



Manpower Update Report

Electronics and Telecommunications industries

2019

Electronics and Telecommunications
Training Board

ACKNOWLEDGEMENT

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Introduction

Background

The Electronics and Telecommunications Training Board (ECTB) of the Vocational Training Council (VTC) is appointed by the Government of Hong Kong Special Administrative Region to be

responsible for, among other duties, determining the manpower situation and training needs of the industry. Following the rationalisation exercise in 2017, a new approach for conducting manpower survey is

adopted to enhance the effectiveness and better reflect the dynamics of the manpower situation. The new approach is to conduct full manpower survey for each industry once every four years, supplemented by periodic information updates through focus group and desk research. The ECTB completed its latest full manpower survey in 2016. Two manpower update reports will be prepared during the period between 2019 and 2020. The ECTB conducted a focus group meeting of the Electronics and Telecommunications industries on 19 October 2018 to collect views about the latest manpower situation and training needs from industry practitioners. Desk research had also been conducted to capture recruitment information including job vacancies of principal jobs, qualification requirements and salary offered in the industry for the period from the 3rd quarter of 2017 to the 2nd quarter of 2018.

This is the first manpower update report of the Electronics and Telecommunications industries which mainly covers the findings obtained from the focus group meeting, supplemented by the information acquired from the desk research for reference purpose.

Objectives

- (i) To examine the latest trends and development of the industries;
- (ii) To identify the manpower and training need;
- (iii) To explore the recruitment requirements and difficulties; and
- (iv) To recommend measures to meet the manpower and training needs

Methodology

Overview

With reference to the 2016 full manpower survey of the Electronics and Telecommunications industries, this update report aims to provide qualitative descriptions of the recent development of the industries through focus group meeting, supplemented by making reference to some quantitative data of recruitment advertisements from desk research collected from Q3 of 2017 to Q2 of 2018.

Focus Group Meeting

The focus group meeting is intended to collect experts' view on the latest trend and development of the industry's manpower, training needs and recruitment challenges, etc. The focus group members are representatives from six sectors of the Electronics and Telecommunications industries, including: Manufacturing, Trading and Services, Telecommunications Services, Wholesale, Design Houses and Relevant Departments in Universities and Government, and Retail for Electronics Products.

The focus group meeting was conducted on 19 October 2018. An experienced moderator led members to in-depth discussion on topics selected by the Working Party on Manpower Survey of the

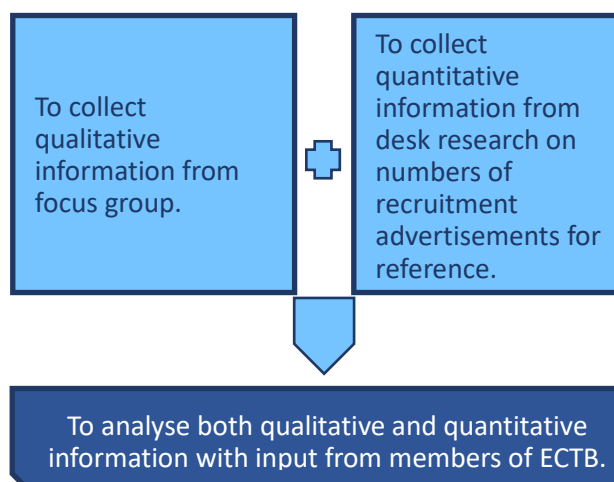
ECTB. The discussion at the meeting were recorded and transcribed to facilitate analysis.

Desk Research

Manpower information covering the period between Q3 of 2017 and Q2 of 2018 was collected through desk research by quarter. The information includes the number of job advertisements, posts' required competency, qualification and experience, market remuneration, etc. An integrated database was developed to capture the relevant recruitment data from major online recruitment portals. Around 8,400 recruitment records were collected during the research period and which served as indicative information of the job market trend. Mapping was made with the list of related companies under the Hong Kong Standard Industrial Classification for removal of duplicated records.

Data Analysis

The analysis consists mainly of the following three steps:



Limitations

As this is not a full manpower survey, the findings and recommendations of the focus group meeting are more qualitative in nature and the report is mainly focused on the manpower trend. The information of job vacancy advertisements was collected from

major recruitment websites and Labour Department, while other channels such as newspapers were not covered.

Since the data collected is a snapshot of a particular period without reference to any historical data, this can only serve as reference information supplementary to the findings of focus group.

Key Findings

Factors Affecting the Development of the Industry

Changing Business Operation

Most Hong Kong manufacturers have relocated their production facilities to the Mainland to reduce cost. Most of the Hong Kong offices now focus mainly on R&D activities, product design and development, management, logistic support, marketing, etc.

Statistically, these setups in Hong Kong are classified as non-manufacturing establishments, despite the fact that they have manufacturing activities across the boundary. This finding echoes the findings of the 2016 Manpower Survey in which 60% of the employees were working in the companies of the trading and services sector.

Given the trend of fast changing markets and advancement in technology, Hong Kong companies emphasise on quick

response to ensure effective services to their customers. Many Hong Kong companies have further strengthened their quality assurance and environmental management systems, and are accredited with internationally recognised standards for quality management system, such as ISO 9000 and ISO 14000, etc.

New Technology

Increased integration of electronics and telecommunications

With the launch of the upcoming 5G mobile service, there would be development of applications such as Internet of Things (IoT), Internet of Everything (IoE), network security, machine learning in Artificial Intelligence (AI), unmanned vehicles, and telemedical applications for consultations and diagnosis in the health care sector. It is anticipated that Government, public

utilities and health care sectors would be the major areas of applications in the initial stage of 5G mobile service before the deployment for public usage.

Mobile products that were portable and personalised will be dominant

Owing to technological advancement and falling prices amid keen competition, conventional IT products like notebook computers have become mass products that are comparatively less favorable. Hence, the industry is focusing on further technological enhancement to mobile devices with enhanced smart features that are in demand in the globe. At the same time, the requirements of manpower on backup management and cloud storage would become more demanding. Furthermore, demand of manpower in integration, development and innovation of IT infrastructure arise and employees would be expected to embrace a wide spectrum of skills as well as depth in some specialised areas.

More automation using robotics for production process in manufacturing plants, the applications of Big Data and Artificial Intelligence for data analytics in both manufacturing and servicing companies, as well as the deployment of 5G enhanced services and applications will be the growing trend in the industry.

Policy

Launch of 5G Service

Hong Kong has been one of the world's most competitive telecommunications

markets with the highest penetration and cheapest service fees. The government has just completed a consultation on its proposal to assign the 3.5GHz band spectrum for the introduction of 5G mobile service use in Hong Kong in 2019, in addition to the 26-28 GHz high capacity band assigned previously. Those who are assigned high-frequency spectrum will need to install a minimum of 5,000 radio base stations, as the bands are limited to small cell coverage. Due to the large investment involved and the uncertainty of the Return of Investment(ROI), the local operators have urged the government not to go for an auction of spectrum so as to reduce the cost for investment and shorten the roll-out of the service.

Re-industrialisation in Hong Kong

The Government is committed to promoting re-industrialisation and Industry 4.0 with a view to developing high-end manufacturing that is based on new technologies and smart production, thereby providing a new engine for growth of Hong Kong's economy and creating quality and diversified employment opportunities. The Government and the Hong Kong Science and Technology Parks Corporation (HKSTPC) revised the Industrial Estate (IE) Policy in 2015, under which the HKSTPC would develop specialised multi-storey industrial buildings for rental to multiple users in order to attract high value-added technology industries and manufacturing processes suitable for Hong Kong. HKSTPC plