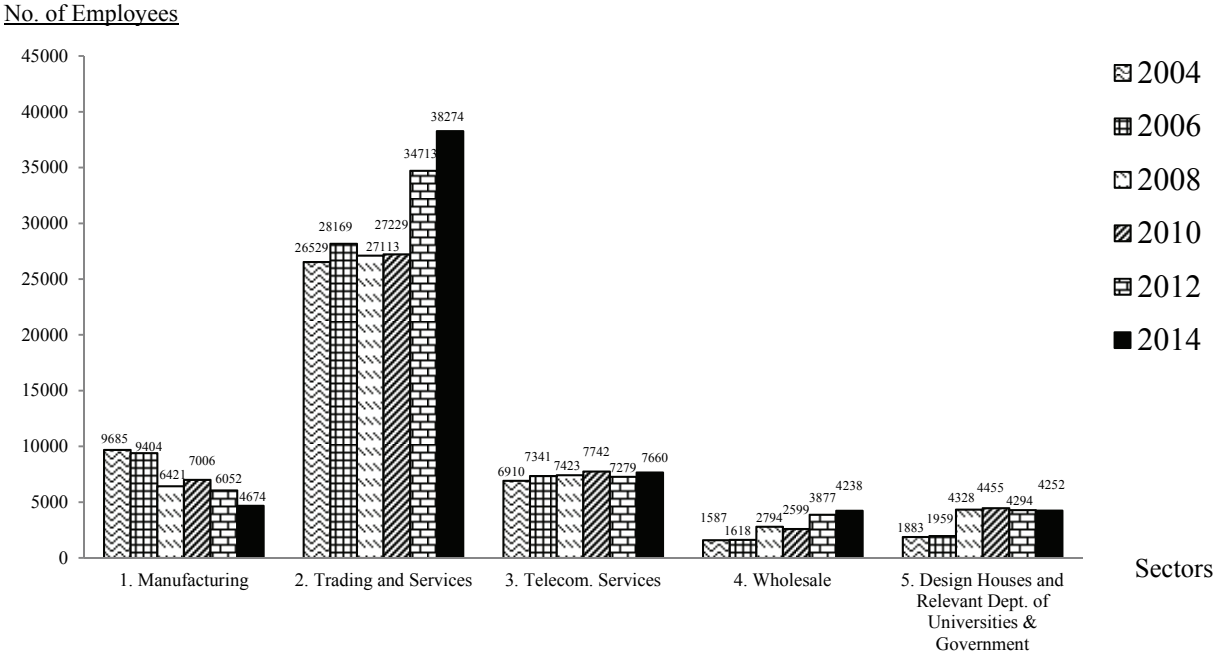
Table 3.2 : Comparison of Manpower in 2014 by Skill Level of Sector 6 with the Manpower in 2012 (for reference)

Sector 6 – Retail Shops for Electronics Products

Year	Technologist	Technician	Craftsman	Operative	Total	**Annual Change**
2014 (8 large shops for electronics products)	4 (-29.3%)	3 495 (+20.5%)	-	-	3 499	**+20.3%**
2012 (5 large shops for electronics products)	8	2 408	-	-	2 416	**-11.5%**

3.3 Figure 3.1 shows the manpower changes by sector of the electronics and telecommunications industries between 2004 and 2014. It also demonstrates the manpower change of the two industries during the past several years since the scope of the manpower survey of the two industries has been revised significantly.

Figure 3.1 : Manpower Changes by Sector (1 to 5) between 2004 and 2014



Manpower Changes by Sector

3.4 Table 2.1 reveals that the manpower of Sector 2 – Trading & Services (38 276) covered about 61.1%, a majority of the total manpower (62 599) of the electronics and telecommunications industries in 2014, while that of Sector 6 – Retail Shops for Electronics Products (3 499) held 5.6%, the least of manpower among all sectors. The two Sectors (2 and 6) accounted 66.7% (41 775) of the total manpower, achieving an annual manpower increase of 6.1%, or 4 646 workers, over the past two years. Table 2.1 shows that the remaining 33.3% (20 824) of the total manpower was contributed by the rest of the four Sectors (1, 3, 4 and 5), resulting an annual manpower decrease of 1.6%, or 678 workers, over the past two years.

3.5 As a detail of annual manpower changes by sector in the electronics and telecommunications industries over the past two years, Table 3.1 reveals a sharp annual manpower decrease of 12.1% in Sector 1 – Manufacturing and a very mild annual manpower decrease of 0.5% in Sector 5 – Design Houses and Relevant Departments of Universities and Government. On the other hand, it recorded an annual manpower increase of 2.6% in Sector 3 (Telecommunication Services). As a reference, Table 3.2 presents a significant annual manpower increase of 20.3% in Sector 6. For the close business and manpower nature of Sectors 2 and 4, an annual manpower increase of 5.0% was obtained in the two Sectors. Excluding Sector 6, Table 3.1 shows a 2.5% per annum increase of manpower in Sectors 1 to 5, from 56 215 workers in 2012 to 59 100 in 2014.

3.6 The followings attributed to the manpower changes by sector:

(i) The world economy declined in the past two years, which caused a substantial impact on Sector 1 that the number of large companies continued to decline, i.e. a total of 18 companies with employment size of 50 and over in 2014 comparing with 22 in 2012. On the other hand, there was a general decrease of manpower at the four job levels across the Sector. As a result, it recorded a shape annual manpower decrease of 12.1% in the Sector.

(ii) An annual manpower increase of 5.0% was obtained in Sectors 2 and 4. It was due to an increase of basic construction work and special overseas project were carried by a few engineering services companies in Sector 2 in the past two years together with the continuous increase in tourists visiting Hong Kong in Sector 4 in 2014. As a result, more skilled manpower was required in the first three work levels. However, the operative level recorded an annual manpower decrease in 2014.

(iii) More and more people used their smartphones and computers for on-line purchase, communications, watching videos, movies and other entertainments via the Internet. In the meantime, more and more specific programmes and features were designed by the telecommunications and related companies in Sector 3 to suit such demands. As a result, additional skilled manpower was required in such companies to capture more market shares that a mild annual increase of 2.6% of manpower was surveyed in 2014 in Sector 3. Also, a general manpower increase happened across the four job levels.

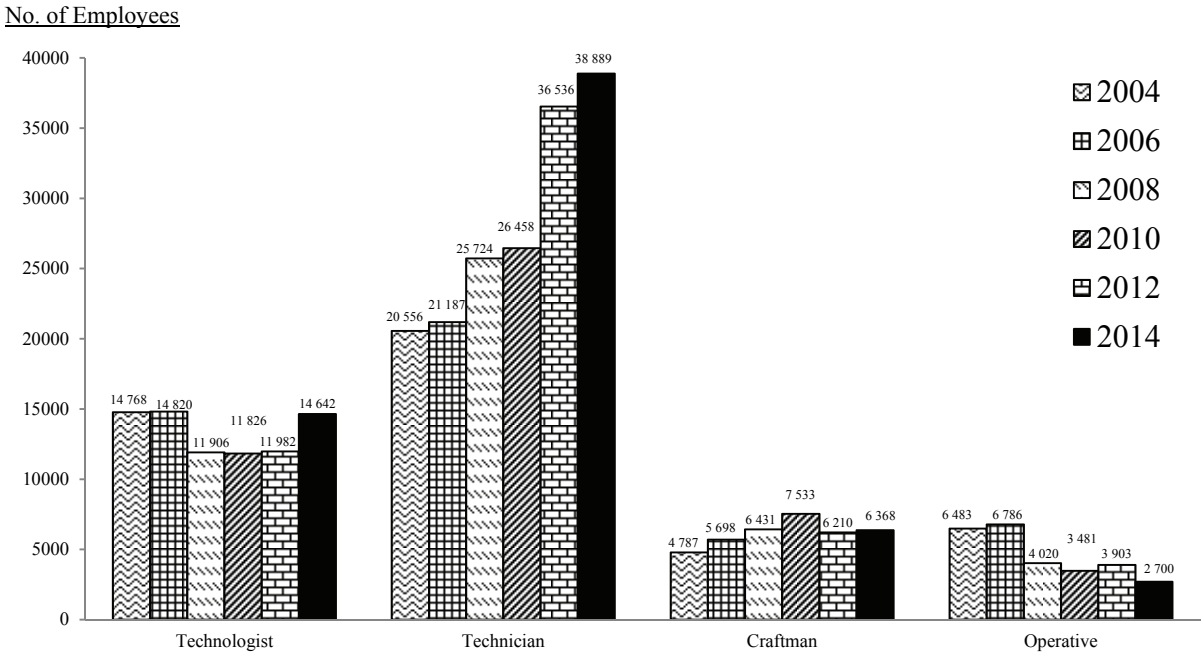
(iv) The steady manpower engaged in the engineering departments of the universities and Government departments constituted the major manpower demand in Sector 5 in the past two years. On the other hand, it recorded a slight manpower drop in design houses. As a result, a very mild annual decrease of 0.5% of manpower was collected in Sector 5. In general, the manpower required by the whole Sector was stable.

(v) The sharp annual increase of manpower of 20.3% recorded in Sector 6 was the result of the number of companies surveyed from five in 2012 increased to eight in 2014 due to more companies in the Sector. Three new companies were included in 2014 to replace those were not engaged in business, with no technical manpower and sudden close of business in 2012. The survey also showed the same manpower situation as in 2012 that nearly the whole manpower in Sector 6 was at technician level and only a very few at technologist level.

Manpower Changes by Principal Job at Job Level

3.7 The manpower change by job level from 2004 to 2014 is shown in Figure 3.2:

Figure 3.2 : Manpower Changes by Job Level between 2004 and 2014



3.8 Among the four skill levels, Table 3.1 shows a substantial annual increase (10.6%) of manpower in technologist, an annual increase (1.8%) in technician and a mild increase (1.3%) in craftsman between 2012 and 2014. It also records a sharp annual decrease (16.8%) in operative workers in the past two years. Table 3.1 reveals that such decrease of manpower was mainly contributed by Sectors 1 and 2 & 4 because there was a continuous decline in Manufacturing Sector and less operative workers were required in Sectors 2 & 4. As a result, there was an annual manpower drop of 19.6% (746) and 15.4% (444) of operative workers in Sector 1 and Sectors 2 & 4 respectively. The followings attributed to such manpower changes in the other three job levels:

(i) Table 3.3 below reveals the substantial annual increase of 10.5% of (or total increase of 2 660) technologists when compared with 2012. The increase of manpower was mainly due to the increase of basic construction work and special overseas projects carried out by a few engineering services companies in Sector 2 over the past two years. As a result, a sharp annual increase of electrical engineers (51.1%), system analysts (43.8%), product/graphic designers (15.3%) and manufacturing/quality assurance engineers (14.5%) were surveyed. However, a substantial annual decrease of mechanical engineers (15.5%) was also obtained.

Table 3.3 : Manpower Changes by Principal Job at Technologist Level between 2012 and 2014

Principal Job at Technologist Level	In 2014	1n 2012	Annual Change (%)
Electronics Engineer	8 503	7 586	+5.9%
Electrical Engineer	1 645	721	+51.1%
Mechanical Engineer	624	874	-15.5%
Manufacturing/Quality Assurance Engineer	1 068	815	+14.5%
Chemical Engineer	54	51	+2.9%
Product/Graphic Designer	419	315	+15.3%
System Analyst	2 329	1 620	+43.8%
Total	**14 642**	**11 982**	**+10.5%**

(ii) The annual increase of 3.2% of technician was attributed by the same reason mentioned in (i). Besides, as shown in Table 3.4 below, the survey also revealed that a sharp annual increase of 20.8% and 17.6% in mechanical technicians and supervisor/ foreman/leader respectively due to its high demand in construction works and special projects. The substantial annual decrease of 16.7% of web developer/designer was properly due to shifting of work to system analyst at the technologist level.

Table 3.4 : Manpower Changes by Principal Job at Technician Level between 2012 and 2014

Principal Job at Technician Level	In 2014	1n 2012	Annual Change (%)
Electronics Technician	12 328	12 127	+0.8%
Mechanical Technician	1 894	1 297	+20.8%
Draughtsman	231	239	-1.7%
Manufacturing/Quality Assurance Technician	604	703	-7.3%
Supervisor/Foreman/ Leader	3 551	2 569	+17.6%
Programmer	4 365	3 992	+4.6%
Web Developer/Designer	1 494	1 793	-16.7%
Sales Technician	14 422	13 816	+2.2%
Total	**38 889**	**36 536**	**+3.2%**

(iii) Table 3.5 shows that a mild annual increase of 1.3% of craftsman was mainly due to a substantial annual increase (6.1%, from 3 814 in 2012 to 4 295 in 2014) in craftsmen in Sector 2, which covered more than the loss of craftsmen in Sectors 1 and 5. The survey also revealed that a sharp annual increase (23.2%) in electrians in Sector 2 due to its high demand in construction works and special projects. Also, an annual decrease of 5.2% of mechanic and an annual decrease of 8.6% of cable jointer/wireman were recorded.

Table 3.5 : Manpower Changes by Principal Job at Craftsman Level between 2012 and 2014

Principal Job at Craftsman Level	In 2014	1n 2012	Annual Change (%)
Cable Jointer/Wireman	583	698	-8.6%
Electronics Craftsman	4 011	4 080	-0.9%
Electrician	1 193	786	+23.2%
Mechanic	581	646	-5.2%
Total	**6 368**	**6 210**	**+1.3%**

Business Outlook

Whole Industry

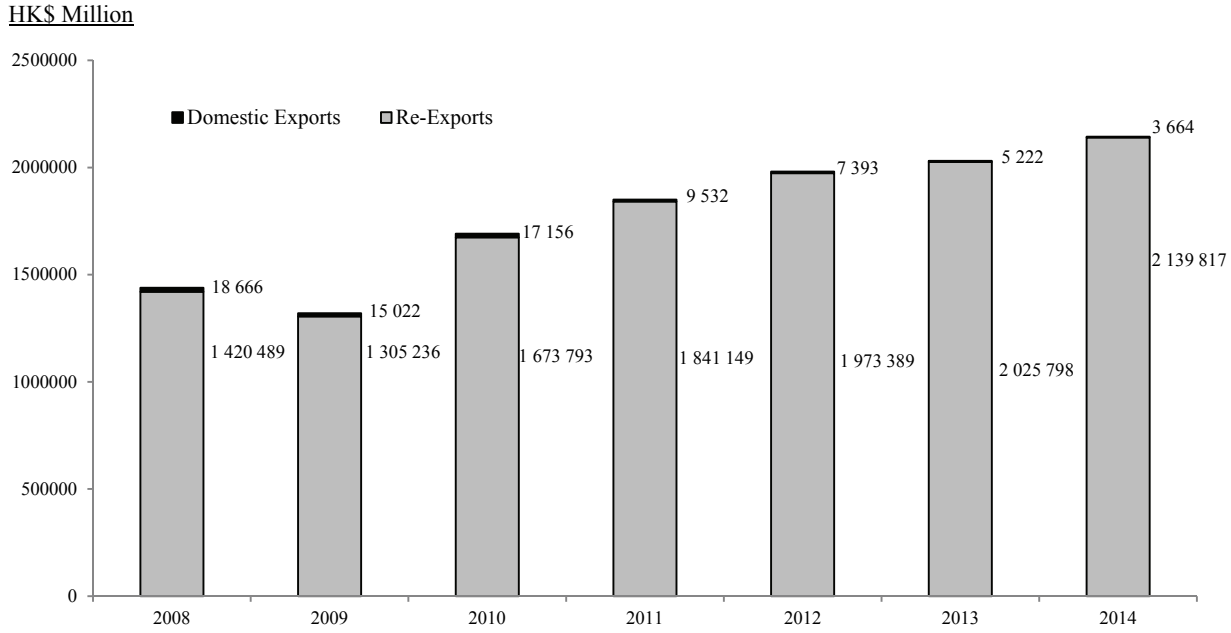
3.9 The electronics and telecommunications industries is still the largest local merchandise export earner, contributing 58% of Hong Kong's total export in 2014. Hong Kong's economy is forecasted to continue to grow by 2.8% to 3.5% in 2015. It is mainly due to continuous expansion of the Mainland in outward processing production and the resurgence of consumer demand for various electronics products, parts and components in the United States of America, ASEAN and Japan. In 2014, the total exports of electronic products increased by 5.5% over the previous year to HK$2,143,481 million. Details of the export values of electronic products between 2008 and 2014 are shown in Table 3.6 and Figure 3.3.

Table 3.6 : Export Values of Electronic Products Between 2008 and 2014

Electronic Products Value (HK$ Million) in Year	Domestic Exports	Re-Exports	Total Exports
2008	18 666	1 420 489	1 439 155
2009	15 022	1 305 236	1 320 258
2010	17 156	1 673 793	1 690 949
2011	9 532	1 841 149	1 850 680
2012	7 393	1 973 389	1 980 782
2013	5 222	2 025 798	2 031 020
2014	3 664	2 139 817	2 143 481

Source :Hong Kong External Merchandise Trade Statistics, Census and Statistics Department

Figure 3.3 : Export Values of Electronic Products



3.10 From the increased export values of electronics products and manpower, the Hong Kong electronics and telecommunications industries had a steady growth in the past two years. However, the continuous increase of the appreciation of Renminbi, rise in wage, taxes and duties, and the up and down of oil price, interest rate and currencies making fluctuation costs of energy and materials cause a great challenge to the two industries. The shortage of workers in the Pearl River Delta together with the effect on implementation of the Mainland's Labour Contract Law and Processing Trade Policy form another threat and essential operating cost items. On the other side, the existing benefit of zero imported tariffs in the Mainland since the implementation of the seventh phase of the Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA VII) in May 2012, the reveal of China 12th Five-Year Plan in March 2013 together with the Supplement IX to CEPA signed on 29 June 2012, will continue to provide considerable opportunities for Hong Kong firms.

3.11 On the other hand, the growing popularity of green concept together with compliance with safety requirements resulting the tightening of environment laws in China and other countries had imposed substantial pressure on companies of Sector 1 (Manufacturing). It is expected that such pressure will continue in the years to come when the companies expand their overseas business. The safety requirements and standards include UL/ETL listing or equivalent and FCC standard in the United States, CE and CE-mark of the European countries and the China Compulsory Certification (CCC). For the green concepts, they consist of Directive on WEEE (Waste Electrical and Electronic Equipment), the Directive on RoHS (Restriction of Hazardous Substances) and European Union law on chemicals – REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals). In the near future, the development of Industry 4.0 and Smart Manufacturing System, aiming for computerization of the manufacturing industry will have further impact on Sector 1.

3.12 The Mainland recorded a record 24-year low economic growth of 7.4% in 2014 showing its slow economic peace of growth, also a reflection of the global economy. In view of its declining unemployment rate, rising consumer confidence and economy pick-up, the United States (US) Federal Reserve ended its huge bond-buying programme in end of October 2014. The growing economy in the US also causes its currency in a high level against other currencies. On the other side in Europe, the weak economic growth with high unemployment rate and just negative consumer index made the European Central Bank launch a bond-buying stimulus programme in January 2015 by pumping 60 billion euros a month into the economy until the end of September 2016. It aims to boost the sagging economy and to avoid deflation in Euro Zone. All the above situations will impose certain effects on the electronics and telecommunications industries in the coming years.

3.13 Despite its low economic growth in 2014, it is expected that the economic growth in the Mainland will continue and number of tourists to Hong Kong will also increase in the coming years, the local economy is forecasted to continue to grow. As a result, the close business nature of Sector 2 (Trading & Services), Sector 4 (Wholesale) and Sector 6 (Retail Shops for Electronics Products) will be benefitted from the growth. In Sector 3 (Telecommunication Services), the Training Board considers that it will be in steady growth as new telecommunication services will continue to be provided to the public. The 4.5G (generation) of mobile communication services is expected in coming years, which will further attract more number of users. The rapid growth of on-line purchase (via the Internet), the developing of smart city, emerging smart digital home service (linking all home appliances and installations easy for centrally control to further reduce carbon dioxide emissions), e-learning market and iCloud computing service (both public and personal or a mix of the two) are the other key development areas in Sector 3.

3.14 With reference to its increased export values of electronics products, Hong Kong will maintain as a popular sourcing centre for parts and components as well as high-end consumer electronics products. To cope with green standards and low emission of carbon dioxide, further increase in electronics vehicle production in the Mainland and other countries are expected. It will cause a growing demand of batteries, battery chargers, car audio and related products as well as electronics components in automobiles. In view of the merits of light weight, small size, long life operation, energy saving and easy to control, LEDs (Light Emitting Diodes) will be further widely adapted in buildings as well as employed in various application areas like road signage, message board, lighting and displays. The other type LED, active-matrix organic light emitting diode (AMOLED), will continue to be commonly used in displays for mobile devices and high-definition televisions in the years to come.

3.15 Sector 5 will maintain their own product developments as to match the latest technological development in the industry and to maintain their competitiveness in the market. IC design and embedded system design will as usual, maintain their valuable contributions to the manufacturing sector. In view of the well protection of intellectual property in Hong Kong and vast design experience with good reputations, the IC design sector will continue to grow in future. The high demand of applications of different service in daily life and business aspects cause more and more developments of various Apps (application stores) as valued added services via different App stores. The development of Apps will become an important growing factor in the Sector.

Product Trend

3.16 The tablet personal computer (PC) becomes more powerful with high speed and multi-functions but is also thinner and lighter. Most of them are equipped with special features of a large multi-touch liquid crystal display (LCD) screen, Wi-Fi (Wireless Fidelity, wireless LAN) and 3G (cellular HSDPA (High Speed Download Packet Access)) connectivity, video conferencing, GPS (Global Positioning System), iCloud storage of data function and voice recording. Through the Internet, the tablet PC is also a multi-functional tool and multimedia platform for communication, reading (e-books and e-magazines), entertainment (music, web contents, movie and games), financial and other activities by using different Apps. The PC is also an essential hardware tool for e-education and e-learning and it is expected to grow.

3.17 With the rapid growth of broadband Internet access and development of various Apps, smartphone has turned into essential and powerful tools for faster communication, entertainment, higher data transfer and other activities. In addition to its normal features of MP3, voice recording, radio and HD camera shooting, touch AMOLED panel, 4G/LTE (Long Term Evolution) communication, WiFi communication, iCloud storage of data, multimedia playback functions, GPS, e-Book reader video conferencing and Internet surfing, the smartphone could be installed with many special Apps as the user wishes. Different types of smartphones operating with different operating systems (Android, iOS, Symbian, Linux, Windows Phone 7/Windows Mobile, BlackBerry and others), will be further equipped with enhanced features like electronic wallet for electronic payments; a remote controller for smart home. Smartphones are still in large demand and some of them are fancy designed to catch more market share. The coming development of 4.5G future development of 5G (fifth generation mobile network) communications in the coming few years, will further make smartphone a more important and essential personal electronics device.

3.18 For consumer electronics products, especially in the audio-visual sector, digitalization with portability and convergence is continuous as the trend. Digital camcorders and digital cameras with common features like WiFi communication, near field communication, motion detector, touch screen and 3D (Three Dimension) and the simplified low-cost version digital single-lens reflex cameras (DSLR) for high-definition (HD) resolution shooting will become more popular in the market. Blue-ray DVD player and recorder are widely accepted products in the market. For easy carrying and presentation, miniature overhead projectors are designed and become favourable tools for marketing and sales people. On the other hand, wireless charger will also exalt smartphone and other electronics devices.

3.19 The recent development of wearable technology will generate a huge business in the near future. The related development of wearable electronics devices like smart watch/iWatch, smart glass, electronics waist wear and fitness bracelet are for various applications for our daily life. They can be employed to monitor and record body temperature, heartbeat, blood pressure, alcohol consumption and etc. Also, they can be used for communication (voice and short messages) and viewing videos and other applications via various Apps. The other popular products such as health care electronics products and systems - using ICT (Information Communication Technology) to connect homes and hospitals / clinics allowing doctors to work more efficiently, together with long-life batteries (especially those used in the e-Car) and energy saving LED lighting are expected to grow. On the other hand, with the continuous introduction of new video game stations with favourable applications such as Internet surfing, 3D display and multi-touch HD screen, the electronics toys and games are still the demanding products both for youngsters and adults.

3.20 With the use of broadband technology and installation of various Apps, Internet TV (iTV) installed with a large LED-backlight LCD or AMOLED UHD (ultra-high resolution 4K: 3 840 x 2 160 or 4 096 x 2 160 pixels) screen and built-in 3D effect, Internet surfing and recording functions become a hot video product. It also gradually becomes a platform for not only entertainment but also on-line purchases, viewing on-demand contents and catch-up TV/video programmes. iTV can also be used as a platform for social gathering for distant friends watching a same programme together while seeing chatting with each other on screen. On the other hand, the mobile TV has become another entertainment favour in the market. Watching TV programmes on spot or stored events via the Internet anywhere at any time using a held mobile device, i.e. smartphone or tablet PC, offers a more convenient way for the users. The latest development of 4K TV for watching 4K video driven by over-the-top video service and curved display TV will become customers' favour products. In the near future, 8K (7680 x 4320 pixels) ultra HD TV will be another hot product. The digital audio broadcast service in Hong Kong provides an alternative choice for users.

3.21 Three-dimensional (3D) printing, which is employed to make 3D objects by additive processes under the control of a computer with free application software, has become more popular. The 3D printing technology is widely used in many areas, including the production of electronics prototypes and samples. In future, more electronics components, like printed batteries, and other things required in daily life can be produced by 3D printing. On the other hand, Internet of Things (IoT) has recent well employed in various applications. Through IoT, everything, especially those frequently used in daily life (like clothes and shoes), can be digitalized and connected via the Internet in the coming years. IoT together with big data and cloud computing will form a power tool for developing new products and services.

3.22 With a view to enhancing the quality of life, home security and energy saving, the development of smart home or home automation, especially for the elderly and disabled, is another hot area. By using various sensors, IoT, big data together with cloud computing, a lot of home devices like security cameras, window curtains, air-conditioners, home entertainment systems, and refrigerators can be connected to the Internet and controlled by a smartphone or a personal computer. In the near future, domestic robots and industrial robots with the abilities of learning, analysis and applying what having learnt will be developed and become a trend. More people will have a better motivation to purchase connected home electronics. On the other hand, as aroused by the challenges of on-line purchase/retail and entertainment together with economic benefits, the development of smart city is another future important aspect. According to the 2015 Policy Address, Kowloon East is proposed as a pilot area for the feasibility development of a smart city in Hong Kong. It will become another important event and business opportunity for the electronics and telecommunication industries in the coming years.

Future Manpower Demand

3.23 Based on the manpower trend, business outlook of the electronics and telecommunications industries and employers' forecast of future manpower requirements, the Training Board believes that in the years ahead, well-trained technologists and technicians are required to maintain the development of the two industries. The demand for craftsman is steady and that for operatives (manufacturing) will be limited.

3.24 In view of the latest development of the industry, the Training Board has also estimated the loss of manpower at different job levels due to workers leaving the electronics and telecommunications industries through retirement, migration to other industries and other causes. The Training Board has decided that the normal annual wastage rate of 3% be used for the loss of manpower at the technologist, technician and craftsman levels.

3.25 The Training Board has estimated, by using the Adaptive Filtering Method for the manpower projection for the technologist, technician and craftman levels. The additional manpower required by the electronics and telecommunications industries for 2015 – 2017 is summarized in Table 3.7 below. A breakdown of the training requirements into principal jobs is shown in Appendix 10.

Table 3.7: Annual Manpower Demand in the Electronics and Telecommunications Industries from 2015 to 2017

Job Level	Annual Average Additional Demand for Employees	
	Total	±10% Range
Technologist	738	664 – 812
Technician	1 825	1 643 – 2 007
Craftsman	200	180 – 220

3.26 The Training Board will conduct another manpower survey of the electronics and telecommunications industries in 2016 to review and update the manpower requirements of the two industries.

SECTION IV

RECOMMENDATIONS

4.1 The Hong Kong electronics and telecommunications industries maintain the largest local merchandise export maker, contributing 58% of Hong Kong's total export in 2014. Hong Kong's economy is forecasted to maintain to grow by 2.8% to 3.5% in 2015. However, the continuous increase of the appreciation of Renminbi, rise in wage, taxes and duties together with up and down of oil price, interest rate and currencies causing fluctuation of costs of energy and materials, which have imposed a great challenge to the electronics and telecommunications industries. The shortage of workers in the Pearl River Delta and the effect on implementation of the Mainland's Labour Contract Law as well as Processing Trade Policy form another threat and essential operating cost items. On the other side, the existing benefit of zero imported tariffs in the Mainland since the implementation of the seventh phase of the Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA VII) in May 2012, the reveal of China 12th Five-Year Plan in March 2013 and the Supplement IX to CEPA signed on 29 June 2012, will continue to provide considerable opportunities for Hong Kong firms.

4.2 The world is facing a volatile economic situation. Recently, the Mainland delivered a report showing annual gross domestic product growth of 7.4% in 2014, a 24-year low record. The United States Federal Reserve ended its huge bond-buying programme in end of October 2014 as a response to its growing economy and improved employment rate. On the other side in Europe, the weak economic growth with high unemployment rate and just negative consumer index made the European Central Bank launch a bond-buying stimulus programme in January 2015. With the aims to boost the sagging economy and to avoid deflation in Euro Zone, the European Central Bank will pump 60 billion euros a month into the economy until the end of September 2016. All the above situations will impose certain effects on the electronics and telecommunications industries in the coming years. However, the reform and continuous development in Mainland will bring more business opportunities to the world as well as the two industries in Hong Kong. In view of the above, the Training Board has a cautious optimistic view that the electronics and telecommunications industries will continue to grow steadily. Thus, the Training Board recommends the following measures for employers to consider coping with present situation and challenges ahead:

(i) To re-engineer, streamline and diversify business to make company more effective and efficient;

(ii) To develop more creative, trendy, value-added, cost effective and green products / services to increase competitive ability;

(iii) To further enhance the overall skill level and competency of the staff, especially the technical workforce, by providing them appropriate training leading to establish a much stronger and competitive organisation;

(iv) To carry on to explore new business in the most cost effective way to expand market share, i.e. the development of a smart city in Kowloon East as stated in the 2015 Policy Address; and

(v) To continue to maintain and to deepen strong partnership with key customers and to establish new partnership with other potential customers.

4.3 Regarding the strength of skill and competency of staff, the Training Board suggests that on top of the individual company's training needs, the "Skills Employees Need to Enhance" at Appendix 9 will be a good reference on various aspects of training for employers. In this particular situation, employers are recommended to step up their training efforts in order to ensure supply of well-equipped manpower to meet the challenges and business opportunities ahead. The Training Board also recommends Vocational Training Council and other training organizations to keep a close view on the above training needs of the electronics and telecommunications industries and provide such needs in time.

Annual Intake of Trainees

4.4 At the time of the survey, there were only 92, 304 and 295 trainees respectively at the technologist, technician and craftsman levels. Since it normally takes two to four years to train a technologist and three to four years a technician or a craftsman, it is evident that the present training efforts provided by employers are insufficient to satisfy the industries' needs.

4.5 The Training Board recommends that the electronics and telecommunications industries as a whole should embark on a training programme of a scale as set out in paragraph 3.25 for 2015 – 2016. A breakdown of the manpower requirements into various principal jobs is given at Appendix 10. For manpower planning at company level, individual employers are requested to note that the volume of training when expressed in terms of existing manpower represents an average annual intake of trainees of about 5.0%, 4.7% and 3.1% respectively of the total number of technologists, technicians and craftsmen presently employed.

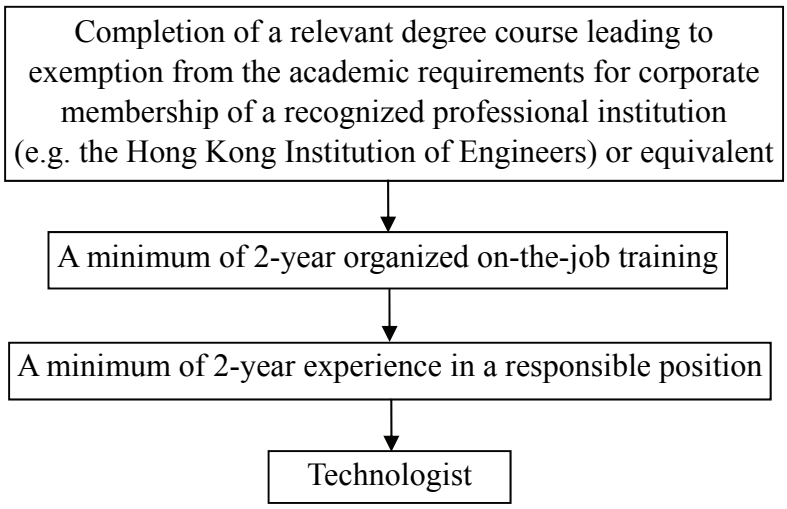
4.6 The recommended training routes for technologists, technicians and craftsmen are outlined in the following paragraphs.

Training of Technologists

4.7 A technologist is a person who has the qualifications and experience equivalent to those required for corporate membership of a professional institution. He should be competent in analyzing and solving a wide range of technical problems. Furthermore, he should be able to assume personal responsibility for the development and application of engineering principles, exercise original thought and judgment, follow progress in his field of technology, apply the latest techniques, supervise and develop his sub-ordinates.

4.8 Technologists play an important role in bringing about improvement in management and technological innovations. The Training Board recommends that technologists should be trained via the following route:

Figure 4.1 : Training of Technologists



4.9 A number of local educational institutions funded by the University Grants Committee (UGC) offer various degree courses in electronic engineering and related disciplines. The following table shows the estimated number of graduates from these full-time engineering degree courses in 2015/16 and 2016/17:

Table 4.1: Estimated Number of Graduates from UGC-funded Institutions in 2015/16 and 2016/17

Full-time Degree Programme	Estimated Number of Graduates	
	2015/16	2016/17
Electronic Engineering	167	148
Computer Engineering	261	207
Information Engineering	317	176
Electronic and Communication Engineering	209	197
Electronic and Information Engineering	132	103
System Engineering & Engineering Management	98	91
Total	1 184	922

4.10 The forecast demand for related technologist level jobs (Electronics Engineer, Manufacturing/Quality Assurance Engineer and System Analyst) in the industry is about 540 – 660 annually in the next three years. The supply of graduates from electronic engineering and related disciplines should be able to meet the forecast demand. In general, the graduates also take up electronics engineering and related jobs in other industries such as electrical and mechanical services, building services, information technology and manufacturing.

Engineering Graduate Training Scheme (EGTS)

4.11 To bring about more well-structured practical training opportunities in local industries for engineering graduates, the Committee on Technologist Training of the Vocational Training Council is operating a subsidized training scheme to provide engineering graduates with 18 months practical training of a standard acceptable for corporate membership of the Hong Kong Institution of Engineers. Each graduate receiving training under the scheme is granted a subsidy through his employer as part of his salary and the training progress is monitored by the Committee.

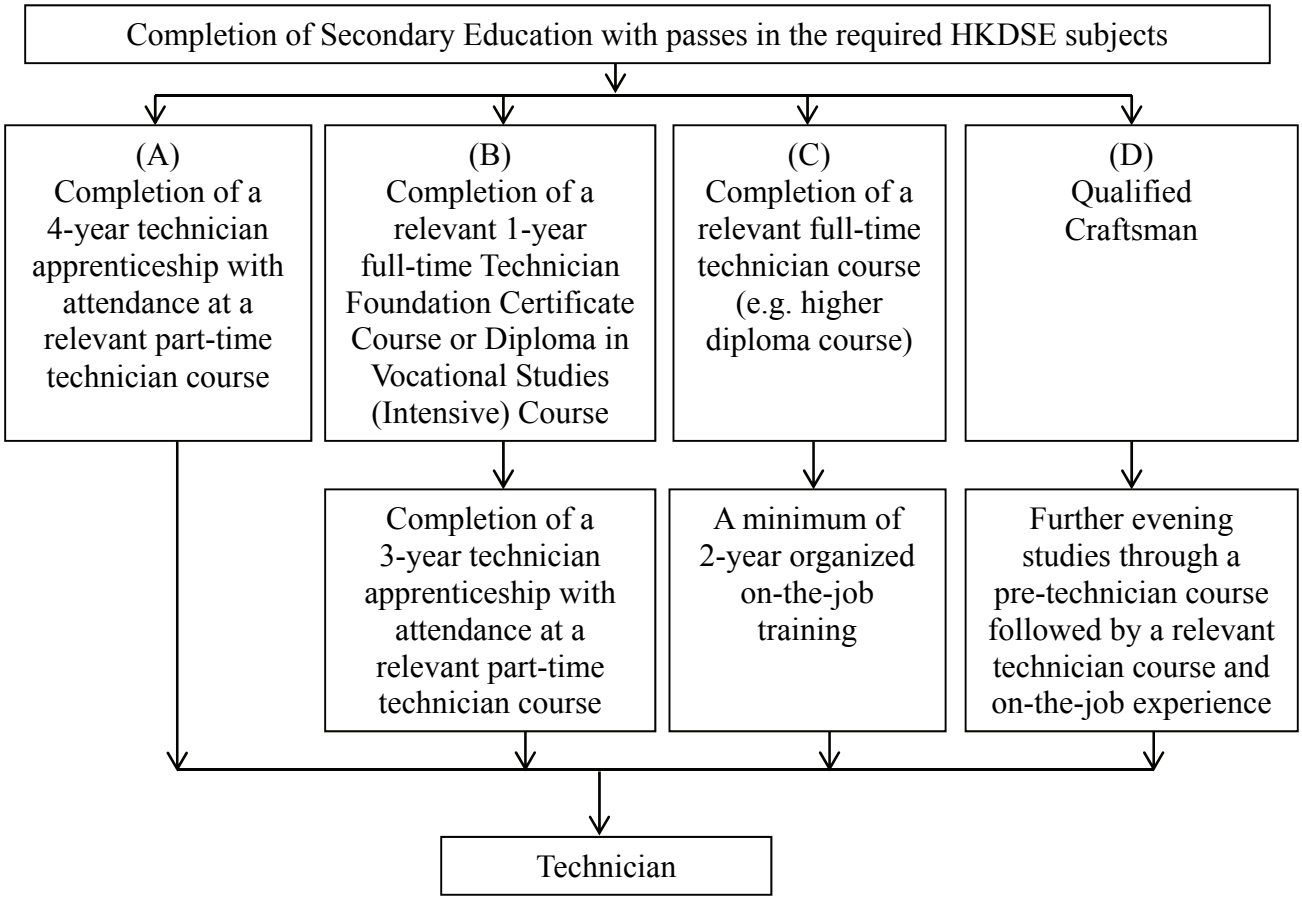
New Technology Training Scheme (NTTS)

4.12 Since 1992, the Vocational Training Council has been operating the New Technology Training Scheme to provide assistance to companies in Hong Kong that wish to have their staff trained in a technology that would be useful to their business. In the context of the scheme, new technologies include those which are not widely applied in Hong Kong and the absorption and application of which will benefit Hong Kong. Any employer in Hong Kong wishing to acquire a new technology for industrial and commercial application may apply for training grant under the Scheme. The Training Board encourages companies to make good use of the Scheme.

Training of Technicians

4.13 A technician is one who occupies a position between the technologist and the craftsman. His education, training and practical experience should enable him to apply proven techniques to solve technical problems. He is expected to carry a measure of technical responsibility, normally under the guidance of a technologist. The routes available for training technicians are shown in Figure 4.2.

Figure 4.2: Training of Technicians



4.14 The Hong Kong Polytechnic University and the Hong Kong Institute of Vocational Education (IVE) of the VTC offer a range of higher diploma courses in electronic engineering and related disciplines. The following table shows the estimated number of graduates from the relevant full-time higher diploma courses of these two institutions:

Table 4.2: Estimated Number of Higher Diploma Graduates in 2015/16 and 2016/17

Full-time Higher Diploma Programme	Estimated No. of Graduates	
	2015/16	2016/17
Electronic and Communications Engineering	87	85
Electronic & Information Engineering	62	61
Computer Engineering	47	57
Multimedia Design & Technology	93	75
Total	289	278

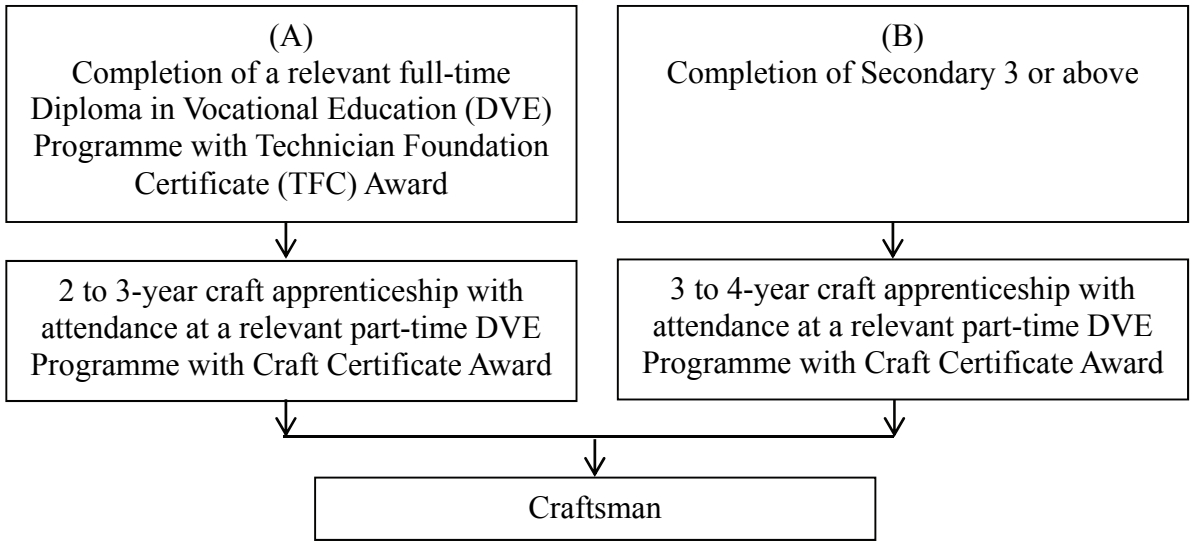
4.15 The Pro-Act Training and Development Centre (Electronics) collaborates with Youth College of the VTC to offer a 1-year full-time Diploma in Vocational Education Awards of a DVE Programme - Digital Electronics Technology for Secondary 6 school leavers. The estimated number of graduates from the course is about 92 from 2015/2016 onwards.

4.16 The forecast demand for related technician level jobs (Electronics Technician, Sales Technician, Draughtsman, Manufacturing/ Quality Assurance Technician, Programmer, and Web Developer/Designer) in the industry for 2015/2016 is 1 413 - 1 726 annually. The total supply of Higher Diploma graduates and Diploma in Vocational Education graduates in 2015/2016 is about 289 which is lower than the forecast demand. However, some of the technician jobs may be filled by the training of secondary school leavers through apprenticeship and internal promotion of experienced craftsmen. It is noted that there were 304 technician trainees in the industry at the time of the survey, and a total of 235 employees were promoted to the technician level jobs in the twelve months prior to the survey.

Training of Craftsmen

4.17 A craftsman is a skilled worker who is able to apply a wide range of skills to his work with minimum direction and supervision. He requires not only practical skills but also related theoretical knowledge to enable him to adapt himself to new technologies. A proper craft apprenticeship would contain both components. The common routes for training craftsmen are shown in Figure 4.3:

Figure 4.3: Training of Craftsmen



4.18 The Training Board recommends route (A) because the apprenticeship period is shorter and the apprentices have already undergone proper basic training and would be productive right from the start of their apprenticeship.

4.19 The Pro-Act Training and Development Centre (Electronics) works in collaboration with Youth College of the VTC to offer a Multi-Entry-Multi-Exit (MEME) Diploma in Vocational Education (DVE) Programme - Digital Electronics Technology for Secondary 3 school leavers. Some 350 students of the DVE are planned to receive training on competence and award of technician for respective jobs in the electronics and telecommunications industries. The forecast demand for related craft jobs (Cable Jointer/Wireman, and Electronics Craftsman) in the two industries for 2015/2016 is 130 - 159 annually. The output from the Pro-Act Training and Development Centre (Electronics) is

various as the graduates could choose further study instead of serving the two industries. However, there were 295 craft trainees in the two industries at the time of the survey and a total of 46 employees were promoted to the craftsman level jobs in the twelve months prior to the survey. The total craftsmen available will be 341, which exceeds the demand. In general, the graduates also take up electronics craftsman jobs and related jobs in other industries such as electrical and mechanical services, building services and manufacturing.

Educational and Training Institutions

4.20 The Hong Kong Institute of Vocational Education of the VTC and the Pro-Act Training and Development Centre (Electronics), as well as several tertiary institutions, offer a wide range of pre-employment and in-service training courses for workers in the electronics and telecommunications industries. The Training Board strongly urges employers in the two industries to make full use of the training facilities in these institutions by recruiting their graduates as apprentices/trainees and sponsoring employees to attend relevant upgrading courses.

Hong Kong Science and Technology Parks Corporation

4.21 The Hong Kong Science and Technology Parks Corporation (HKSTP) was established in 2001 by the HKSAR Government to offer one-stop infrastructural support services to technology-based companies and activities in a synergetic manner, ranging from nurturing start-ups through incubation programmes, providing premises and services in the HKSTP for applied research and development activities, creating and sustaining a design cluster in the InnoCentre, to offering land and premises in industrial estates for production. As a whole, the HKSTP provides 20 state-of-the-art laboratory-fitted buildings offering 220 000 square meter office space – an effective research and development environment and support services to facilitate collaboration and synergy among its 300 tenant companies. Its tenants are under five clusters – engaging in integrated circuits and electronics; precision engineering, biotechnology, green technology and ICT industries. Advanced facilities and services provided include Secure Virtual IP Chamber – EDA & IP Services, IP, MPW & LVP Services, IC Probe & Test Services, Reliability Test Services, IC Failure Analysis Services, Material Analysis Services, Solid-State Lighting Test Services, Wireless Communication Test Lab, Solar Panel Test Services and Biotech Support Centre. The Training Board urges employers to make good use of the facilities and services offered by the HKSTP, especially those for IC design.

Training Services of the Vocational Training Council

4.22 The Vocational Training Council offers free services to help employers organize the statutory apprenticeship training schemes through which technicians and craftsmen can be effectively trained to meet the needs of the electronics and telecommunications industries. The Training Board recommends employers to contact the Council for assistance in setting up training schemes and recruiting apprentices/trainees.

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電子業及電訊業

2014 年人力調查報告摘要

緒論

職業訓練局轄下電子業及電訊業訓練委員會（下稱「本會」）於 2014 年 4 月進行人力調查，以蒐集電子業及電訊業主要職務的最新人力資料。

2. 本會採用分層隨機抽樣方法，於 7 567 間機構中選出 709 間為調查對象。調查所得資料其後以統計方法倍大，以反映業內的整體人力情況。

調查結果

3. 是次調查顯示，2014 年 4 月本港電子業及電訊業共僱用 144 149 人，其中 62 599 人擔任電子工程及相關範疇的主要職務。業內各類機構不同技能等級僱員的分布情況如下：

表 A： 各類機構不同技能等級的僱員分布情況

門類	技能等級				**總數**
	技師	技術員	技工	操作工	
7. 製造	797	2 158	352	1 367	**4 674 (7.5%)**
8. 貿易及服務	9 847	23 113	4 295	1 021	**38 276 (61.1%)**
9. 電訊服務	2 302	4 602	614	142	**7 660 (12.2%)**
10. 批發	390	3 502	249	97	**4 238 (6.8%)**
11. 設計公司、相關院校學系及政府部門	1 302	2 019	858	73	**4 252 (6.8%)**
12. 電子產品零售公司 (八間大型公司)	4	3 495	-	-	**3 499 (5.6%)**
總數 (佔僱員總數百分率)	**14 642 (23.4%)**	**38 889 (62.1%)**	**6 368 (10.2%)**	**2 700 (4.3%)**	**62 599 (100%)**

4. 調查期間，僱主填報電子工程及相關範疇共有 695 名受訓者，空缺則有 1 388 個，分別佔業內人力的 1.1%及 2.2%。僱主亦預測，至 2015 年 4 月時業內將需要 64 007 名員工，較 2014 年 4 月時增加 2.3% (1 408 人）。

人力變化

5. 在電子業及電訊業內，擔任電子及相關範疇主要職務的僱員總數由 2012 年 58 631 人增至 2014 年 62 599 人。根據表 2.1 所示，在 2014 年，門類二（貿易及服務）有人力 38 276 人，佔電子業及電訊業僱員總數（62 599 人）的大多數，約達 61.1%；而門類六（電子產品零售公司）的人力為 3 499 人，佔 5.6%，為各門類中最少。門類二及門類六共有僱員 41 775 人，佔總數 66.7%；在過去兩年間僱員人數增加 4 646 人，增幅為 6.1%。表 2. 1 亦顯示，其餘 33.3%的人力（20 824 人）分布於另外四個門類（一、三、四及五），過去兩年間按年減少 1.6%（678 人）。

6. 表 3.1 按門類詳細分析過去兩年間電子業及電訊業的每年人力變化。根據該表所示，門類一（製造）的人力按年大跌 12.1%；門類五（設計公司、相關院校學系及政府部門）亦按年微跌 0.5%；門類三（電訊服務）的人力則按年增加 2.6%。表 3.2 顯示，門類六的人力按年大增 20.3%（數字僅供參考）；業務及人力性質相近的門類二及四的人力則按年增加 5.0%。表 3.1 顯示，撇除門類六，門類一至五的人力由 2012 年 56 215 人增至 2014 年 59 100 人，按年增加 2.5%。

7. 以下是影響各門類人力變化的因素：

(i) 全球經濟於過去兩年間持續下滑，對門類一構成重大影響。這個門類僱有 50 名或以上員工的大型公司數目持續下跌（由 2012 年 22 間減少至 2014 年 18 間），同時四個技能等級的人力亦普遍減少，人力按年大幅下跌 12.1%。

(ii) 門類二及四的人力按年增加 5.0%。這可歸因於過去兩年間門類二某些工程服務公司承接更多基礎建造工程及海外專項工程，而門類四的業務亦因訪港旅客持續上升而有所增長。基於上述原因，兩個門類均需要聘請更多幹練的技師、技術員和技工，但操作工級的人力在 2014 年則有所減少。

(iii) 近年，愈來愈多人使用智能手機及電腦上網進行網購、通訊、觀看錄像／電影，以及其他娛樂活動。為應付這方面的需求，門類三的電訊業務及相關公司需要不斷開發新穎程式和功能，故有需要增聘幹練人手，以爭取擴大市場佔有率。因此，是次調查錄得門類三的人力按年微增 2.6%，而四個技能等級的人力均有所上升。

(iv) 大學工程系及政府工程部門是吸納門類五人員的主力，於過去兩年間人力需求維持穩定；而設計公司的人力則微跌。綜合上述影響，門類五的人力微跌 0.5%。整體而言，此門類的人力需求大致穩定。

(v) 由於門類六的公司數目有所增加，而且接受調查的公司亦由 2012 年五間增至 2014 年八間，使門類六的人力按年大增 20.3%。2014 年調查新增三間門類六的公司，以取代於 2012 年調查後不再從事相關業務、沒有僱用技術人員及突然結業的公司。與 2012 年的人力情況相若，是次調查顯示，門類六的僱員幾乎全屬技術員級，只有少數屬技師級。

未來人力需求

8. 根據人力趨勢、電子業及電訊業的業務前景，以及僱主對未來人力需求的預測，本會相信未來數年，業界將繼續需要幹練的技師和技術員，以維持行業發展；對技工的需求會維持穩定，而對操作工（製造門類）的需求則有限。

9. 本會根據電子業及電訊業的最新發展，估算各技能等級因退休、轉業或其他原因而流失的人手，並決定採用每年 3% 的正常流失率，用以推算技師、技術員及技工級的人手流失情況。

10. 本會亦採用「調節過濾法」估算技師及技術員級的人力需求。下列表 B 扼要列出電子業及電訊業於 2015 年至 2017 年間的額外人力需求。按主要職務劃分的詳細培訓需求載於附錄 10。

表 B: 電子業及電訊業 2015 年至 2017 年間每年人力需求

技能等級	平均每年需培訓人數	
	總數	幅度（±10%）
技師	738	664 – 812
技術員	1 825	1 643 – 2 007
技工	200	180 – 220

建議

11. 電子業及電訊業仍是香港最大的本地出口商品行業，產品佔 2014 年本港出口總值的 58%。預期香港經濟於 2015 年可保持 2.8%至 3.5% 的增幅。然而，人民幣不斷升值、工資上漲、稅項增加，加上油價、利率及貨幣反覆上落令能源及原材料價格波動，均對電子業及電訊業構成重大挑戰。珠江三角洲勞工短缺及內地實施《勞動合同法》及加工貿易政策亦影響營運開支，帶來另一隱憂。另一方面，自從 2012 年 5 月實施第七階段《內地與香港關於建立更緊密經貿關係的安排》（CEPA VII）以來，香港一直享受零關稅優惠；中央政府更於 2013 年 3 月公布「十二五」規劃，加上香港與內地於 2012 年 6 月 29 日簽訂 CEPA 補充協議九，相信會繼續為香港企業提供大量商機。

12. 全球經濟情況反覆波動。最近，內地公布一項報告，顯示 2014 年全年國內生產總值增幅為 7.4%，是 24 年來最低。另一方面，由於經濟增長及就業情況改善，美國聯邦儲備局於 2014 年 10 月底結束其大型債券購買計劃。歐洲方面，面對經濟增長疲弱，失業率高企及消費物價指數錄得負數等問題，歐洲中央銀行於 2015 年 1 月推出購買債券刺激經濟計劃。為了對抗經濟低迷及防止歐元區的經濟步向通縮，歐洲中央銀行將會每月注資 600 億歐元改善經濟，直至 2016 年 9 月底為止。上述各種情況於未來幾年將對電子業及電訊業產生一定程度的影響。然而，內地持續改革和發展可為全球以至本港電子業及電訊業帶來更多商機。基於上述原因，本會對電子業及電訊業今後的發展持審慎樂觀的看法，相信業界可繼續穩定增長。本會建議僱主採取下列措施，以應付目前情況和未來挑戰：

(i) 優化精簡工序，開拓多元化業務，改善公司運作成效和效率；

(ii) 開發更多新穎、入時、高增值、具成本效益和環保的產品／服務，提升競爭力；

(iii) 透過適當培訓，進一步增強員工（尤其是技術人員）的整體技術水平和能力，令機構更具實力和競爭力；

(iv) 繼續以最具成本效益的方式開拓新業務，以提高市場佔有率（如 2015 年《施政報告》中提及以九龍東為試點發展「聰明城市／智能城市」）；及

(v) 繼續維繫和加強與重要客戶的伙伴關係，並與潛在客戶建立合作關係。

13. 至於員工的技術和能力水平，本會認為除考慮公司的個別培訓需求外，附錄 9 所載的「僱員需要加強培訓的技能」，對僱主於籌辦培訓時甚具參考價值。在目前情況下， 僱主宜加強培訓，以確保有足夠的幹練員工應對日後的挑戰和商機。此外，本會建議職業訓練局及其他培訓機構緊貼上述的電子業及電訊業培訓需求，適時配合。

14. 本會將於 2016 年進行另一次電子業及電訊業人力調查，檢視這兩個行業的人力需求及更新有關數據。

第一章

緒　論

電子業及電訊業訓練委員會

1.1　電子業及電訊業訓練委員會（下稱「本會」）是隸屬職業訓練局的法定委員會，由香港特別行政區政府委任，負責制訂與電子業及電訊業人力培訓相關之事宜。本會委員乃由主要行業公會、專業學會、工會、訓練及教育機構，以及政府部門提名代表出任。委員名單及職權範圍分別載於附件甲及乙。

1.2　按職權規定，本會需負責確定電子業及電訊業的人力需求，並向職業訓練局提出建議，以發展專業教育及培訓設施，應付行業需要。

人力調查

1.3　本會於 2014 年 4 月為電子業及電訊業進行人力調查，蒐集最新資料。是次調查在政府統計處協助下進行，實地調查後的跟進工作於 2014 年 10 月完成，並於 2014 年 11 月完成數據處理。

1.4　是次調查蒐集到下列人力統計數據及資料：

(i) 調查期間各主要職務的僱員人數；

(ii) 現有空缺額；

(iii) 受訓僱員人數；

(iv) 僱主預測 2015 年 4 月時的僱員總數；

(v) 僱員平均每月收入；及

(vi) 僱主認為僱員宜有的教育程度、訓練方式及訓練期。

1.5　本會亦請僱主填報調查進行前 12 個月內，獲得晉升或派往香港以外地區工作超過六個月的技師、技術員及技工人數，以及僱員需要加強培訓的技能。

調查範圍

1.6 是次調查涵蓋六個門類，包括業內公司、相關院校學系及政府部門：

第一類：製造

下列產品的製造商：

(a) 電腦及周邊設備(HSIC 262000, 281700, 952100)；
(b) 影音器材(HSIC 264000, 953100)；
(c) 通訊設備及電纜(HSIC 263000, 273100, 952200)；
(d) 磁性及光學媒體、已儲錄資料媒體的複製(HSIC 182000, 268000)；
(e) 電腦及電訊設備用電子零件與組件(HSIC 261100)；
(f) 其他電子零件及組件(HSIC 261900)；
(g) 電子遊戲用品及玩具(HSIC 324500)；及
(h) 工業用電子儀器及量度、檢驗、導航與控制用設備(HSIC 265100, 331300)。

第二類：貿易及服務

(a) 防盜系統、閉路通訊系統及電訊設備安裝及保養公司(HSIC 432104, 432105, 432106)
(b) 下列產品的進出口貿易公司：
    (i) 科學及專業儀器(HSIC 451631, 452631)*；
    (ii) 電訊設備及零件(HSIC 451611, 452611)*；
    (iii) 電器(HSIC 451452, 452452)*；
    (iv) 電腦、電腦周邊設備及套裝軟件(HSIC 451601, 451602, 452601, 452602)*；
    (v) 辦公室器材及設備(HSIC 451634, 452634)*；
    (vi) 電子零件 (HSIC 451613, 452613)*
(c) 資料處理、寄存及相關活動公司(HSIC 620101, 620199, 620200, 620900, 631100)*；及
(d) (a)至(c)以外的其他電子工程服務公司。

(附錄 A)

第三類：電訊服務

提供下列服務的公司：

(a) 電訊網絡營運服務(HSIC 611000)；
(b) 其他雜項電訊活動(HSIC 619900)；
(c) 互聯網接駁服務(HSIC 619100)；及
(d) 電台廣播，電影、錄像及電視節目編製與廣播活動(HSIC 591100, 601000, 602000)。

第四類：批發

下列批發公司：

(a) 電訊設備及零件(HSIC 460611)；
(b) 電器（不包括機械、辦公室及電訊設備及器材）(HSIC 460452)；
(c) 電腦及電腦周邊設備(HSIC 460601, 460602)；及
(d) 辦公室器材及設備（不包括電腦、傢具及固定裝置）(HSIC 460634)。

第五類：設計公司、相關院校學系及政府部門

(a) 電子設計公司；
(b) 相關院校學系；及
(b) 相關政府部門。

第六類：電子產品零售公司(八間大型公司)

附註： (1) HSIC — 香港標準行業分類。
*(2) *不包括僱用 10 名以下職員的機構，因這些機構技術人員不多。*

1.7 調查前，政府統計處錄得香港電子業及電訊業六個門類約共有 7 567 間機構。鑑於資源有限，本會採用分層隨機抽樣方法，選出共 709 間機構為調查對象。調查所得資料其後以統計方法倍大，以反映業內的整體人力情況。

調查方法

1.8 實地調查進行前兩星期，本會將有關調查文件，包括調查表(附件丁)、附註(附件戊)及主要職務工作說明（附件己）寄予選出的 709 間機構。另亦透過本地報章和有關行業組織宣傳是次調查，促請僱主合作。

1.9 實地調查期間，政府統計處派員到全部 709 間機構收回填妥的調查表，並於有需要時，協助僱主填寫表格。收回的調查表均經詳細審核，如有需要，會與填覆機構核對。

調查反應

1.10 在 709 間選出的機構中，487 間填覆調查表，33 間拒絕作答；而其餘 189 間，則已搬遷、結業、未能聯絡，或已轉營他業。是次調查的有效填覆率為 93.7 %。

1.11 部分機構只提供粗略的資料，並無詳細列出調查進行時的僱員每月收入、受訓者數目和空缺數目，原因是業務繁忙和不願披露機構的機密資料。

調查報告

1.12 本會在跟進實地調查及處理數據後，於 2014 年 11 月編製統計報告，列載調查蒐集所得的重要人力數據。統計報告其後上載職業訓練局網站，以便公眾參考。

1.13 本報告書詳載是次調查結果、本會對電子業及電訊業培訓需求的預測，以及滿足這些需求的建議措施。報告書內，「僱員」、「從業員」和「人力」均指調查期間業內各主要職務的僱員總數，但不包括受訓者及學徒。「受訓者」指正在接受各種形式訓練的人士，包括已簽署學徒合約的註冊學徒。

第二章

調查結果摘要

僱員人數

2.1 是次調查顯示，2014 年 4 月，本港電子業及電訊業共僱用 144 149 人，其中 62 599 人受僱擔任電子工程及相關範疇的主要職務。下文各段只列載與業內主要職務僱員相關的人力統計數字。

各類機構各技能等級的僱員分布情況

2.2 電子業及電訊業各類機構內各技能等級僱員的分布情況見表 2.1，以及圖 2.1 和 2.2。

表 2.1： 各類機構各技能等級的僱員分布情況

門類	技能等級				**總數（佔僱員總數百分率）**
	技師	技術員	技工	操作工	
1. 製造	797	2 158	352	1 367	**4 674 (7.5%)**
2. 貿易及服務	9 847	23 113	4 295	1 021	**38 276 (61.1%)**
3. 電訊服務	2 302	4 602	614	142	**7 660 (12.2%)**
4. 批發	390	3 502	249	97	**4 238 (6.8%)**
5. 設計公司、相關院校學系及政府部門	1 302	2 019	858	73	**4 252 (6.8%)**
6. 電子產品零售公司（八間大型公司）	4	3 495	-	-	**3 499 (5.6%)**
總數（佔僱員總數百分率）	**14 642 (23.4%)**	**38 889 (62.1%)**	**6 368 (10.2%)**	**2 700 (4.3%)**	**62 599 (100%)**

圖 2.1： 各技能等級的僱員分布情況

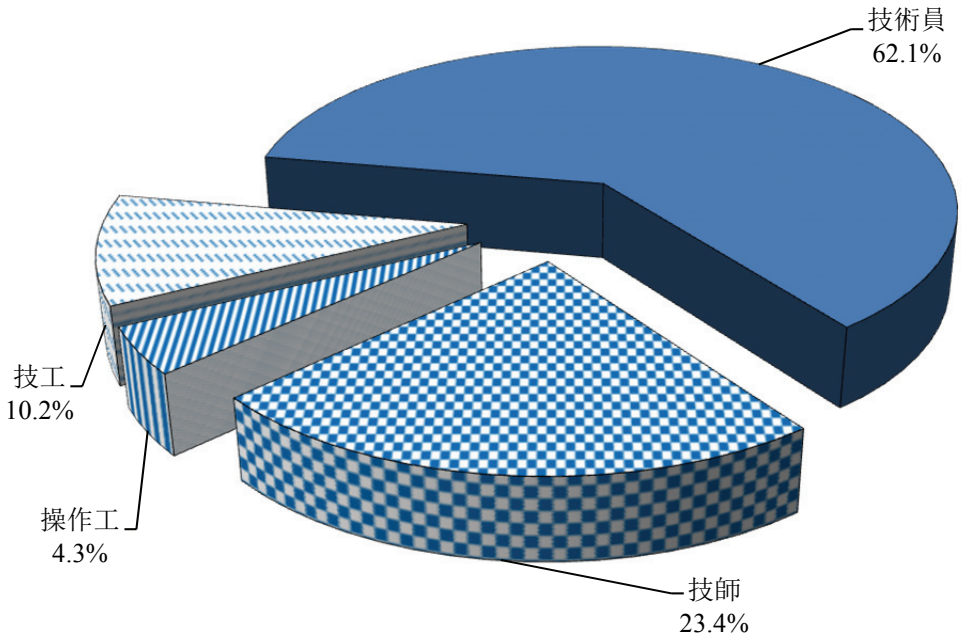
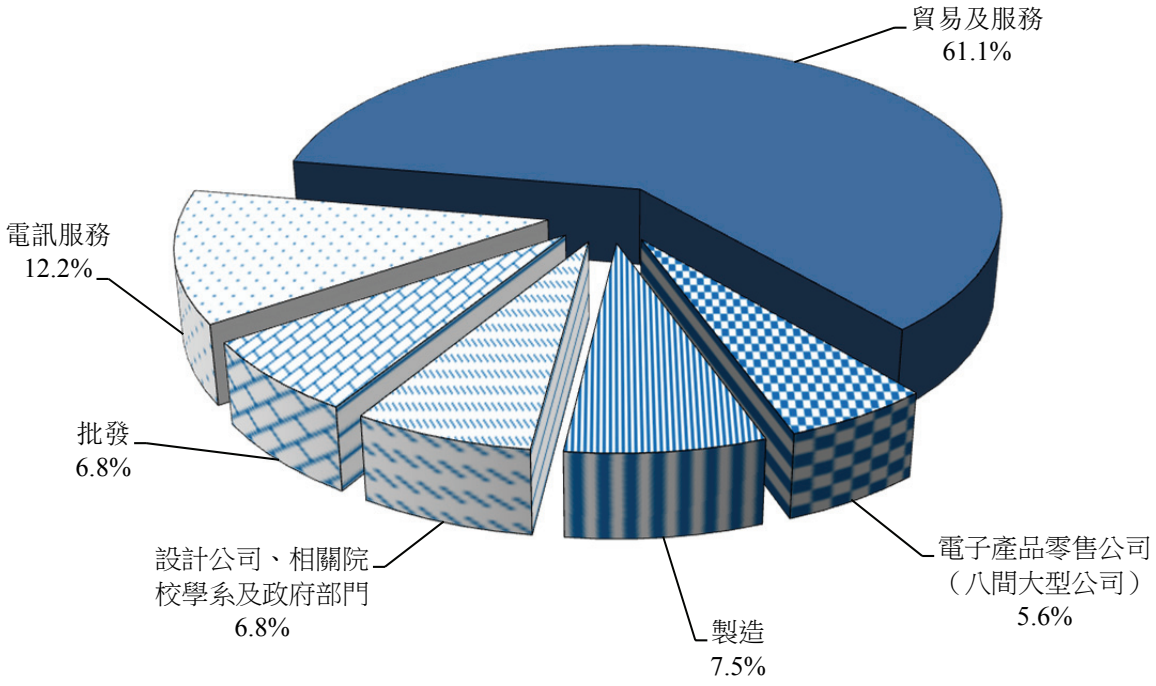


圖 2.2： 各類機構的僱員分布情況



受訓者人數

2.3 調查期間，業內共有 695 名受訓者，按技能等級的分布情況見表 2.2：

表 2.2：各技能等級的受訓者分布情況

技能等級	受訓者人數 (a)	僱員人數 (b)	百分率 $\frac{(a)}{(b)}$ x100%
技師	92	14 642	0.6%
技術員	304	28 889	0.8%
技工	295	6 368	4.6%
操作工	4	2 700	0.1%
總數	**695**	**62 599**	**1.1%**

調查期間空缺數目及預測 2015 年 4 月時的人力

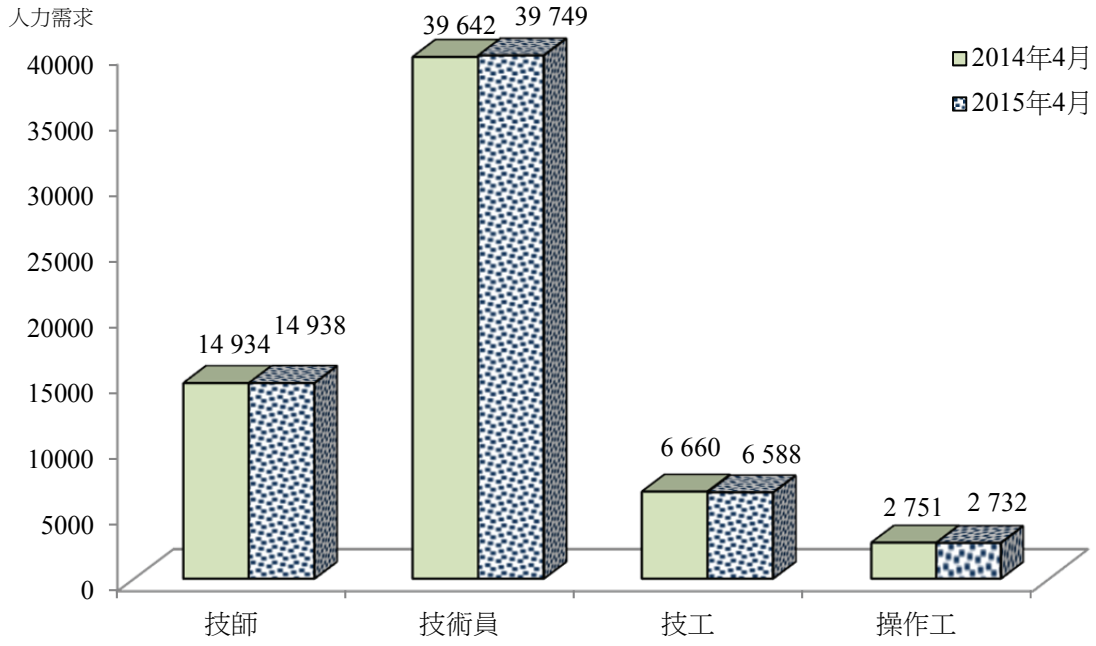
2.4 調查期間，業內共有 1 388 個空缺，佔業內僱員總數 2.2%。此外，僱主預測，至 2015 年 4 月時，業內將需要 64 007 名僱員，較 2014 年 4 月增加 1 408 人，增幅為 2.2%。

2.5 表 2.3 及圖 2.3 比較調查期間及僱主預測至 2015 年 4 月時的人力需求：

表 2.3： 2014 年 4 月與 2015 年 4 月的人力需求比較

技能等級	調查期間（2014 年 4 月）			預測至 2015 年 4 月時的僱員總數	預測人力需求增減
	僱員人數	空缺數目	總人力需求		
技師	14 642	292	14 934	14 938	+0.03%
技術員	38 889	753	39 642	39 749	+0.3%
技工	6 368	292	6 660	6 588	-1.1%
操作工	2 700	51	2 751	2 732	-0.7%
總數	**62 599**	**1 388**	**63 987**	**64 007**	**+0.03%**

圖 2.3： 2014 年 4 月與 2015 年 4 月的人力需求比較



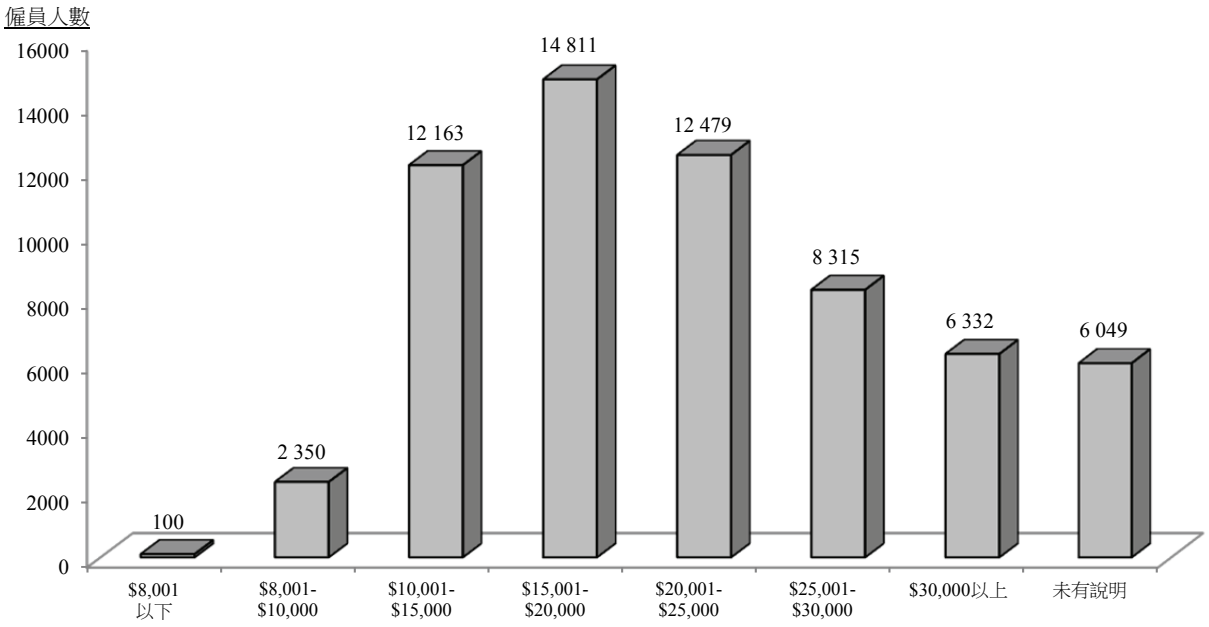
僱員每月總收入幅度

2.6 按每月總收入幅度劃分的僱員分布情況見表 2.4 及圖 2.4：

表 2.4： 根據每月總收入幅度的僱員人數分布情況

技能等級	$8,001 以下	$8,001-$10,000	$10,001-$15,000	$15,001-$20,000	$20,001-$25,000	$25,001-$30,000	$30,000 以上	未有說明
技師	-	-	38	977	2 476	4 522	4 846	1 783
技術員	-	235	7 734	12 616	9 341	3 793	1 486	3 684
技工	-	218	4 020	1 182	662	-	-	286
操作工	100	1 897	371	36	-	-	-	296
總數	**100**	**2 350**	**12 163**	**14 811**	**12 479**	**8 315**	**6 332**	**6 049**

圖 2.4： 根據每月總收入幅度的僱員人數分布情況



僱員宜有的教育程度、訓練方式及訓練時間

2.7 大部分僱主認為技師、技術員及技工級僱員宜有的教育程度、訓練方式及訓練時間見表 2.5：

表 2.5： 僱員宜有的教育程度、訓練方式及訓練時間

技能等級	宜有教育程度	宜有訓練方式	宜有訓練時間
技師	大學學位／院士或同等學歷	在職訓練	四年或以上
技術員	中四至中七／香港中學文憑或同等學歷	在職訓練	一年至二年以內
技工	技工證書	在職訓練	三年至四年以內

內部晉升情況

2.8 調查前 12 個月內，本業共有 463 名僱員獲內部晉升至較高級職位。各技能等級的內部晉升僱員人數分布如下：

表 2.6： 內部晉升情況

內部晉升	獲晉升 僱員人數 (a)	晉升職級的 僱員總數 (b)	百分率 $\frac{(a)}{(b)}$ x100%
由技術員晉升至技師	149	14 642	1.0%
由技工晉升至技術員	268	38 889	0.7%
由其他職級晉升至技工	46	6 368	0.7%
總數	**463**	**59 899**	**0.8%**

派駐香港以外地區工作的僱員

2.9 據僱主填報，調查前 12 個月內，派駐香港以外地區工作超過六個月的僱員人數如下：

表 2.7： 派駐香港以外地區工作的僱員人數

技能等級	派駐香港以外 地區工作的 僱員人數 (a)	同一技能等級的 僱員總數 (b)	百分率 $\frac{(a)}{(b)}$ x100%
技師	607	14 642	4.1%
技術員	280	38 889	0.7%
技工	41	6 368	0.6%
總數	**928**	**59 899**	**1.6%**

僱員需要加強培訓的技能

2.10 僱主認為僱員最需要加強培訓的三項技能見表 2.8：

表 2.8：按需要加強培訓的技能僱員分布情況

技能等級	僱員最需要加強培訓的三項技能			
	次序	編號	技能／知識／個人特質	僱員人數
技師	1.	107	領導能力	3 291
	2.	401	解決問題	2 400
	3.	103	項目管理	2 193
技術員	1.	401	解決問題	7 534
	2.	411	客戶服務技巧	7 327
	3.	406	時間管理技巧	6 512
技工	1.	413	學習或適應新技能、新知識的能力	2 369
	2.	411	客戶服務技巧	1 482
	3.	404	溝通技巧	1 356

統計表

2.11 電子業及電訊業各類機構不同主要職務的詳細人力統計數字分析載於附錄 1 至 7；按每月收入幅度劃分的僱員分布情況載於附錄 8；僱員最需要加強培訓技能的統計數字則載於附錄 9。

第三章

結　論

3.1　　本會已仔細審閱調查結果，並認為有關數據大致能反映調查期間電子業及電訊業的就業情況。

3.2　　在電子業及電訊業內，擔任電子及相關範疇主要職務的僱員總數由 2012 年 58 631 人增至 2014 年 62 599 人，按年增幅為 3.3%。下文各段會按門類及技能等級詳細分析業界的人力變化。在是次調查中，本會第二度納入門類六（電子產品零售公司）為調查對象，但僅得八間公司受訪，故此有關人力數字並不全面。為了更恰當地直接比較各門類的人力情況，下文的分析並不涵蓋門類六，但這個門類於 2012 年及 2014 年的人力情況會另載於表3.2，以供參考。此外，由於門類二（貿易及服務）和門類四（批發）的業務及人力性質相近，故有關數據會合併，以便比較及分析。下表3.1扼要列出各門類不同技能等級於 2012 年及2014 年的人力分布及變化。

表 3.1 :　各門類各技能等級 2012 年與 2014 年人力比較（括弧內為 2012 年數據）

技能等級	門類一	門類二及四	門類三	門類五	總數	
	製造	貿易及服務、批發	電訊服務	設計公司、相關院校學系及政府部門		**按年變化**
技師	797 (956)	10 237 (7 914)	2 302 (2 200)	1 302 (904)	14 638 (11 974)	**+10.6%**
技術員	2 158 (2 432)	26 615 (25 026)	4 602 (4 337)	2 019 (2 333)	35 394 (34 128)	**+1.8%**
技工	352 (551)	4 544 (4 088)	614 (609)	858 (962)	6 368 (6 210)	**+1.3 %**
操作工	1 367 (2 113)	1 118 (1 562)	142 (133)	73 (95)	2 700 (3 903)	**-16.8%**
總數	4 674 (6 052)	42 514 (38 590)	7 660 (7 279)	4 252 (4 294)	59 100 (56 215)	**+2.5%**
按年變化	**-12.1%**	**+5.0%**	**+2.6%**	**-0.5%**	**+2.5%**	

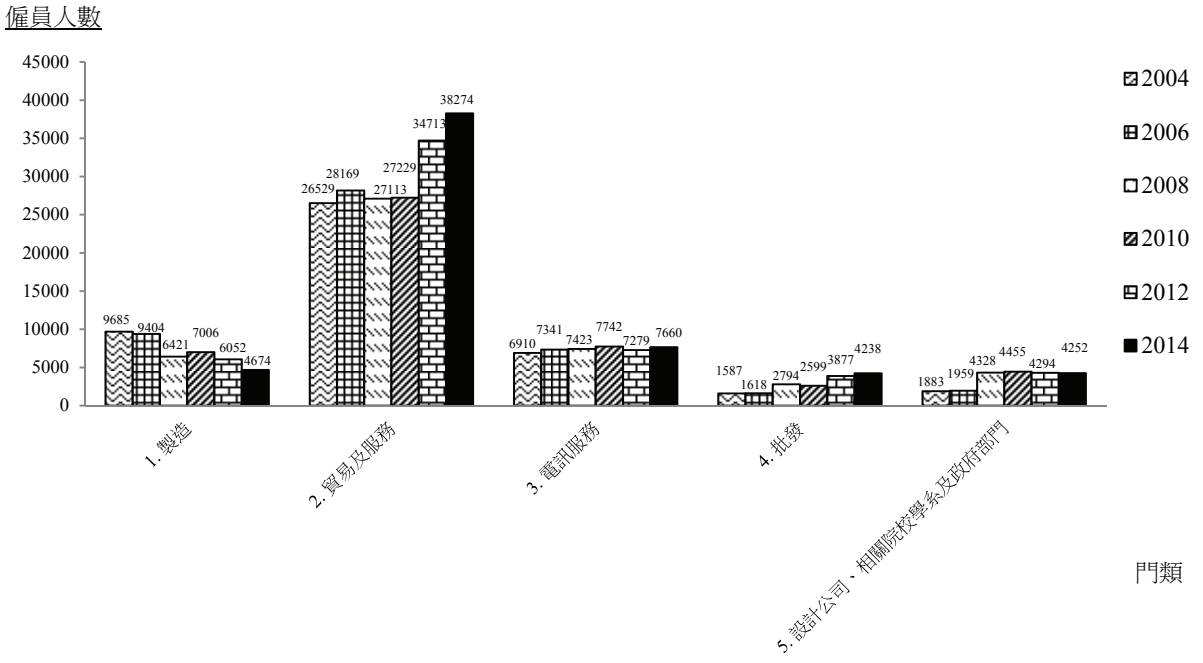
表 3.2 : 門類六各技能等級
2012 年與 2014 年人力比較（供參考）

門類六 – 電子產品零售公司

年份	技師	技術員	技工	操作工	總數	**按年變化**
2014（八間大型電子產品零售公司）	4 (-29.3%)	3 495 (+20.5%)	-	-	3 499	**+20.3%**
2012（五間大型電子產品零售公司）	8	2 408	-	-	2 416	**-11.5%**

3.3 下圖 3.1 顯示電子業及電訊業各門類於 2004 年至 2014 年間的人力變化，並反映在人力調查範圍大幅修訂之後，兩個行業在最近幾年的人力變化。

圖 3.1 : 各門類（一至五）
2004 年至 2014 年間的人力變化



各門類的人力變化

3.4 根據表 2.1 所示，在 2014 年門類二(貿易及服務)的人力(38 276 人)約佔電子業及電訊業僱員總數(62 599 人)的 61.1%，為各門類之首；而門類六（電子產品零售公司）的人力（3 499 人）則佔 5.6%，為各門類中最少。門類二及六的總人力（41 775 人）佔業內僱員總數的 66.7%，在過去兩年間按年增加 6.1%(4 646 人)。此外，表 2.1 亦顯示，其餘 33.3% 的人力（20 824 人）分布於另外四個門類（一、三、四及五），過去兩年間按年減少 1.6%（678 人）。

3.5 表 3.1 按門類詳細分析過去兩年間電子業及電訊業的每年人力變化。根據該表所示，門類一（製造）的人力按年大跌 12.1%；門類五（設計公司、相關院校學系及政府部門）亦按年微跌 0.5%；門類三（電訊服務）的人力則按年增加 2.6%。表 3.2 顯示，門類六的人力按年大增 20.3%（數字僅供參考）；業務及人力性質相近的門類二及四的人力則按年增加 5.0%。表 3.1 顯示，撇除門類六，門類一至五的人力由 2012 年 56 215 人增至 2014 年 59 100 人，按年增加 2.5%。

3.6 各門類的人力變化原因如下：

(i) 全球經濟於過去兩年間持續下滑，對門類一構成重大影響，導致僱有 50 名或以上員工的大型公司數目持續下跌(由 2012 年 22 間減少至 2014 年 18 間，而四個技能等級的人力亦普遍下跌。受上述原因影響，門類一的人力按年大幅下跌 12.1%。

(ii) 門類二及四的人力按年增加 5.0%。這可歸因於過去兩年間門類二某些工程服務公司承接更多基礎建造工程及海外專項工程，而門類四的業務亦因訪港旅客持續上升而有所增長。基於上述原因，兩個門類均需要聘請更多幹練的技師、技術員和技工。操作工級的人力方面則錄得跌幅。

(iii) 近年，愈來愈多人使用智能手機及電腦上網進行各式各樣的娛樂活動，例如網購、通訊、觀看錄像／電影等。為應付與日俱增的需求，門類三的電訊業務及相關公司需要不斷開發新穎程式和功能，故有需要增聘幹練人手，以爭取擴大市場佔有率。因此，是次調查錄得門類三的人力按年微增 2.6%，而四個技能等級的人力均有所上升。

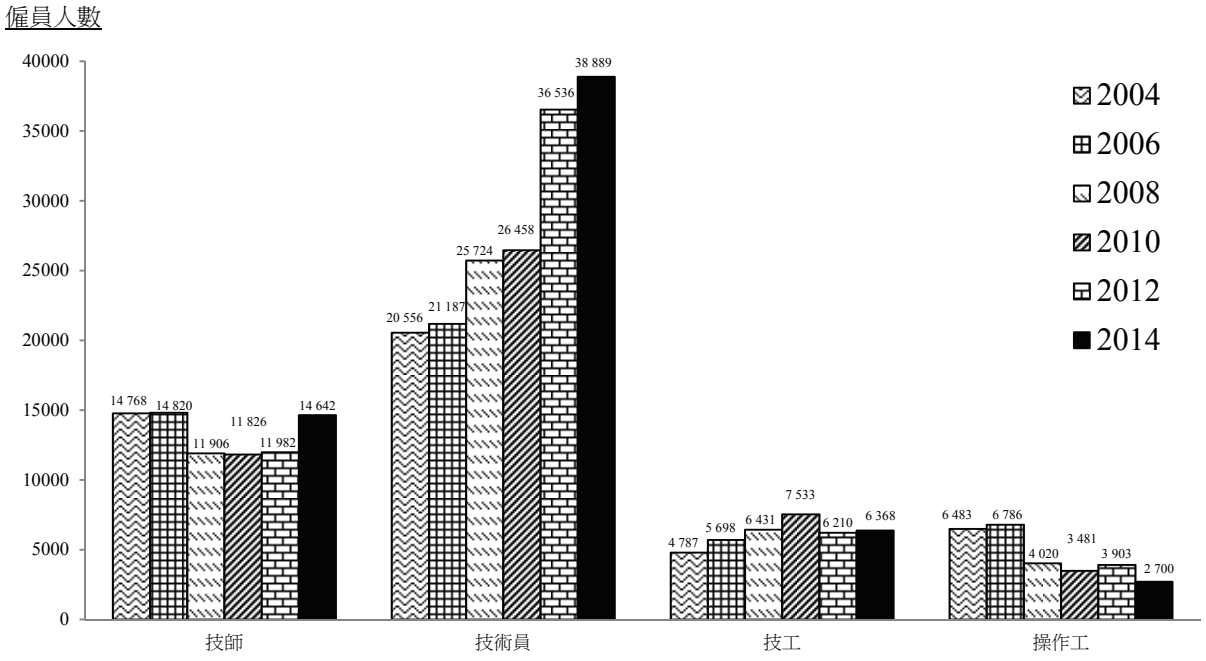
(iv) 大學工程系及政府工程部門是吸納門類五人員的主力，於過去兩年間人力需求維持穩定；而設計公司的人力則微跌。綜合上述影響，門類五的人力按年微跌 0.5%。整體而言，此門類的人力需求大致穩定。

(v) 由於門類六的公司數目有所增加，而且接受調查的公司亦由 2012 年五間增至 2014 年八間，使門類六的人力按年大增 20.3%。2014 年調查新增三間門類六的公司，以取代於 2012 年調查後不再從事相關業務、沒有僱用技術人員及突然結業的公司。與 2012 年的人力情況相若，是次調查顯示，門類六的僱員幾乎全屬技術員級，只有少數屬技師級。

各技能等級各主要職務的人力變化

3.7 各技能等級於 2004 年至 2014 年間的人力變化見下圖 3.2：

圖 3.2: 各技能等級 2004 年至 2014 年間的人力變化



3.8 按技能等級而言，表 3.1 顯示，在 2012 年至 2014 年間，技師級人力按年大增 10.6%；技術員級按年增加 1.8%；而技工級亦按年微升 1.3%。相反，過去兩年間，操作工級人手錄得每年 16.8%的顯著跌幅，主要由於門類一（製造）的人力持續下跌，以及門類二、四對操作工的需求減少所影響。門類一的操作工人數按年下跌 19.6%（746 人）， 而門類二、四則跌 15.4%（444 人）。其他三個技能等級的人力變化原因如下：

(i) 根據下表 3.3 所示，技師級的人力較 2012 年調查時大增 10.5%（2 660 人），主要原因是過去兩年間，門類二某些工程服務公司承接更多基礎建造工程及海外專項工程，技師級人力因而按年大增，當中包括電機工程師（+51.1%）、系統分析員（+43.8%）、產品／平面設計員（+15.3%）及製造／品質保證工程師（+14.5%）；但機械工程師的人數則按年大跌 15.5%。

表 3.3： 技師級各主要職務 2012 年至 2014 年間的人力變化

技師級主要職務	2014	2012	按年變化 (%)
電子工程師	8 503	7 586	+5.9%
電機工程師	1 645	721	+51.1%
機械工程師	624	874	-15.5%
製造／品質保證工程師	1 068	815	+14.5%
化學工程師	54	51	+2.9%
產品／平面設計員	419	315	+15.3%
系統分析員	2 329	1 620	+43.8%
總數	**14 642**	**11 982**	**+10.5%**

(ii) 技術員級的人力按年增加 3.2%，原因亦如上文(i)所述。此外，如下表 3.4 所示，受建造工程及專項工程的需求大增所帶動，是次調查錄得機械技術員及監督／管工／組長的人力分別按年大增 20.8%及 17.6%。至於網站開發員／設計員的人力按年大跌 16.7%，原因估計是相關工作已轉由技師級的系統分析員負責。

表 3.4： 技術員級各主要職務
2012 年至 2014 年間的人力變化

技術員級主要職務	2014	2012	按年變化 (%)
電子技術員	12 328	12 127	+0.8%
機械技術員	1 894	1 297	+20.8%
繪圖員	231	239	-1.7%
製造／品質保證技術員	604	703	-7.3%
監督／管工／組長	3 551	2 569	+17.6%
程序編製員	4 365	3 992	+4.6%
網站開發員／設計員	1 494	1 793	-16.7%
推銷技術員	14 422	13 816	+2.2%
總數	**38 889**	**36 536**	**+3.2%**

(iii) 下表 3.5 顯示，技工級的人力按年微增 1.3%，主要由於門類二的技工人數按年大增 6.1%（由 2012 年 3 814 人大增至 2014 年 4 295 人），而且有關增幅足以抵消門類一及門類五所流失的技工人手。調查亦顯示，受建造工程及專項工程的需求大增所帶動，門類二的電氣技工按年大增 23.2%。另一方面，技工的人數亦按年減少 5.2%；電纜接駁技工／駁線技工則按年減少 8.6%。

表 3.5： 技工級各主要職務
2012 年至 2014 年間的人力變化

技工級主要職務	2014	2012	按年變化 (%)
電纜接駁技工／駁線技工	583	698	-8.6%
電子技工	4 011	4 080	-0.9%
電氣技工	1 193	786	+23.2%
技工	581	646	-5.2%
總數	**6 368**	**6 210**	**+1.3%**

業務展望

行業整體

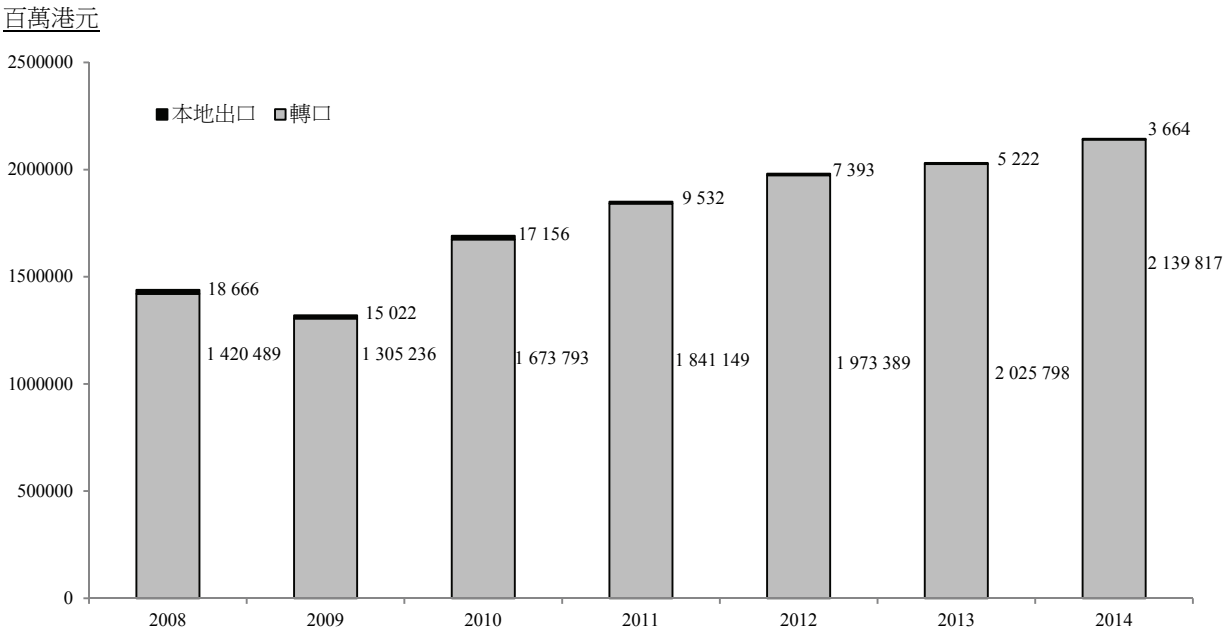
3.9 電子業及電訊業仍是香港貨值最高的本地出口商品行業，佔2014年本港出口總值的58%。受惠於內地對委託加工生產的需求持續增加，以及美國、東盟及日本的消費者對各類電子產品和零部件的需求回升，預期香港經濟於2015年可保持2.8%至3.5%的增幅。在2014年，電子產品的出口總值較上一年上升5.5%，達港幣21,434.81億元。2008年至2014年間電子產品的出口貨值詳見表3.6及圖3.3。

表3.6: 2008年至2014年間電子產品的出口貨值

全年電子產品貨值（百萬港元）	本地出口	轉口	總出口
2008	18 666	1 420 489	1 439 155
2009	15 022	1 305 236	1 320 258
2010	17 156	1 673 793	1 690 949
2011	9 532	1 841 149	1 850 680
2012	7 393	1 973 389	1 980 782
2013	5 222	2 025 798	2 031 020
2014	3 664	2 139 817	2 143 481

資料來源：政府統計處《香港對外商品貿易統計》

圖 3.3: 電子產品出口貨值



3.10　隨著電子產品的出口貨值及人力增加，香港電子業及電訊業於過去兩年有平穩增長；然而，人民幣不斷升值、工資上漲、稅項增加，以及油價、利率及貨幣匯價反覆令能源及原材料價格波動等因素，均對電子業及電訊業構成重大挑戰。珠江三角洲勞工短缺及內地實施《勞動合同法》及加工貿易政策等亦影響營運開支，構成另一項隱憂。此外，自從2012 年 5 月實施第七階段《內地與香港關於建立更緊密經貿關係的安排》（CEPA VII）以來，香港一直享受零關稅優惠；中央政府更於 2013 年 3 月公布「十二五」規劃，加上香港與內地於 2012 年 6 月 29 日簽訂 CEPA 補充協議九，將會繼續為香港企業提供大量商機。

3.11　另一方面，中國及其他國家愈來愈重視環保概念及講究遵守安全規定，不斷收緊環保條例，令門類一（製造）的公司承受巨大壓力。本會預期，未來幾年，這些公司在擴充海外業務時，仍會面對上述壓力。現行的安全規定及標準包括：美國 UL／ETL 或同等認證、FCC 標準認證；歐洲國家 CE／CE-Mark 認證；中國強制性產品認證（CCC）。至於環保措施方面，相關法規包括：《廢棄電器及電子設備指令》（WEEE）、《限制電器及電子設備使用有害物質指令》（RoHS），以及歐盟就化學品制訂的《化學品註冊、評估、授權和限制法規》（REACH）。未來幾年，市場將繼續開發“Industry 4.0”及智能製造系統以推動製造業電腦化，這將進一步窒礙門類一的發展。

3.12　內地經濟於 2014 年錄得 7.4%增長，為 24 年來最低，反映經濟增長緩慢，這同時亦是全球經濟的縮影。另一方面，由於失業率下降、消費者信心指數上升及經濟好轉，美國聯邦儲備局於 2014 年 10 月底結束其大型債券購買計劃。美國經濟漸見起色亦令美元的價位較其他貨幣為高。歐洲方面，由於經濟增長疲弱，失業率高企及消費物價指數錄得負數，歐洲中央銀行於 2015 年 1 月推出購買債券刺激經濟計劃，至 2016 年 9 月底為止每月注資 600 億歐元，以對抗經濟低迷及防止歐元區的經濟步向通縮。上述各種情況於未來幾年將對電子業及電訊業產生一定程度的影響。

3.13　雖然內地經濟於 2014 年的增長不大，但預期未來幾年將續有改善，而訪港旅客人數亦會增加，本會相信香港經濟將持續增長。業務性質相近的門類二（貿易及服務）、門類四（批發）及門類六（電子產品零售公司）會因而受惠。門類三（電訊服務）會繼續為公眾提供新服務，本會認為其業績將相當平穩。第 4.5 代流動通訊服務在未來幾年推出後，會進一步吸引更多用戶。門類三的其他主要發展範疇包括：迅速增長的互聯網網購業務、發展智能城市、新興的智能數碼家居服務（連繫所有家居電器及裝置，以便集中控制，進一步減少二氧化碳排放）、網上學習及 iCloud 雲端電腦服務（供公眾或個人使用，或兩者兼備）。

3.14　隨著電子產品的出口貨值上升，香港仍會是零部件及高檔電子消費品熱門採購中心。為符合環保標準及減少排放二氧化碳，預期內地及其他國家會生產更多電子汽車，繼而令汽車電池、充電器、音響器材及相關產品、汽車電子零件等的需求日增。發光二極管（LED）勝在輕巧纖細、耐用節能及容易調控，因而將會在建築物及道路標誌、告示板、照明設備、顯示器等更廣泛採用。另一類 LED－有源有機發光二極管（AMOLED）未來數年仍會普遍用於流動裝置及高清電視的顯示屏。

3.15　門類五的公司會繼續開發產品，以配合業內最新科技發展，保持市場競爭力。另一方面，集成電路設計及內置系統設計仍會是製造門類的重要業務。香港的知識產權法例和相關措施完善，加上業界的豐富設計經驗和良好信譽，預期集成電路設計業務將蒸蒸日上。日常生活及商務交往需要使用各式各樣的服務，促使愈來愈多應用程式推出，並以應用程式商店提供增值服務。因此，應用程式開發將會成為門類五的一個發展重點。

產品趨勢

3.16　平板個人電腦的功能愈來愈強勁，速度快且功能多，機身亦趨向纖薄輕巧。市面上大部分平板個人電腦均具備下列特色：大型多點觸控液晶體顯示（LCD）屏幕，以及 Wi-Fi（無線網絡／無線局域網絡）、3G（流動通訊高速下行分組接入（HSDPA））上網、視像會議、全球衞星定位系統（GPS）、iCloud 數據儲存及錄音功能。在連接互聯網後，平板個人電腦會變成多功能工具及多媒體平台，用戶可透過各類應用程式進行通訊、閱讀（電子書和電子雜誌）、娛樂（音樂、網頁內容、影片及遊戲）及理財等活動。平板個人電腦亦是電子教學和電子學習的重要硬件工具，預計將更爲普及。

3.17　隨著寬頻互聯網接駁服務高速發展及應用程式推陳出新，智能手機已變成重要且功能強勁的工具，提供更快捷的通訊及娛樂途徑、高速數據傳輸、多元化活動等。除了 MP3、錄音、收音機及高清拍攝、觸控 AMOLED 屏幕、4G／LTE（長期演進）通訊、WiFi 通訊、iCloud 數據儲存、多媒體重播功能、GPS、電子書閱讀器、視像會議及上網等一般功能之外，智能手機用戶亦可自行安裝各類精心設計的應用程式。市面上的智能手機形形式式，各自配備不同的操作系統（如 Android、iOS、Symbian、Linux、Windows Phone 7／Windows Mobile 及 BlackBerry），日後功能更會加強，例如增設電子錢包以便進行電子交易，以及加入智能家居遙控器等功能。市場對智能手機的需求仍然龐大，而部分手機的設計新穎，力求爭取更大的市場佔有率。即將面世的第 4.5 代及未來會推出的第 5 代流動通訊服務將進一步鞏固智能手機的地位，成為重要且不可或缺的個人電子裝置。

3.18　電子消費品（尤其視聽產品）方面，數碼化配搭可攜式設計及匯流技術將會繼續成為市場趨勢。當中，配備 WiFi 通訊、近場通訊、動作感應器、輕觸式屏幕及 3D（立體效果）等功能的數碼攝錄機和數碼相機會較受歡迎，而可拍攝高解像度相片／影片的較廉價簡化版數碼單鏡反光相機亦會暢銷。藍光數碼影音光碟機和錄影機已成為市場廣泛採用的產品。為了方便攜帶及進行匯報，亦推出了小型投影機，成為推廣及銷售人員的理想工具。另一方面，無線充電器的出現亦將進一步增強智能手機及其他電子裝置的市場優勢。

3.19　隨著穿戴式技術日益發展，今後將會帶來龐大商機。穿戴式電子裝置的相關研發（如智能手錶／iWatch、智能眼鏡、電子腰帶、健身手環等），可應用於日常生活的不同範疇，包括用以監察及記錄體溫、心跳、血壓、酒後情況等。此外亦可透過各類應用程式作溝通（話音短訊）、觀看影片及其他用途。另一類受歡迎的產品為電子醫療產品和系統 – 利用資訊及通訊科技連接家居及醫院／診所，以助提升醫生的工作效率；預計長壽電池（如環保車專用電池）及 LED 節能照明設備亦將愈來愈受歡迎。另一方面，市面上不斷湧現新的電腦遊戲站台，配備互聯網瀏覽、3D 顯示卡、觸控式高清屏幕等受歡迎功能，估計電子玩具及遊戲仍十分受青少年及成年人士喜愛。

3.20　寬頻技術廣泛使用及各類程式可供下載，令配備大型 LED 背光液晶體顯示屏／主動式矩陣 AMOLED 顯示屏（超高清 4K：3 840 x 2 160 或 4 096 x 2 160 像數）、內置 3D 效果、互聯網瀏覽及錄影功能的網絡電視（iTV）成為熱門的影音器材。不僅娛樂用途，iTV 亦逐漸成為網購、自選觀看及追看新劇集／影片的平台。iTV 亦可用作社交聚會的平台，使用戶可與遠方的朋友一同觀賞節目，並透過熒幕聊天分享。另一方面，流動電視已成為市場上另一受歡迎的娛樂。用戶只需要一部手提裝置（如智能手機或平板個人電腦），就可隨時隨地透過互聯網觀看播放中的電視節目或已儲存的節目，較以往更便捷。最新發展的 4K（實時串流技術）電視（用來觀看以網絡形式播放（Over-the-Top）的 4K 影片），以及弧幕電視將會成為消費者喜愛的產品。未來幾年，8K（7 680 x 4 320 像素）超高清電視將會成為另一項熱門產品。香港的數碼電台廣播服務亦為用戶提供另一項選擇。

3.21　3D 打印技術漸受歡迎。3D 打印主要是以電腦控制，再搭配免費應用程式軟件進行加工，以製作 3D 實物。3D 打印技術廣泛應用於多個範疇，包括製作電子原型和樣本。未來將有更多電子元件（如印刷電池）及其他日常生活用品會以 3D 印刷製作。另一方面，物聯網（IoT）近年亦經常於不同層面上應用。未來，透過物聯網，所有東西（尤其是衣服、鞋履等日常生活中經常使用的物品）均可被數碼化及連接至互聯網。IoT、大數據及雲端技術將會組成強大工具，促進開發新產品和服務。

3.22 為了提高生活質素、改善家居安全及節能，研發智能家居／家居自動化（尤其是針對長者及殘疾人士的需要而設計）已成為另一個熱門範疇。透過使用各類感應器、IoT、大數據及雲端計算技術，就可將眾多家居裝置（如保安攝錄機、窗簾、空調、家居娛樂系統、雪櫃等）連接上網，再以智能手機或個人電腦操控。不久將來，市場將會出現兼備學習、分析及學以致用能力的家居機械人及工業機械人，並成為新趨勢。這將會大大提升消費者對購買可連接上網家居電子產品的動力。另一方面，在面對網上購物／零售及娛樂的挑戰及各種經濟誘因下，發展智能城市將會成為未來的重要議題。根據 2015 年《施政報告》，政府建議以九龍東作為試點，探討香港發展「聰明城市／智能城市」的可行性。對電子業及電訊業而言，這將會是未來幾年的另一項要事及商機。

未來人力需求

3.23 根據人力趨勢、電子業及電訊業的業務前景，以及僱主對未來人力需求的預測，本會相信未來數年，業界將繼續需要聘請幹練的技師和技術員，以維持行業發展。此外，業界對技工的需求會維持穩定，而對操作工（製造門類）的需求則有限。

3.24 本會根據電子業及電訊業的最新發展，估算各技能等級因退休、轉業或其他原因而流失的人手。本會決定採用每年 3% 的正常流失率，推算技師、技術員及技工級的人手流失情況。

3.25 本會亦採用「調節過濾法」估算技師、技術員及技工級的人力需求。下表 3.7 扼要列出電子業及電訊業於 2015 年至 2017 年間的額外人力需求。按主要職務劃分的詳細培訓需求載於附錄 10。

表 3.7: 電子業及電訊業
2015 年至 2017 年間每年人力需求

技能等級	平均每年需培訓人數	
	總數	幅度（±10%）
技師	738	664 – 812
技術員	1 825	1 643 – 2 007
技工	200	180 – 220

3.26 本會將於 2016 年進行另一次電子業及電訊業人力調查，檢視這兩個行業的人力需求及更新有關數據。

第四章

建　議

4.1　電子業及電訊業仍是香港最大的本地出口商品行業，產品佔2014年本港出口總值的58%。預期香港經濟於2015年可保持2.8%至3.5%的增幅。然而，人民幣不斷升值、工資上漲、稅項增加，加上油價、利率及貨幣反覆上落令能源及原材料價格波動，均對電子業及電訊業構成重大挑戰。珠江三角洲勞工短缺及內地實施《勞動合同法》及加工貿易政策亦影響營運開支，帶來另一隱憂。另一方面，自從2012年5月實施第七階段《內地與香港關於建立更緊密經貿關係的安排》（CEPA VII）以來，香港一直享受零關稅優惠；中央政府更於2013年3月公布「十二五」規劃，加上香港與內地於2012年6月29日簽訂CEPA補充協議九，相信會繼續為香港企業提供大量商機。

4.2　全球經濟情況反覆波動。最近，內地公布一項報告，顯示2014年全年國內生產總值增幅為7.4%，是24年來最低。另一方面，由於經濟增長及就業情況改善，美國聯邦儲備局於2014年10月底結束其大型債券購買計劃。歐洲方面，面對經濟增長疲弱，失業率高企及消費物價指數錄得負數等問題，歐洲中央銀行於2015年1月推出購買債券刺激經濟計劃。為了對抗經濟低迷及防止歐元區的經濟步向通縮，歐洲中央銀行將會每月注資600億歐元改善經濟狀況，至2016年9月底為止。上述各種情況於未來幾年將對電子業及電訊業產生一定程度的影響。然而，內地持續改革和發展可為全球以至本港電子業及電訊業帶來更多商機。基於上述原因，本會對電子業及電訊業今後的發展持審慎樂觀的看法，相信業界可繼續穩定增長。本會建議僱主採取下列措施，以應付目前情況和未來挑戰：

(i)　優化精簡工序，開拓多元化業務，改善公司運作成效和效率；

(ii)　開發更多新穎、入時、高增值、具成本效益和環保的產品／服務，提升競爭力；

(iii)　透過適當培訓，進一步增強員工（尤其是技術人員）的整體技術水平和能力，令機構更具實力和競爭力；

(iv) 繼續以最具成本效益的方式開拓新業務，以提高市場佔有率（如 2015 年《施政報告》中提及以九龍東為試點發展「聰明城市／智能城市」；及

(v) 繼續維繫和加強與重要客戶的伙伴關係，並與潛在客戶建立合作關係。

4.3 至於員工的技術和能力水平，本會建議除了考慮公司的個別培訓需求外，附錄 9 所載的「僱員需要加強培訓的技能」，對僱主於規劃培訓時甚具參考價值。在目前情況下，僱主宜加強培訓力度，以確保有足夠的幹練員工應對今後的挑戰和商機。此外，本會建議職業訓練局及其他培訓機構密切注視上述電子業及電訊業的培訓需求，並適時配合。

每年受訓人數

4.4 在調查期間，技師、技術員及技工級的受訓者分別只有 92 人、304 人和 295 人。由於培訓技師通常需時兩至四年，培訓技術員或技工則需要三至四年，目前僱主提供的培訓，明顯未能滿足行業需求。

4.5 本會建議，電子業及電訊業整體於 2015 年至 2016 年以第 3.25 段所述的規模推行培訓計劃。各主要職務的人力需求載於附錄 10。僱主為機構策劃人力時，應留意平均每年需受訓的人數，按現有的人手計算，分別約佔現職技師、技術員及技工總數的 5.0%、4.7%和 3.1%。

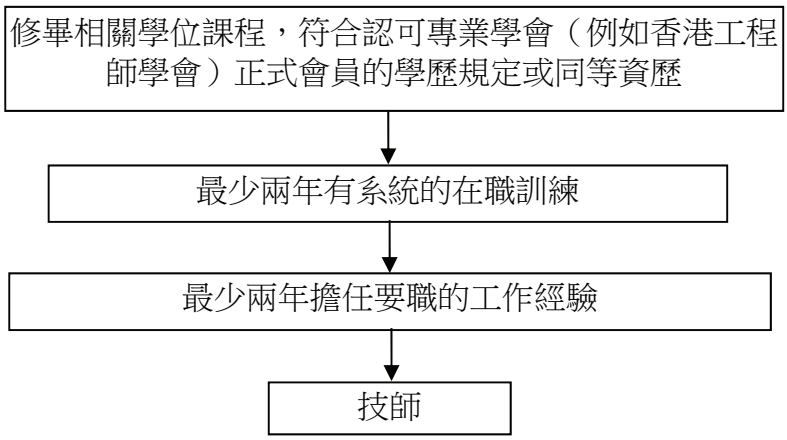
4.6 下文概述技師、技術員及技工的建議培訓途徑。

技師訓練

4.7 技師須具備相當於專業學會正式會員的學歷和經驗，並且能夠分析和解決各種技術問題。此外，技師亦須負責發展及應用工程原理，具創見和判斷力，緊貼行業的科技發展，採用最新技術，並督導和培訓下屬。

4.8 技師在改善管理及革新科技方面肩負重任。本會建議循以下途徑訓練技師：

圖 4.1： 技師訓練



4.9 大學教育資助委員會（下稱「教資會」）資助的多所本地院校，均有開辦各類電子工程及相關學科的學位課程。下表列出這些全日制工程科學位課程在 2015/16 及 2016/17 年度的預計畢業生人數：

表 4.1: 2015/16 及 2016/17 年度
預計教資會院校畢業生人數

全日制學位課程	預計畢業生人數	
	2015/16	2016/17
電子工程	167	148
電腦工程	261	207
資訊工程	317	176
電子及通訊工程	209	197
電子及資訊工程	132	103
系統工程及工程管理	98	91
總數	1 184	922

4.10 預測未來三年，業界每年約需招聘 540 至 660 名有關的技師級人員（包括電子工程師、製造／品質保證工程師及系統分析員）。電子工程及相關學科的畢業生人數應可滿足預測需求。這些畢業生普遍亦會在機電工程、屋宇裝備、資訊科技及製造等其他行業，從事電子工程及相關工作。

工科畢業生訓練計劃（EGTS）

4.11 為了讓工程科畢業生在本地行業接受更有系統的實務訓練，職業訓練局轄下的技師訓練委員會正推行一項資助訓練計劃，名為「工科畢業生訓練計劃」（Engineering Graduate Training Scheme，EGTS），為工科畢業生提供為期 18 個月的實習訓練，程度符合香港工程師學會正式會員的資格要求。訓練津貼會經由僱主發放，作為受訓者部分薪金，而訓練進度則由技師訓練委員會負責監察。

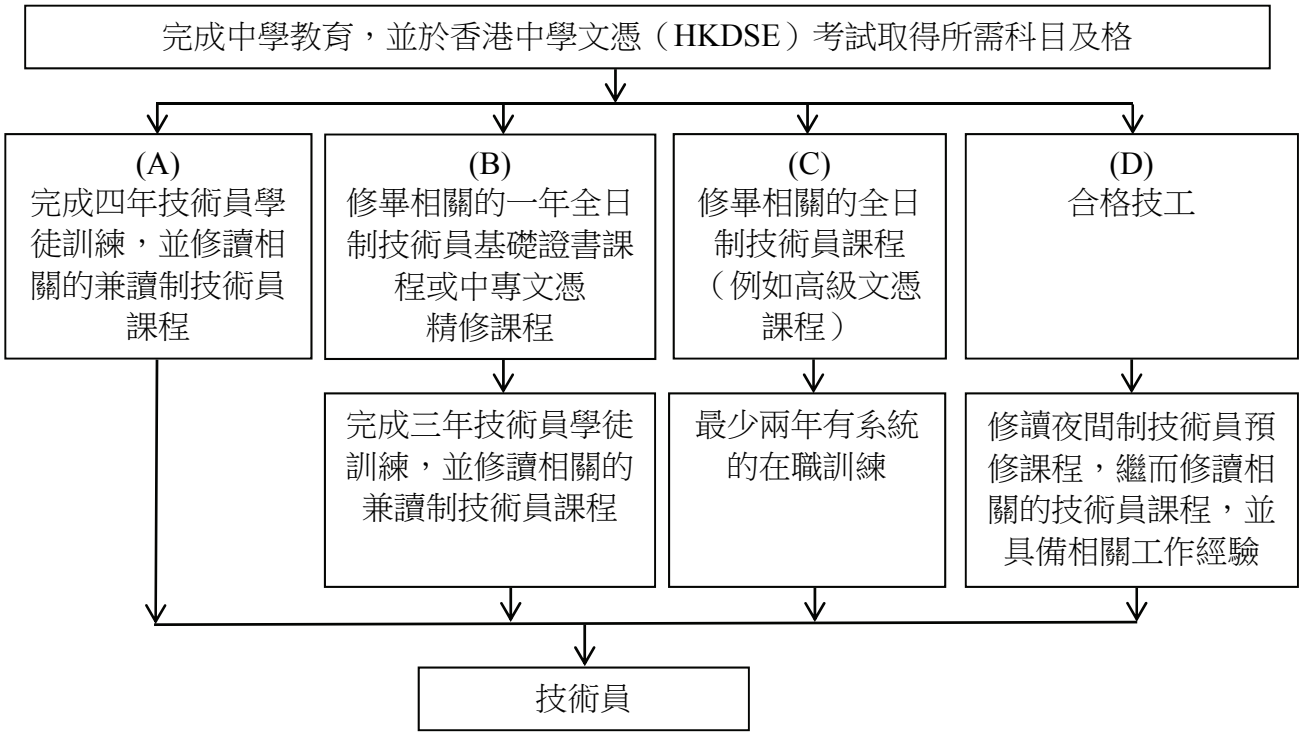
新科技培訓計劃（NTTS）

4.12 自 1992 年起，職業訓練局一直開辦「新科技培訓計劃」（New Technology Training Scheme，NTTS），為有意讓員工接受新科技培訓以促進業務發展的本地公司提供協助。該項計劃所指的「新科技」，是尚未在香港廣泛應用，但吸納和應用有關科技有助本港發展。本地僱主如欲引進新科技作工商業用途，可申請計劃的訓練津貼。本會鼓勵僱主充分利用該項計劃。

技術員訓練

4.13 技術員是職級介乎技師與技工之間的從業員，以其學歷、訓練和實務經驗，應能運用已確立的方法來解決技術問題。此外，技術員一般能在技師督導下，肩負技術責任。技術員的訓練途徑見圖 4.2。

圖 4.2: 技術員訓練



4.14　香港理工大學及職業訓練局轄下的香港專業教育學院（IVE）開辦多項電子工程及相關學科的高級文憑課程。下表列出兩間院校相關全日制高級文憑課程的預計畢業生人數：

表 4.2:　2015/16 及 2016/17 年度
高級文憑課程預計畢業生人數

全日制高級文憑課程	預計畢業生人數	
	2015/16	2016/17
電子及通訊工程	87	85
電子及資訊工程	62	61
電腦工程	47	57
多媒體設計及科技	93	75
總數	289	278

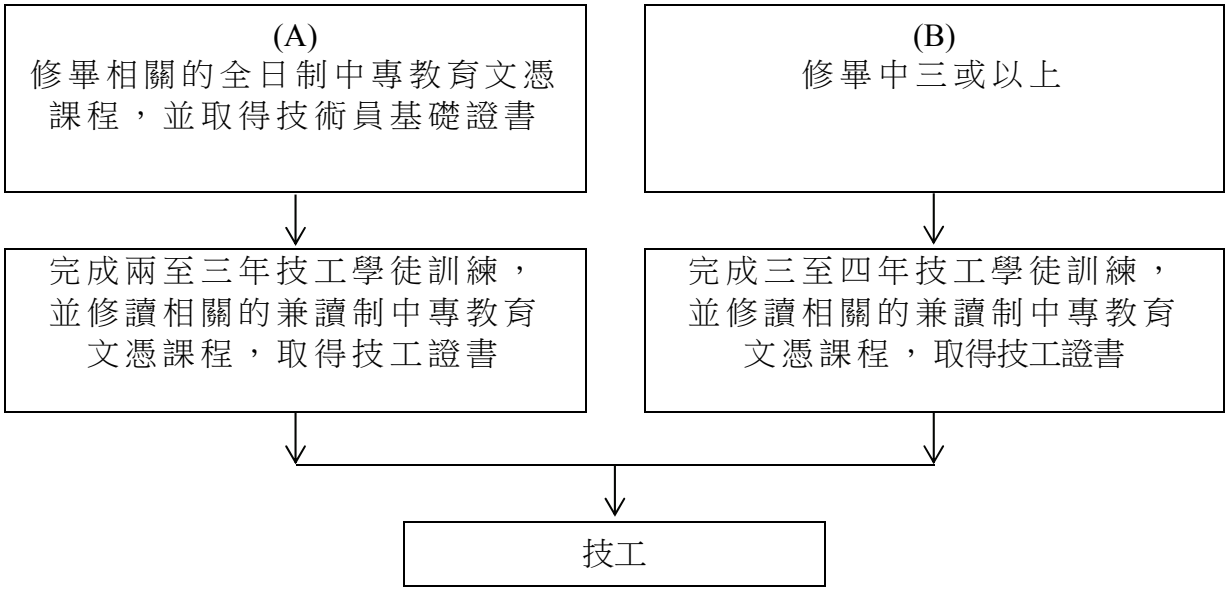
4.15　卓越培訓發展中心（電子業）與職業訓練局轄下的青年學院合辦一年全日制中專教育文憑（DVE）課程（數碼電子科技），供中六離校生修讀。由 2015/2016 年度起，估計此課程每年約有 92 名畢業生。

4.16　據估計，業界在 2015/2016 年度需招聘 1 413 至 1 726 名技術員級人員（包括電子技術員、推銷技術員、繪圖員、製造／品質保證技術員、程序編製員及網站開發員／設計員），但高級文憑課程及中專教育文憑課程的畢業生合共約有 289 人，少於預測的人力需求。不過，僱主可利用學徒訓練計劃培訓中學離校生，同時提升具經驗的技工，藉此填補部分技術員職位。本會發現，在調查期間，業內有 304 名見習技術員，而調查之前的 12 個月內，共有 235 名僱員晉升至技術員職級。

技工訓練

4.17　技工具熟練技術，能夠在極少指導及監督下，將多方面的技能應用到工作上。技工不但要有實際技能，還須具備相關的理論知識，才能適應新科技發展。完善的技工學徒訓練會兼備這兩方面的培訓。訓練技工的一般途徑見圖 4.3：

圖 4.3:　技工訓練



4.18　本會推薦途徑（A），因為學徒訓練期較短，而且學徒已受過適當的基本訓練，於學徒訓練開始時即可執行工作。

4.19　卓越培訓發展中心（電子業）與職業訓練局轄下的青年學院合辦中專教育文憑課程（數碼電子科技），採取多階進出的修讀模式，供中三離校生修讀。課程擬取錄約350名學員接受培訓，於獲頒技術員證書後，可以擔任電子業及電訊業相關職務。電子業及電訊業於2015/2016年度需招聘130至159名技工（包括電纜接駁技工／駁線技工及電子技工）。由於畢業生可能選擇繼續進修而非投身上述兩個行業工作，卓越培訓發展中心（電子業）提供的技工畢業生人數不定。不過，調查期間，電子業及電訊業有295名見習技工；而調查之前的12個月內，共有46名僱員晉升至技工職級。因此，可供僱用的技工將有341名，大於需求。一般而言，畢業生亦可投身如機電工程、屋宇裝備工程及製造等其他行業，擔任電子技工及相關職務。

教育及培訓機構

4.20 職業訓練局轄下的香港專業教育學院及卓越培訓發展中心（電子業），以及幾所大專院校，均有為電子業及電訊業人員提供多種職前及在職培訓課程。本會促請業內僱主聘請這些課程的畢業生擔任學徒／見習員，並資助僱員修讀有關技能提升課程，以充分利用這些機構的培訓設施。

香港科技園公司

4.21 香港特區政府於 2001 年成立香港科技園公司(下稱「科技園」)，透過協作形式致力為以科技為本的公司及活動提供一站式的基礎支援服務，包括透過培育計劃協助新進的科技公司；在科技園內為應用研發活動提供各種設施及服務；於創新中心設置匯聚設計行業的辦公場地；以及在工業邨內為生產工序提供土地及設施。總括而言，香港科技園內設有 20 幢配備實驗室的先進大樓，研發辦公空間面積達 220,000 平方米，提供良好的研發環境及支援服務，以便 300 間入駐公司互相合作和發揮協同效益。這些公司分屬五個科技領域，包括集成電路及電子、精密工程、生物科技、綠色科技，以及資訊及通訊科技行業。園內的先進設施及服務包括知識產權安全使用虛擬平台－電子設計自動化（EDA）及半導體知識產權（IP）服務；半導體知識產權（IP）、多項目晶圓（MPW）及小批量生產（LVP）服務；集成電路探測及測試開發服務；可靠性測試服務；集成電路失效分析服務；材料分析服務；固態照明測試服務；無線通訊測試實驗室；太陽能電池板測試服務；以及生物科技支援中心。本會促請業界僱主善用香港科技園提供的設施和服務，尤其是集成電路設計方面。

職業訓練局的培訓服務

4.22 職業訓練局免費協助僱主籌辦法定的學徒訓練計劃，藉此有效地培訓技術員和技工，切合電子業及電訊業所需。本會建議，僱主可就制訂訓練計劃及招聘學徒／見習員事宜與該局聯絡，尋求協助。

Appendices and Annexes

附 錄 及 附 件

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MANPOWER STATISTICS OF THE ELECTRONICS AND TELECOMMUNICATIONS INDUSTRIES
電子業及電訊業人力統計數字
Sector 1: Manufacturing (門類一：製造)

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間空缺數目	Forecast of Total Workers by April 2015 預測至 2015 年 4 月時的僱員總數
TECHNOLOGIST LEVEL 技師級				
Electronics Engineer 電子工程師	339	9	15	352
Electrical Engineer 電機工程師	2	-	-	2
Mechanical Engineer 機械工程師	109	9	11	119
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	247	-	21	268
Chemical Engineer 化學工程師	17	-	-	17
Product/Graphic Designer 產品／平面設計員	11	-	-	11
System Analyst 系統分析員	72	-	-	72
Sub-total 小 計	797	18	47	841
TECHNICIAN LEVEL 技術員級				
Electronics Technician 電子技術員	1 232	-	4	1 236
Mechanical Technician 機械技術員	181	-	-	181
Draughtsman 繪圖員	2	-	-	2
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	179	-	-	179
Supervisor/Foreman/Leader 監督／管工／組長	234	-	-	234
Programmer 程序編製員	12	-	-	12
Web Developer/Designer 網站開發員／設計員	3	-	-	3
Sales Technician 推銷技術員	315	-	-	315
Sub-total 小 計	2 158	0	4	2 162
CRAFTSMAN LEVEL 技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	2	-	-	2
Electronics Craftsman 電子技工	329	-	-	288
Electrician 電氣技工	13	-	1	14
Mechanic 技工	8	-	-	8
Sub-total 小 計	352	0	1	312
OPERATIVE LEVEL 操作工級				
Operator 生產線操作工	1 367	-	33	1 397
Sub-total 小 計	1 367	-	33	1 397
GRAND TOTAL 總 計	**4 674**	**18**	**85**	**4 712**

MANPOWER STATISTICS OF THE ELECTRONICS AND TELECOMMUNICATIONS INDUSTRIES
電子業及電訊業人力統計數字
Sector 2: Trading and Services (門類二：貿易及服務)

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間空缺數目	Forecast of Total Workers by April 2015 預測至 2015 年 4 月時的僱員總數
TECHNOLOGIST LEVEL 技師級				
Electronics Engineer 電子工程師	4 958	16	27	5 001
Electrical Engineer 電機工程師	1 348	30	55	1 403
Mechanical Engineer 機械工程師	489	19	10	499
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	733	5	8	741
Chemical Engineer 化學工程師	16	-	-	16
Product/Graphic Designer 產品／平面設計員	354	-	3	357
System Analyst 系統分析員	1 949	-	39	1 992
Sub-total 小 計	9 847	70	142	10 009
TECHNICIAN LEVEL 技術員級				
Electronics Technician 電子技術員	6 648	106	168	6 914
Mechanical Technician 機械技術員	1 527	99	88	1 625
Draughtsman 繪圖員	172	-	1	141
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	412	-	14	424
Supervisor/Foreman/Leader 監督／管工／組長	2 155	-	43	2 207
Programmer 程序編製員	3 843	2	57	3 900
Web Developer/Designer 網站開發員／設計員	852	-	28	880
Sales Technician 推銷技術員	7 504	-	104	7 608
Sub-total 小 計	23 113	207	503	23 699
CRAFTSMAN LEVEL 技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	581	21	10	591
Electronics Craftsman 電子技工	2 800	142	129	2 910
Electrician 電氣技工	699	29	29	728
Mechanic 技工	215	11	5	222
Sub-total 小 計	4 295	203	173	4 451
OPERATIVE LEVEL 操作工級				
Operator 生產線操作工	1 021	-	2	1 023
Sub-total 小 計	1 021	-	2	1 023
GRAND TOTAL 總 計	**38 276**	**480**	**820**	**39 182**

MANPOWER STATISTICS OF THE ELECTRONICS AND TELECOMMUNICATIONS INDUSTRIES
電子業及電訊業人力統計數字
Sector 3: Telecommunications Services (門類三：電訊服務)

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間空缺數目	Forecast of Total Workers by April 2015 預測至 2015 年 4 月時的僱員總數
TECHNOLOGIST LEVEL 技師級				
Electronics Engineer 電子工程師	2 014	1	21	2 035
Electrical Engineer 電機工程師	13	-	1	14
Mechanical Engineer 機械工程師	5	-	-	5
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	27	-	2	29
Chemical Engineer 化學工程師	-	-	-	-
Product/Graphic Designer 產品／平面設計員	44	-	2	46
System Analyst 系統分析員	199	-	1	200
Sub-total 小 計	2 302	1	27	2 329
TECHNICIAN LEVEL 技術員級				
Electronics Technician 電子技術員	2 455	3	45	2 499
Mechanical Technician 機械技術員	7	-	-	7
Draughtsman 繪圖員	50	-	-	50
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	-	-	-	-
Supervisor/Foreman/Leader 監督／管工／組長	179	-	-	179
Programmer 程序編製員	212	-	5	217
Web Developer/Designer 網站開發員／設計員	613	-	-	613
Sales Technician 推銷技術員	1 086	-	46	1 132
Sub-total 小 計	4 602	3	96	4 697
CRAFTSMAN LEVEL 技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	-	-	-	-
Electronics Craftsman 電子技工	498	2	9	507
Electrician 電氣技工	113	-	-	113
Mechanic 技工	3	-	-	3
Sub-total 小 計	614	2	9	623
OPERATIVE LEVEL 操作工級				
Operator 生產線操作工	142	-	-	142
Sub-total 小 計	142	-	-	142
GRAND TOTAL 總 計	**7 660**	**6**	**132**	**7 791**

MANPOWER STATISTICS OF THE ELECTRONICS AND TELECOMMUNICATIONS INDUSTRIES
電子業及電訊業人力統計數字
Sector 4: Wholesale (門類四：批發)

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間空缺數目	Forecast of Total Workers by April 2015 預測至 2015 年 4 月時的僱員總數
TECHNOLOGIST LEVEL 技師級				
Electronics Engineer 電子工程師	278	-	1	279
Electrical Engineer 電機工程師	35	-	-	35
Mechanical Engineer 機械工程師	-	-	-	-
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	21	-	-	21
Chemical Engineer 化學工程師	-	-	-	-
Product/Graphic Designer 產品／平面設計員	9	-	-	9
System Analyst 系統分析員	47	-	-	47
Sub-total 小 計	390	-	1	391
TECHNICIAN LEVEL 技術員級				
Electronics Technician 電子技術員	1 037	-	22	1 059
Mechanical Technician 機械技術員	6	-	-	6
Draughtsman 繪圖員	-	-	-	-
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	1	-	-	1
Supervisor/Foreman/Leader 監督／管工／組長	58	-	-	58
Programmer 程序編製員	163	-	5	163
Web Developer/Designer 網站開發員／設計員	24	-	-	24
Sales Technician 推銷技術員	2 213	-	22	2 235
Sub-total 小 計	3 502	-	49	3 546
CRAFTSMAN LEVEL 技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	-	-	-	-
Electronics Craftsman 電子技工	192	5	5	202
Electrician 電氣技工	57	-	8	65
Mechanic 技工	-	-	-	-
Sub-total 小 計	249	5	13	267
OPERATIVE LEVEL 操作工級				
Operator 生產線操作工	97	-	-	97
Sub-total 小 計	97	-	-	97
GRAND TOTAL 總 計	**4 238**	**5**	**63**	**4 301**

MANPOWER STATISTICS OF THE ELECTRONICS AND TELECOMMUNICATIONS INDUSTRIES
電子業及電訊業人力統計數字
Sector 5: Design Houses and Relevant Departments in Universities and Government
(門類五：設計公司、相關院校學系及政府部門)

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間空缺數目	Forecast of Total Workers by April 2015 預測至 2015 年 4 月時的僱員總數
TECHNOLOGIST LEVEL 技師級				
Electronics Engineer 電子工程師	911	3	59	960
Electrical Engineer 電機工程師	247	-	15	259
Mechanical Engineer 機械工程師	21	-	-	21
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	40	-	-	40
Chemical Engineer 化學工程師	21	-	1	22
Product/Graphic Designer 產品／平面設計員	1	-	-	1
System Analyst 系統分析員	61	-	-	61
Sub-total 小 計	1 302	3	75	1 364
TECHNICIAN LEVEL 技術員級				
Electronics Technician 電子技術員	930	28	22	954
Mechanical Technician 機械技術員	173	15	10	193
Draughtsman 繪圖員	7	-	-	7
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	12	-	-	12
Supervisor/Foreman/Leader 監督／管工／組長	753	48	57	826
Programmer 程序編製員	135	1	7	142
Web Developer/Designer 網站開發員／設計員	-	-	-	-
Sales Technician 推銷技術員	9	-	-	9
Sub-total 小 計	2 019	92	96	2 143
CRAFTSMAN LEVEL 技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	-	-	-	-
Electronics Craftsman 電子技工	192	14	15	193
Electrician 電氣技工	311	37	31	335
Mechanic 技工	355	34	50	407
Sub-total 小 計	858	85	96	935
OPERATIVE LEVEL 操作工級				
Operator 生產線操作工	73	4	16	73
Sub-total 小 計	73	4	16	73
GRAND TOTAL 總 計	**4 252**	**184**	**283**	**4 515**

MANPOWER STATISTICS OF THE ELECTRONICS AND TELECOMMUNICATIONS INDUSTRIES
電子業及電訊業人力統計數字
Sector 6: Retail Shops for Electronics Products (8 large shops)
(門類六：零售－8 間大型電子產品零售公司)

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間空缺數目	Forecast of Total Workers by April 2015 預測至 2015 年 4 月時的僱員總數
TECHNOLOGIST LEVEL 技師級				
Electronics Engineer 電子工程師	3	-	-	3
Electrical Engineer 電機工程師	-	-	-	-
Mechanical Engineer 機械工程師	-	-	-	-
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	-	-	-	-
Chemical Engineer 化學工程師	-	-	-	-
Product/Graphic Designer 產品／平面設計員	-	-	-	-
System Analyst 系統分析員	1	-	-	1
Sub-total 小 計	4	-	-	4
TECHNICIAN LEVEL 技術員級				
Electronics Technician 電子技術員	26	2	-	28
Mechanical Technician 機械技術員	-	-	-	-
Draughtsman 繪圖員	-	-	-	-
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	-	-	-	-
Supervisor/Foreman/Leader 監督／管工／組長	172	-	1	173
Programmer 程序編製員	-	-	-	-
Web Developer/Designer 網站開發員／設計員	2	-	-	2
Sales Technician 推銷技術員	3 295	-	4	3 299
Sub-total 小 計	3 495	2	5	3 502
CRAFTSMAN LEVEL 技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	-	-	-	-
Electronics Craftsman 電子技工	-	-	-	-
Electrician 電氣技工	-	-	-	-
Mechanic 技工	-	-	-	-
Sub-total 小 計	-	-	-	-
OPERATIVE LEVEL 操作工級				
Operator 生產線操作工	-	-	-	-
Sub-total 小 計	-	-	-	-
GRAND TOTAL 總 計	**3 499**	**2**	**5**	**3 506**

Appendix 7
附錄 7

MANPOWER STATISTICS OF THE ELECTRONICS AND TELECOMMUNICATIONS INDUSTRIES (ALL SECTORS)
電子業及電訊業人力統計數字（各門類）

Job Title 職稱	Number of Workers Employed 僱員人數	Number of Trainees 受訓者人數	Number of Vacancies at Date of Survey 調查期間空缺數目	Forecast of Total Workers by April 2015 預測至 2015 年 4 月時的僱員總數
TECHNOLOGIST LEVEL 技師級				
Electronics Engineer 電子工程師	8 503	29	123	8 630
Electrical Engineer 電機工程師	1 645	30	71	1 713
Mechanical Engineer 機械工程師	624	28	21	644
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	1 068	5	31	1 099
Chemical Engineer 化學工程師	54	-	1	55
Product/Graphic Designer 產品／平面設計員	419	-	5	424
System Analyst 系統分析員	2 329	-	40	2 373
Sub-total 小 計	14 642	92	292	14 938
TECHNICIAN LEVEL 技術員級				
Electronics Technician 電子技術員	12 328	139	261	12 690
Mechanical Technician 機械技術員	1 894	114	98	2 012
Draughtsman 繪圖員	231	-	1	200
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	604	-	14	616
Supervisor/Foreman/Leader 監督／管工／組長	3 551	48	101	3 677
Programmer 程序編製員	4 365	3	74	4 434
Web Developer/Designer 網站開發員／設計員	1 494	-	28	1 522
Sales Technician 推銷技術員	14 422	-	176	14 598
Sub-total 小 計	38 889	304	753	39 749
CRAFTSMAN LEVEL 技工級				
Cable Jointer/Wireman 電纜接駁技工／駁線技工	583	21	10	593
Electronics Craftsman 電子技工	4 011	163	158	4 100
Electrician 電氣技工	1 193	66	69	1 255
Mechanic 技工	581	45	55	640
Sub-total 小 計	6 368	295	292	6 588
OPERATIVE LEVEL 操作工級				
Operator 生產線操作工	2 700	4	51	2 732
Sub-total 小 計	2 700	4	51	2 732
GRAND TOTAL 總 計	**62 599**	**695**	**1 388**	**64 007**

DISTRIBUTION OF EMPLOYEES BY MONTHLY INCOME RANGE (ALL SECTORS)
根據每月總收入幅度的僱員人數分布情況（各門類）

Job Title 職稱	Unspecified 未有說明	Below $8,001 以下	$8,001 - $10,000	$10,001 - $15,000	$15,001 - $20,000	$20,001 - $25,000	$25,001 - $30,000	Over $30,000 以上
TECHNOLOGIST LEVEL 技師級								
Electronics Engineer 電子工程師	726	-	-	8	539	1 813	2 625	2 792
Electrical Engineer 電機工程師	2	-	-	-	2	42	1 026	573
Mechanical Engineer 機械工程師	87	-	-	3	31	110	201	192
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	220	-	-	8	49	192	279	320
Chemical Engineer 化學工程師	3	-	-	4	-	4	41	2
Product/Graphic Designer 產品／平面設計員	6	-	-	7	135	164	25	82
System Analyst 系統分析員	739	-	-	8	221	151	325	885
Sub-total 小 計	1 783	-	-	38	977	2 476	4 522	4 846
TECHNICIAN LEVEL 技術員級								
Electronics Technician 電子技術員	1 206	-	-	2 483	3 421	3 982	722	514
Mechanical Technician 機械技術員	122	-	-	81	309	1 253	117	12
Draughtsman 繪圖員	1	-	6	111	66	10	37	-
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	107	-	1	65	286	121	24	-
Supervisor/Foreman/Leader 監督／管工／組長	71	-	-	255	1 164	80	1 749	232
Programmer 程序編製員	979	-	-	308	1 644	872	532	30
Web Developer/Designer 網站開發員／設計員	307	-	-	14	650	407	75	41
Sales Technician 推銷技術員	891	-	228	4 417	5 076	2 616	537	657
Sub-total 小 計	3 684	-	235	7 734	12 616	9 341	3 793	1 486
CRAFTSMAN LEVEL 技工級								
Cable Jointer/Wireman 電纜接駁技工／駁線技工	2	-	-	282	299	-	-	-
Electronics Craftsman 電子技工	204	-	187	2 766	829	25	-	-
Electrician 電氣技工	80	-	31	471	26	585	-	-
Mechanic 技工	-	-	-	501	28	52	-	-
Sub-total 小 計	286	-	218	4 020	1 182	662	-	-
OPERATIVE LEVEL 操作工級								
Operator 生產線操作工	296	100	1 897	371	36	-	-	-
Sub-total 小 計	296	100	1 897	371	36	-	-	-
GRAND TOTAL 總 計	**6 049**	**100**	**2 350**	**12 163**	**14 811**	**12 479**	**8 315**	**6 332**

SKILLS EMPLOYEES NEED TO ENHANCE
僱員需要加強培訓的技能

Skills 技能	No. of Employees 僱員人數			
	Technologist 技師	Technician 技術員	Craftsman 技工	All 總數
Management Skills 管理技能				
101 Production and engineering management 工業生產及工程管理	1 133	273	-	1 406
102 Marketing management 經銷管理	659	398	-	1 057
103 Project management 項目管理	2 193	370	-	2 563
104 Quality management 品質管理	947	1 210	5	2 162
105 Purchasing management 採購管理	-	180	-	180
106 People management 人事管理	1 602	1 574	-	3 176
107 Leadership skills	3 291	337	-	3 628
China-related Knowledge and World Vision 有關中國的知識及世界視野				
201 Social and economic development in China 在中國內地的社會和經濟發展	92	400	-	492
202 Laws and regulatory restrictions to China 進入中國市場的法律和規條限制	160	240	-	400
203 Trade practices in the mainland of China 在中國內地的營商常規	159	355	-	514
204 Cross-cultural knowledge 跨文化的知識	-	-	-	-
205 World vision 世界視野	148	151	-	299
Language Skills 語文能力				
301 Spoken English 英語會話	339	2 368	162	2 869
302 Written English 英文書寫能力	54	422	-	476
303 Putonghua 普通話	404	2 633	153	3 190
304 Written Chinese 中文書寫能力	6	32	93	131
Interpersonal and Intrapersonal Skills for the Workplace 工作間的人際及個人才能				
401 Problem solving 解決問題	2 400	7 534	1 123	11 057
402 Creativity 創意力	6	479	959	1 444
403 Critical thinking 批判思考能力	227	503	52	782
404 Communication skills 溝通技巧	2 141	4 894	1 356	8 391
405 Team building 團隊建立	833	2 602	922	4 357
406 Time management skills 時間管理技巧	766	6 512	896	8 174
407 Optimism/Positive 樂觀/積極	153	1 636	25	1 814
408 Self-esteem 自尊	-	-	-	-
409 Perseverance 毅力	2	1 242	47	1 291
410 Change management skills 變革管理技巧	1576	131	-	1 707
411 Customer services skills 客戶服務技巧	887	7 327	1 482	9 696
412 Numerical skills 數學運用技巧	117	4	-	121
413 Ability to learn/adapt new skills/knowledge 學習或適應新科技、新知識的能力	1611	5 218	2 369	9 198
Others 其他				
699 Others	1 181	4 051	517	5 749

RECOMMENDED NUMBER OF TRAINEES
TO BE TAKEN ON ANNUALLY FOR THE NEXT FEW YEARS
建議未來幾年每年應取錄的受訓者人數

Job Title 職稱	No. of Workers Employed at Time of Survey (2014) 調查期間（2014 年）僱員人數	Recommended Number of Trainees to be Taken on Annually Starting from 2014 建議由 2014 年起每年取錄的受訓者人數
TECHNOLOGIST LEVEL 技師級		
Electronics Engineer 電子工程師	8 503	386 – 472
Electrical Engineer 電機工程師	1 645	75 – 91
Mechanical Engineer 機械工程師	624	28 – 35
Manufacturing/Quality Assurance Engineer 製造／品質保證工程師	1 068	48 – 59
Chemical Engineer 化學工程師	54	2 – 3
Product/Graphic Designer 產品／平面設計員	419	19 – 23
System Analyst 系統分析員	2 329	106 – 129
Sub-total 小 計	**14 642**	**664 – 812**
Electronics Technician 電子技術員	12 328	521 – 636
Mechanical Technician 機械技術員	1 894	80 – 98
Draughtsman 繪圖員	231	10 – 12
Manufacturing/Quality Assurance Technician 製造／品質保證技術員	604	26 – 31
Supervisor/Foreman/Leader 監督／管工／組長	3 551	150 – 183
Programmer 程序編製員	4 365	184 – 225
Web Developer/Designer 網站開發員／設計員	1 494	63 – 77
Sales Technician 推銷技術員	14 422	609 – 745
Sub-total 小 計	**38 889**	**1 643 – 2 007**
Cable Jointer/Wireman 電纜接駁技工／駁線技工	583	17 – 20
Electronics Craftsman 電子技工	4 011	113 – 139
Electrician 電氣技工	1 193	34 – 41
Mechanic 技工	581	16 – 20
Sub-total 小 計	**6 368**	**180 - 220**

Annex A
附件甲

Membership of the Electronics and Telecommunications Training Board
(March 2015)

電子業及電訊業訓練委員會委員名單
（2015 年 3 月）

Chairman:
主席

Mr Johnny YEUNG Chi-hung, MH 楊志雄先生, MH	(nominated by the Hong Kong Electronic Industries Association Limited) （香港電子業商會提名）

Vice-Chairman:
副主席

Mr Christopher TSE Hung-keung 謝鴻強先生	(nominated by the Federation of Hong Kong Industries) （香港工業總會提名）

Members:
委員

Dr Lawrence CHEUNG Chi-chong 張梓昌博士	(nominated by the Hong Kong Productivity Council) （香港生產力促進局提名）
Mr CHEUNG Hok-yin 張學研先生	(nominated by the Hong Kong & Kowloon Electronics Industry Employees' General Union) （港九電子工業職工總會提名）
Mr Kenny CHEUNG 張惠權先生	(nominated by an electronics manufacturing company (semi-conductor)) （一間半導體製造公司提名）
Dr Measure HUNG Kim-fung 洪劍峰博士	(nominated by an electronics trading/engineering services company) （一間電子貿易/工程服務公司提名）
Mr KWAN Man-lung 關文龍先生	(nominated by an electronics manufacturing company (components/parts)) （一間電子元件及配件製造公司提名）
Ir Ricky KWONG Wai-chuen 鄺偉銓工程師	(nominated by a telecommunication company (the fixed telecommunication network services sector)) （一間固定電訊網絡服務公司提名）
Dr LAM Hiu-fung 林曉鋒博士	(Ad personam) （獨立人士）

Ir LAW Man-hoi 羅文海工程師	(nominated by a broadcasting company) （一間廣播公司提名）
Mr Sylvian LEE Chi-hung 李志雄先生	(nominated by a telecommunication company (the mobile telecommunicaton network services sector)) （一間流動電訊網絡服務公司提名）
Mr LEUNG Ding-kau 梁定球先生	(nominated by an electronics manufacturing company (computers and related peripherals)) （一間電腦及有關周邊裝置製造公司提名）
Dr LO Tai-chin 羅台秦博士	(nominated by the Chinese Manufacturers' Association of Hong Kong) （香港中華廠商聯合會提名）
Mr MA Fung-on 馬逢安先生	(nominated by an electronics manufacturing company (consumer products)) （一間電子消費產品製造公司提名）
Prof Philip MOK Kwok-tai 莫國泰教授	(nominated by a local university) （本地一大學提名）
Ir Johnny POON Chung-yin 潘仲賢工程師	(nominated by the Hong Kong Institution of Engineers （香港工程師學會提名）
Mr William TSE Wing-nam 謝永南先生	(nominated by an electronics manufacturing company (telecommunications)) （一間電訊器材製造公司提名）
Ir Eric CHAK Ho-leung 陳浩樑工程師	(representative of the Director of Electrical and Mechanical Services) （機電工程署署長代表）
Mr CHENG Chi-keung 鄭志強先生	(representative of the Director-General of Communications) （通訊事務總監代表）
Mr Eric NG Ka-lok 吳家樂先生	(representative of the Director-General of Trade and Industry) （工業貿易署署長代表）
Ir SHIU Chi-yung 邵志勇工程師	(representative of the Executive Director of the Vocational Training Council) （職業訓練局執行幹事代表）

In Attendance:
列席者

Dr LEUNG Yau-cheung 梁有祥博士	Head of Department of Engineering, Hong Kong Institute of Vocational Education (Shatin) 香港專業教育學院（沙田）工程系 系主任
Mr HUI Chi-kwok 許志國先生	Manager-In-Charge, Pro-Act Training and Development Centre (Electronics) 卓越培訓發展中心（電子業）中心主管

Adviser:
顧問

Mr LAM Kwok-luen 林國聯先生	Governor Asia Pacific The Society of Motion Picture and Television Engineers (Hong Kong Section) 電影電視工程師協會香港分會 亞太區理事

Secretary:
秘書

Mr CHENG Tai-man 鄭泰民先生	(Vocational Training Council) （職業訓練局）

Annex B

Electronics and Telecommunications Training Board

Terms of Reference

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 (VTC) the development of vocational education and training facilities to meet the assessed manpower demand.

4. To advise the Hong Kong Institute of Vocational Education (IVE) and training & development centres on the direction and strategic development of their programmes in the relevant disciplines.

5. To advise on the course planning, curriculum development and quality assurance systems of the IVE and training & development centres.

6. To prescribe job specifications for the principal jobs in the industry defining the skills, knowledge and training required.

7. To advise on training programmes for the principal jobs in the industry specifying the time a trainee needs to spend on each skill elements.

8. To tender advice in respect of skill assessments, trade tests and certification for in-service workers, apprentices and trainees, for the purpose of ascertaining that the specified skill standards have been attained.

9. To advise on the conduct of skill competitions in key trades in the industry for the promotion of vocational education and training as well as participation in international competitions.

10. 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 vocational education and training in the industry.

11. To organize seminars/conferences/symposia on vocational education and training for the industry.

12. To advise on the publicity relating to the activities of the Training Board and relevant vocational education and training programmes of the VTC.

13. 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.

14. To undertake any other functions delegated by the Council in accordance with Section 7 of the Vocational Training Council Ordinance.

附件乙

電子業及電訊業訓練委員會

職權範圍

1. 確定業內的人力需求，包括收集、分析相關的人力和學生／學員統計數字，以及關於社會經濟、科技及人力市場發展的資料。
2. 評估及研究本業的人力供求是否平衡。
3. 就發展業內專業教育及訓練設施應付人力需求，向職業訓練局提供意見。
4. 就相關學科的課程發展方向及策略，向香港專業教育學院(IVE)、卓越培訓發展中心提出建議。
5. 就 IVE、卓越培訓發展中心的課程策劃、課程發展及質素保證制度提供意見。
6. 擬訂本業主要職務的工作範圍，界定所需的技能、知識及訓練。
7. 建議本業主要職務訓練方案，訂定每種技能所需的訓練期。
8. 對技術評估、技能測驗及證書頒發制度提供意見，以確定從業員、學徒及見習員的技能水平。
9. 就本業主要行業舉辦技能比賽提供意見，以推廣專業教育與訓練和派員參加國際賽事。
10. 就本業專業教育及訓練的發展與推廣事宜，與僱主、僱主聯會、工會、專業團體、訓練及教育機構、政府部門等聯絡。
11. 為本業舉辦有關專業教育及訓練的研討會與會議。
12. 就業內訓練委員會工作、有關職訓局專業教育及訓練課程的宣傳事宜提供意見。
13. 每年向局方呈交訓練委員會工作報告，以及相關學科課程發展策略建議。
14. 根據《職業訓練局條例》第 7 條，負責局方所委派的其他工作。

Vocational Training Council 職業訓練局

Headquarters Division 2 總辦事處二科
6F, 20A Tsing Yi Road, Tsing Yi Island, New Territories, Hong Kong
香港新界青衣島青衣路20A號6樓
www.vtc.edu.hk

Telephone No 電話

Facsimile No 傳真

Our Reference 本局檔號 ( ) in EC/4/2 (2014)

Your Reference 來函檔號

Annex C

8 April 2014

Dear Sir/Madam,

The 2014 Manpower Survey of the Electronics Industry

The Electronics and Telecommunications Training Board of the Vocational Training Council is appointed by the Government of the Hong Kong Special Administrative Region to be responsible for all matters pertaining to the planning and training of manpower in the electronics industry.

With the assistance of the Census and Statistics Department, the Training Board will conduct the 2014 manpower survey of the industry from 22 April to 21 May 2014. A reference day is given as 1 April 2014, to collect the following information about each of the principal jobs in the industry:

(a) the number of employees at present employed,

(b) the number of employees at present under training,

(c) the number of existing vacancies, and

(d) a forecast of the total number of employees in 12 months' time.

The information collected will be handled in strict confidence and will be published only in the form of statistical summaries without reference to any individual establishment.

---- I am forwarding for your reference and completion, the following documents in both English and Chinese:

(a) a questionnaire (Appendix A);

(b) an explanatory note on the questionnaire (Appendix B); and

(c) a list of job descriptions for the principal jobs in the electronics industry (Appendix C).

During the period of the survey, an officer of the Census and Statistics Department will contact your office. The officer will assist in the completion of the questionnaire, if necessary, and collect the questionnaire for processing.

I sincerely hope that you will co-operate in this survey to enable the Training Board to make training plans for the benefit of the industry. The Manpower Survey Report will be uploaded onto the webpage of the Training Board under the VTC website at **http://ectb.vtc.edu.hk** .

Thank you for your kind participation and contribution to the electronics industry. Should you have any queries in connection with the survey, please contact the Manpower Statistics Section of the Census and Statistics Department by telephoning 2116 8505.

Yours faithfully,

(YEUNG Chi-hung, Johnny)
Chairman
Electronics and Telecommunications Training Board

附件丙

Vocational Training Council 職業訓練局

Headquarters Division 2 總辦事處二科
6F, 20A Tsing Yi Road, Tsing Yi Island, New Territories, Hong Kong
香港新界青衣島青衣路20A號6樓
www.vtc.edu.hk

Telephone No 電話　　Facsimile No 傳真

Our Reference 本局檔號 (　) in EC/4/2 (2014)　　Your Reference 來函檔號

各位僱主：

電子業二零一四年人力調查

職業訓練局電子業及電訊業訓練委員會由香港特別行政區政府委任，負責一切有關電子業的人力策劃及訓練事宜。

在政府統計處協助下，本訓練委員會將於本年四月二十二日至五月二十一日期間，進行電子業二零一四年人力調查。調查參考日將定為二零一四年四月一日，蒐集本業各主要職務的資料：

(一) 現有僱員人數；
(二) 現有受訓人數；
(三) 現有空缺額；
(四) 預計十二個月後的僱員總數。

調查所得資料絕對保密，只以摘要統計數字發表，並不提及個別機構。

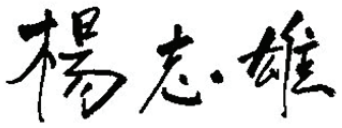
現附上以下中英對照文件，供貴機構參閱填寫：

(一) 調查表（附錄 A）；
(二) 調查表附註（附錄 B）；
(三) 電子業主要職務工作說明（附錄 C）。

調查期間，政府統計處職員會聯絡 貴機構，收取調查表作資料處理，並於需要時協助填寫調查表。

是次調查，懇請 貴機構惠予合作，使本訓練委員會能為電子業定出人力訓練計劃。當二零一四年人力調查報告完成後，亦會上載於職業訓練局網頁(網址：**http://ectb.vtc.edu.hk**)，歡迎下載。

如對調查有任何查詢，請致電 2116 8505 與政府統計處人力統計組聯絡。



電子業及電訊業訓練委員會
主席
楊志雄

二零一四年四月八日

CONFIDENTIAL
WHEN DATA ENTERED
填入數據後即成
機密文件

VOCATIONAL TRAINING COUNCIL
職業訓練局

THE 2014 MANPOWER SURVEY OF THE ELECTRONICS INDUSTRY
電子業二零一四年人力調查

QUESTIONNAIRE
調查表

PLEASE READ THE EXPLANATORY NOTES BEFORE COMPLETING THIS QUESTIONNAIRE
填表前，請參閱附註

For official use only: 此欄毋須填寫	Rec. Type	Survey Code	Industry Code	Establishment No.	Enumerator's No.	Editor's No.	Check Digit	No. of Employees Covered by the Questionnaire
	1	0 5						
	1	2 3	4 5 6 7 8 9	10 11 12 13 14 15	16 17	18 19	20 21 22	23 24 25 26 27

NAME OF ESTABLISHMENT: 機構名稱 _____

ADDRESS: 地址 _____

TYPE OF PRODUCT/SERVICE: 產品／服務 _____

TOTAL NUMBER OF PERSONS ENGAGED: 僱員總人數 _____

NAME OF PERSON TO CONTACT: 聯絡人姓名 (28 – 47)

POSITION: 職位 _____

TEL. NO.: 電話 (48 – 55) - (56 – 63)

FAX NO.: 圖文傳真 _____

E-MAIL: 電郵 (64 – 98)

VTC-EC-01

Part I 第一部份

	(A) Job 工作			(B) Average Monthly Income 每月平均收入	(C) Number Employed as at 1 April 2014 (excl. trainees) 在1.4.2014之僱員人數（受訓者除外）	(D) Forecast of Number Employees in 12 Month's Time (excl. trainees) 預計十二個月後的僱員人數（受訓者除外）	(E) Number of Vacancies as at 1April 2014 (excl. trainees) 在 1.4.2014之空缺額 (受訓者除外)	(F) Number of Trainees as at 1April 2014 在 1.4.2014之受訓者人數
	Title 職稱	Rec. Type	Job Code 職位編號	Code 編號				
	For Official Use Only → 此欄毋須填寫		8-10	11	12-15	16-19	20-22	23-25
	TECHNOLOGIST LEVEL 技師級							
1	Electronics Engineer 電子工程師	2	1 0 1					
2	Electrical Engineer 電機工程師	2	1 0 2					
3	Mechanical Engineer 機械工程師	2	1 0 3					
4	Manufacturing/ Quality Assurance Engineer 製造／品質保證工程師	2	1 0 4					
5	Chemical Engineer 化學工程師	2	1 0 5					
6	Product/ Graphic Designer 產品／平面設計員	2	1 0 6					
7	System Analyst 系統分析員	2	1 0 7					
	TECHNICIAN LEVEL 技術員級							
8	Electronics Technician 電子技術員	2	2 0 1					
9	Mechanical Technician 機械技術員	2	2 0 2					
10	Draughtsman 繪圖員	2	2 0 3					
11	Manufacturing/ Quality Assurance Technician 製造／品質保證技術員	2	2 0 4					
12	Supervisor/ Foreman/ Leader 監督／管工／組長	2	2 0 5					
13	Programmer 程式編製員	2	2 0 6					
14	Web Developer/ Designer 網站開發員／設計員	2	2 0 7					
15	Sales Technician 推銷技術員	2	2 0 8					
	CRAFTSMAN LEVEL 技工級							
16	Cable Jointer/ Wireman 電纜接駁技工／駁線技工	2	3 0 1					
17	Electronics Craftsman 電子技工	2	3 0 2					
18	Electrician 電氣技工	2	3 0 3					
19	Mechanic 技工	2	3 0 4					
	OPERATIVE LEVEL 操作工級							
20	Operator 生產線操作工	2	4 0 1					
21	Others 其他	2						
22		2						
23		2						
24		2						
25		2						

Average Monthly Income
每月平均收入

Enter in column B employee's average monthly income range according to the following codes. The income should include basic wages, guaranteed year-end bonus, regular overtime pay, cost of living allowance, meal allowance etc.

請將僱員的每月平均收入幅度按照下列類別編號填入B欄內。「每月平均收入」包括底薪固定發放的年終花紅、定期超時工作工資、生活津貼、膳食津貼等。

Code 編號	Average Monthly Income Range 每月平均收入幅度
1	Under $8,001 以下
2	$8,001 - $10,000
3	$10,001 - $15,000
4	$15,001 - $20,000
5	$20,001 - $25,000
6	$25,001 - $30,000
7	Over $30,000 以上

Remark
備註

Note 1 If additional lines are necessary, please tick here ☐ and enter on supplementary sheet(s).
附註一 如此頁填滿，請先將（✓）號填入此 ☐ 內，然後在附頁繼續填寫 。

Note 2 The term 'trainees' includes all trainees receiving any form of training and apprentices under a contract of apprenticeship.
附註二 「受訓者」包括正在接受各種訓練的人士，以及簽有學徒合約的登記學徒。

Part II 第二部份

1. Internal Promotion
內部晉升

Please fill in the number of internal promotion in the past 12 months (1.4.2013 to 31.3.2014)
請填寫過去十二個月內 (1.4.2013 至 31.3.2014)，內部晉升的人數

Rec. Type	From Technician to Technologist 由技術員晉升至技師	From Craftsman to Technician 由技工晉升至技術員	From Others to Craftsman 由其他職級晉升至技工	For official use only 此欄毋須填寫
3				
1	8 9 10	11 12 13	14 15 16	17

2. Hong Kong Technical Personnel Dispatched Outside Hong Kong
遣派香港以外的香港技術人員

Please enter below the number of technical personnel paid by Hong Kong who had been dispatched to work for more than half year outside Hong Kong during the 12 months (1.4.2013 to 31.3.2014) prior to the survey.
請填寫調查前十二個月內 (1.4.2013 至 31.3.2014)，由香港支薪而被派往外地工作超過半年的技術人員數目

Number of Technologists 技師人數	Number of Technicians 技術員人數	Number of Craftsmen 技工人數	For official use only 此欄毋須填寫
18 19 20 21	22 23 24 25	26 27 28 29	30

3. Education and Training an Employee Should Have
僱員宜有的教育及訓練

Technologist 技師			Technician 技術員			Craftsman 技工		
Education 教育	Training Mode 訓練方式	Training Period 訓練時間	Education 教育	Training Mode 訓練方式	Training Period 訓練時間	Education 教育	Training Mode 訓練方式	Training Period 訓練時間
31	32	33	34	35	36	37	38	39

Please enter in the boxes the education and training an employee should have according to the following codes:
請將僱員宜有的教育及訓練按照下列類別編號填入格內：

Code 編號	Education 教育
1	Degree/Associateship or equivalent 大學學位／院士或同等學歷
2	Higher Diploma 高級文憑
3	Diploma 文憑
4	Higher Certificate 高級證書
5	Certificate 證書
6	Secondary 4 to 7 / Hong Kong Diploma of Secondary Education or equivalent 中四至中七 / 香港中學文憑或同等學歷
7	Craft Certificate 技工證書
8	Secondary 3 or below 中三或以下

Code 編號	Training Mode 訓練方式
1	Graduate traineeship 工科畢業生訓練
2	On-the-job training 在職訓練
3	Apprenticeship 學徒訓練
4	Off-the-job training 職外訓練
5	Others 其他

Code 編號	Training Period 訓練時間
1	4 years or above 四年或以上
2	3 to less than 4 years 三年至四年以下
3	2 to less than 3 years 二年至三年以下
4	1 to less than 2 years 一年至二年以下
5	6 to less than 12 months 六至十二個月以下
6	Below 6 months 六個月以下

Part III 第三部份

1. Recruitment
招聘

(a) Please fill in the number of new recruits in the past 12 months (1.4.2013 to 31.3.2014)
請填寫過去十二個月內 (1.4.2013 至 31.3.2014)，新招聘的僱員人數

Number of Technologists 技師人數	Number of Technicians 技術員人數	Number of Craftsmen 技工人數	Number of Operatives 操作工人數
40 41 42 43	44 45 46 47	48 49 50 51	52 53 54 55

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(b) Number of recruits who have performed electronics services related duties in their last jobs from item (a) above
上列(a)項中，在剛離職的工作崗位上曾執行電子業相關職務的人數

Number of Technologists 技師人數	Number of Technicians 技術員人數	Number of Craftsmen 技工人數	Number of Operatives 操作工人數
57 58 59 60	61 62 63 64	65 66 67 68	69 70 71 72

2. Employees Left
僱員離職

Please fill in the number of employees who had left your establishment in the past 12 months (1.4.2013 to 31.3.2014)
請填寫過去十二個月內 (1.4.2013 至 31.3.2014)，離職的僱員人數

Number of Technologists 技師人數	Number of Technicians 技術員人數	Number of Craftsmen 技工人數	Number of Operatives 操作工人數
73 74 75 76	77 78 79 80	81 82 83 84	85 86 87 88

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3. Skills an Employee Need to Enhance
僱員需加強培訓的技能

Please indicate the three most important skills that your employees need to enhance. (Please see the table on the right for the choice of skills.)
你認為 貴機構現有僱員在那三方面技能最需要加強培訓。(請參閱右面的編號表以選擇技能。)

Technologist 技師	90 91 92	93 94 95	96 97 98
Technician 技術員	99 100 101	102 103 104	105 106 107
Craftsman 技工	108 109 110	111 112 113	114 115 116

Code 編號 — Types of skills / knowledge / attributes 技能/知識/個人特質的類別

Management skills 管理技能
- 101 Production and engineering management 工業生產及工程管理
- 102 Marketing management 經銷管理
- 103 Project management 計劃管理
- 104 Quality management 品質管理
- 105 Purchasing management 採購管理
- 106 Personnel management 人事管理
- 107 Leadership skills 領導能力

China-related knowledge and world vision 有關中國的知識及世界視野
- 201 Social and economic development in the mainland of China 在中國內地的社會和經濟發展
- 202 Laws and regulatory restrictions for access to China's market 進入中國市場的法律和規條限制
- 203 Trade practices in the mainland of China 在中國內地的營商常規
- 204 Cross-cultural knowledge 跨文化的知識
- 205 World vision 世界視野

Language skills 語文技能
- 301 Spoken English 英語會話
- 302 Written English 英文書寫能力
- 303 Putonghua 普通話
- 304 Written Chinese 中文書寫能力

Interpersonal and intrapersonal skills for the workplace 工作間的人際及個人才能
- 401 Problem solving 解決問題
- 402 Creativity 創意力
- 403 Critical thinking 批判思考能力
- 404 Communication skills 溝通技巧
- 405 Team building 團隊建立
- 406 Time management skills 時間管理技巧
- 407 Optimism/Positive 樂觀／積極
- 408 Self-esteem 自尊
- 409 Perseverance 毅力
- 410 Change management skills 變革管理技巧
- 411 Customer services skills 客戶服務技巧
- 412 Numerical skills 數學運用技巧
- 413 Ability to learn/adapt new skills/knowledge 學習或適應新技能、新知識的能力

- 699 Others * 其他 *

* Please specify if skills code = '699'.
* 若技能編號 = '699'， 請說明。

For official use only 此欄毋須填寫

Est No. _____

Annex E
附 件 戊

The 2014 Manpower Survey of the
Electronics and Telecommunications Industries
電 子 業 及 電 訊 業 二 零 一 四 年 人 力 調 查

Explanatory Note
附 註

1. Please ignore the numbers of the row immediately beneath the headings. They are purely for data processing.
每行標題下的號碼只供資料處理用，請毋須理會。

2. Before completing the questionnaire, please read carefully the job titles and job descriptions in Appendix C.
填寫調查表前，請先詳閱附錄 C 所列的職稱與工作說明。

3. Please complete the columns ('A' to 'F') of the questionnaire and insert a zero (0) for any column not applicable to your establishment.
請填寫表內各欄（「A」至「F」），並在不適用於 貴機構的各欄內填入（0）符號。

4. Please fill in information as accurate as possible because the information collected from this survey is vital for determining the manpower requirements of the industry in order that the Electronics and Telecommunications Industry Training Board can make meaningful recommendations to Government on how to meet training needs.
請填入準確資料，因是項資料對於確定本業的人力需求極為重要，而電子業及電訊業訓練委員會亦將以此為根據，向政府提供解決訓練需求的建議。

5. Job Titles - Column 'A'
職稱 —— 「A」欄
   (a) The job titles and code numbers are pre-printed.
   職稱及職務編號已代為印上。
   (b) Please add in column 'A' titles of any technical jobs not mentioned in Appendix C, and briefly describe them and indicate their skill levels.
   如 貴機構另有技術性職務名稱未載於附錄 C 者，請一併填入「A」欄內，並扼要說明其工作性質及技能等級。
   (c) Please classify an employee according to his/her main duty irrespective of any additional secondary duties he/she may be required to perform (e.g. a technician, who works mainly as an electronics technician but is also required to perform the work of a draughtsman occasionally, should be classified as an electronics technician and not as a draughtsman).
   請根據僱員的主要職務分類，而不以其兼任的其他職務分類（例如，一名技術員的主要職務為電子技術員，但有時須擔任繪圖員的工作，則應歸類為電子技術員而非繪圖員）。

6. Average Monthly Income - Column 'B'
每月平均收入 —— 「B」欄
Please enter into this column the code for average monthly income range for each type of employees. The income should include basic wages, guaranteed year-end bonus, regular overtime pay, cost of living allowance, meal allowance etc., if any. If you have more than one employee doing the same job, please enter the average figure. (Please refer to the codes in the last column of the questionnaire.)
請在「B」欄填入每類僱員的每月平均收入編號，這包括底薪固定發放的年終花紅、定期超時工作工資、生活津貼、膳食津貼等。若從事同類工作的僱員多於一名，則請取其平均數字。（請參閱調查表最後一欄的類別編號）

7. Number of Employed as at 1.4.2014 (Excluding Trainees) - Column 'C'
在 2014 年 4 月 1 日之現有僱員人數（受訓者除外） —— 「C」欄
Please fill in the total number of employees (excluding trainees and apprentices) in your establishment.
請將 貴機構目前所僱用的全部僱員人數（受訓者及學徒除外）填入此欄。

8. Forecast of Number Employees in 12 Months' Time (Excluding Trainees) - Column 'D'
預計十二個月後的僱員人數（受訓者除外） —— 「D」欄
The forecast of number employed means the likely number of employees (excluding trainees and apprentices) you will be employing 12 months from now.
預計僱員人數指 貴機構於十二個月後可能僱用的員工總數（受訓者及學徒除外）。

9. Number of Vacancies as at 1.4.2014 (Excluding Trainees) - Column 'E'
在 2014 年 4 月 1 日之現有空缺額（受訓者除外） —— 「E」欄
Please fill in the number of existing vacancies (excluding those for trainees and apprentices).
請填入 貴機構現有的空缺額（受訓者及學徒的空缺數目除外）。
'Existing vacancies' refer to those unfilled, immediately available job openings for which the establishment is actively trying to recruit personnel at date of survey.
「現有空缺額」是指該職位仍懸空，須立刻填補，而現正積極招聘人員填補。

10. Number of Trainees as at 1.4.2014 - Column 'F'
在 2014 年 4 月 1 日之現有受訓者人數 —— 「F」欄
Please fill in the total number of trainees. The term 'trainees' includes all trainees receiving any form of training and apprentices under a contract of apprenticeship.
請將正在受訓者人數填入此欄。「受訓者」包括正在接受各種訓練的人士，以及簽有學徒合約的登記學徒。

11. Internal Promotion
內部晉升
An internal promotion is the promotion of an employee to a higher level job by virtue of his/her performance or abilities. Please fill in the no. of internal promotion from "Technician to Technologist", from "Craftsman to Technician" and from "Others to Craftsman" in the past 12 months （1.4.2013 to 31.3.2014） in the respective columns.
內部晉升指一名僱員由於表現良好或具工作才能而獲晉升至較高級職位。請將過去十二個月 (1.4.2013 至 31.3.2014) 貴機構內部由技術員晉升至技師、由技工晉升至技術員，以及由其他職級晉升至技工的人數填入所屬欄內。

12. Hong Kong Technical Personnel Dispatched Outside Hong Kong
遣派香港以外的香港技術人員
Please enter the number of technologists, technicians and craftsmen paid by Hong Kong who had been dispatched to work for more than half year outside Hong Kong in the past 12 months (1.4.2013 to 31.3.2014).
請填寫過去十二個月內 (1.4.2013 至 31.3.2014)，由香港支薪而被遣派往外地，工作超過半年的技師、技術員及技工數目。

13. Education and Training an Employee Should Have
僱員宜有的教育及訓練
The purpose of this column is to solicit your view on the education and training which an employee in a particular job should have if he/she were to carry out his/her work competently. (Please refer to the codes in the same page of the questionnaire.)
此欄目的在調查　貴機構的意見：各類職位的僱員宜具備何種教育及訓練，才能勝任其工作。(請參閱調查表同一頁的類別編號)。

14. Recruitment
招聘
(a) Please enter the number of new recruits in the past 12 months (1.4.2013 to 31.3.2014);
請填寫過去十二個月內 (1.4.2013 至 31.3.2014)， 貴機構新招聘的僱員人數；
(b) and the number of recruits who have performed electronics services related duties in their last jobs from items (a).
及在上列 (a) 項中，入職前是從事電子業相關職務的人數。

15. Employees Left
僱員離職
Please enter the number of employees who had left your establishment in the past 12 months (1.4.2013 to 31.3.2014)
請填寫過去十二個月內 (1.4.2013 至 31.3.2014)， 貴機構離職的僱員人數。

16. Skills an Employee Need to Enhance
僱員需加強培訓的技能
Please indicate the three most important skills that your employees need to enhance. (Please refer to the codes in the same page of the questionnaire.)
此欄目的在調查　貴機構的意見：各類職位的僱員在那三方面技能最需要加強培訓。(請參閱調查表同一頁的類別編號)。

17. Example
例子
To facilitate proper completion, an example is given below for your reference.
為協助閣下填表，現將例子附錄於後，以供參考。

Example 例子

Part I 第一部份

	(A) Job 工作			(B) Average Monthly Income 每月平均收入	(C) Number Employed as at 1 April 2014 (excl. trainees) 在1.4.2014之僱員人數（受訓者除外）	(D) Forecast of Number Employees in 12 Month's Time (excl. trainees) 預計十二個月後的僱員人數（受訓者除外）	(E) Number of Vacancies as at 1April 2014 (excl. trainees) 在 1.4.2014之空缺額(受訓者除外)	(F) Number of Trainees as at 1April 2014 在 1.4.2014之受訓者人數
	Title 職稱	Rec. Type	Job Code 職位編號	Code 編號				
	For Official Use Only 此欄毋須填寫 →		8-10	11	12-15	16-19	20-22	23-25
	TECHNOLOGIST LEVEL 技師級							
1	Electronics Engineer 電子工程師	2	1 0 1	8	5	6	1	1
2	Electrical Engineer 電機工程師	2	1 0 2	7	2	2	0	1
3	Mechanical Engineer 機械工程師	2	1 0 3	7	2	2	0	0
4	Manufacturing/ Quality Assurance Engineer 製造／品質保證工程師	2	1 0 4	7	1	1	0	0
5	Chemical Engineer 化學工程師	2	1 0 5					
6	Product/ Graphic Designer 產品／平面設計員	2	1 0 6					
7	System Analyst 系統分析員	2	1 0 7					
	TECHNICIAN LEVEL 技術員級							
8	Electronics Technician 電子技術員	2	2 0 1	6	3	4	1	1
9	Mechanical Technician 機械技術員	2	2 0 2	5	1	1	0	0
10	Draughtsman 繪圖員	2	2 0 3	4	2	2	0	0
11	Manufacturing/ Quality Assurance Technician 製造／品質保證技術員	2	2 0 4					
12	Supervisor/ Foreman/ Leader 監督／管工／組長	2	2 0 5					
13	Programmer 程式編製員	2	2 0 6					
14	Web Developer/ Designer 網站開發員／設計員	2	2 0 7					
15	Sales Technician 推銷技術員	2	2 0 8					
	CRAFTSMAN LEVEL 技工級							
16	Cable Jointer/ Wireman 電纜接駁技工／駁線技工	2	3 0 1					
17	Electronics Craftsman 電子技工	2	3 0 2	3	3	4	1	1
18	Electrician 電氣技工	2	3 0 3	3	1	1	0	0
19	Mechanic 技工	2	3 0 4					
	OPERATIVE LEVEL 操作工級							
20	Operator 生產線操作工	2	4 0 1	2	5 0	5 5	5	0
21	Others 其他	2						
22		2						
23		2						
24		2						
25		2						

Average Monthly Income 每月平均收入

Enter in column B employee's average monthly income range according to the following codes. The income should include basic wages, guaranteed year-end bonus, regular overtime pay, cost of living allowance, meal allowance etc.

請將僱員的每月平均收入幅度按照下列類別編號填入B欄內。「每月平均收入」包括底薪固定發放的年終花紅、定期超時工作工資、生活津貼、膳食津貼等。

Code 編號	Average Monthly Income Range 每月平均收入幅度
1	Under $8,001 以下
2	$8,001 - $10,000
3	$10,001 - $15,000
4	$15,001 - $20,000
5	$20,001 - $25,000
6	$25,001 - $30,000
7	Over $30,000 以上

Remark 備註

Note 1 If additional lines are necessary, please tick here ☐ and enter on supplementary sheet(s).
附註一 如此頁填滿，請先將（✓）號填入此 ☐ 內，然後在附頁繼續填寫 。

Note 2 The term 'trainees' includes all trainees receiving any form of training and apprentices under a contract of apprenticeship.
附註二 「受訓者」包括正在接受各種訓練的人士，以及簽有學徒合約的登記學徒。

JOB DESCRIPTIONS OF PRINCIPAL JOBS IN THE ELECTRONICS AND TELECOMMUNICATIONS INDUSTRIES
電子業及電訊業主要職務工作說明

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
TECHNOLOGIST LEVEL		技師級
101	Electronics Engineer [Electronics Sales / Support Engineer, Telecommunications Engineer]	Carries out one or more of the following activities: research into electronic engineering / telecommunication engineering problems, design of, technical sales / support, and advice on electronic equipment and systems, components and products, and planning and supervision of their 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) telecommunication systems; (vi) multimedia electronics, audio-visual and entertainment systems; (vii) other electronic engineering fields.
	電子工程師 [電子推銷／支援工程師，電訊工程師]	擔任下列一項或多項工作：研究電子工程／研究電訊工程方面的問題；負責電子設備及系統、零件及產品的設計、技術推銷／支援及顧問工作；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) 電訊系統； (vi) 多媒體電子、影音及娛樂系統； (vii) 電子工程其他方面的工作。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
TECHNOLOGIST LEVEL (Continued) 技師級（續）		
102	Electrical Engineer 電機工程師	Designs and advises on electrical equipment and systems, and plans, and supervises their development, construction, installation, operation, maintenance and repair. 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。
103	Mechanical Engineer 機械工程師	Designs and advises on plant, mechanical parts, moulds and equipment, machinery and tools, and plans and supervises their development, construction, installation, operation, maintenance and repair. 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。
104	Manufacturing / Quality Assurance Engineer [Industrial Engineer, Quality Control Engineer] 製造／品質保證工程師 [工業工程師，品質控制工程師]	Carries out one or more of the following activities: (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; (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. 擔任以下一項或多項工作： (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； (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。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
TECHNOLOGIST LEVEL (Continued) 技師級（續）		
105	Chemical Engineer 化學工程師	Designs and advises on manufacturing processes in which chemical changes occur, and plans and supervises their development, construction, installation, operation and maintenance to ensure compliance with standards, specifications, and safety and environmental regulations. 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。
106	Product / Graphic Designer 產品／平面設計員	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. 能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。
107	System Analyst [Software Engineer] 系統分析員 [軟件工程師]	Carries out one or more of the following activities: (i) Works closely with user personnel to identify problems, review methods and specify and evaluate information technology (IT) solutions; (ii) In accordance with product specifications, designs system firmware / software using high level and/or assembler languages for electronics, microprocessors, microcomputers and embedded systems. 擔任以下一項或多項工作： (i) 與用戶部門緊密合作，確定問題、檢討方法、說明和評估資訊科技的解決辦法； (ii) 依據產品規格，使用高階語言及／或匯編語言，為電子、微處理器、微型電腦及嵌入式系統設計軟件及／或系統軟件。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
TECHNICIAN LEVEL 技術員級		
201	Electronics Technician [Electronics / Maintenance / Service Technician, Telecommunications Technician, Computer / Network Technician, Audio-Visual Technician, Electronic Support Technician]	Performs technical tasks, normally under the direction and supervision of an electronics / telecommunications engineer, contributory to design, development, manufacture, technical support, construction, installation, operation, maintenance and repair of: (i) Electronic and electrical products, equipment and systems, such as consumer electronics, home appliances, healthcare electronics, toys, and watch / clock; (ii) Telecommunication systems and equipment, such as telephone, digital broadcasting, high-definition electronic media, wireless / microwave / satellite communication, mobile communication and data communication systems; (iii) Computer and multimedia networks, systems and peripherals; (iv) Audio-visual, entertainment and associated equipment and systems.
	電子技術員 [電子／保養／維修技術員，電訊技術員，電腦／網絡技術員，影音技術員，電子支援技術員]	通常在電子／電訊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： (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； (ii) 電訊系統及器材，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； (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。
202	Mechanical Technician	Performs technical tasks, normally under the direction and supervision of a mechanical engineer, contributory to design, development, construction, installation, operation, maintenance and repair of plant, mechanical parts and equipment, machinery and tools.
	機械技術員	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。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
TECHNICIAN LEVEL (Continued) 技術員級（續）		
203	Draughtsman 繪圖員	Prepares detail and assembly drawings and circuit diagrams according to design specifications. 按照設計規格繪製明細圖、裝配圖及線路圖。
204	Manufacturing / Quality Assurance Technician [Quality Control Technician] 製造／品質保證技術員 [品質控制技術員]	Performs technical tasks, normally under the direction and supervision of a manufacturing / industrial or a quality assurance / control engineer, contributory to: (i) The efficient and economical operation of the manufacturing process and the maintenance of quality standards; (ii) Quality assurance / control at all phases of manufacturing including testing and measurement of in-coming materials and parts, work-in-progress, and finished products to ensure compliance with standards and specifications, and safety and environmental regulations. 通常在製造／工業或品質保證／控制工程師的監督下擔任： (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； (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。
205	Supervisor / Foreman / Leader [Junior Supervisor] 監督／管工／組長 [初級監督]	Performs supervisory duties contributory to the planning and allocation of tasks to workers and trainees, and to the production, inspection, installation, operation, maintenance and repair of components, products, equipment and systems; OR Organises and takes charge of a group or groups of operatives in a section, normally under the direction of a supervisor / foreman. 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； 或 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。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
TECHNICIAN LEVEL (Continued) 技術員級（續）		
206	Programmer [Software Technician] 程式編製員 [軟件技術員]	Develops computer programmes and systems to implement embedded systems / software design, normally under the direction and supervision of a software engineer / system analyst. 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。
207	Web Developer / Designer 網站開發員／設計員	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 for integration to IT applications according to business requirement, strategy and direction. 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。
208	Sales Technician [Electronic Sales Technician, Electronic Merchandising Technician] 推銷技術員 [電子推銷技術員／電子採購技術員]	Updates / studies / analyses electronic, technical and functional knowledge as well as contemporary trend and development of products, systems, equipment and components from the demands of 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 in one or more of the following: (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. 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： (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。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
CRAFTSMAN LEVEL 技工級		
301	Cable Jointer / Wireman 電纜接駁技工／ 駁線技工	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 [Audio Visual, Electronic Servicing, Electronic System Installation, Telecommunications and Surveillance Technical Assistant] 電子技工 [影音、電子維修、電子系統安裝、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 minimize such occurrence; (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。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
CRAFTSMAN LEVEL (Continued) 技工級（續）		
304	Mechanic [Maintenance Mechanic / Fitter / Machinist, Tool and Die Maker, Mould and Die Maker and Repairer]	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.
	技工 [保養技工／裝配打磨技工，機床工，工具及工模製造技工，工模製造及修理技工]	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。

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
OPERATIVE LEVEL 操作工級		
401	Operator [Assembler, Soldering Worker, Aligner / Tester, Quality, Assurance / Control Operator, Machine Operator / Attendant, Packer, Stock Handler, Electronic Data Processing Operator, General Worker]	Carries out any one of the operative jobs in 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, coats 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 machine and coil winding machines etc; (vi) Packs finished products into boxes, crates or other containers; (vii) Handles components, 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 undertake other manual work.

Job Code 職位編號	Job Title 職稱	Job Description 工作說明
OPERATIVE LEVEL (Continued) 操作工級（續）		
	生產線操作工 [裝配工，焊錫工，校整／測試工，品質保證／控制工，機器操作工／看值工，包裝工，物料搬運工，電腦操作員／雜工]	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。

Remark: [ ] Equivalent

註： [ ] 其他名稱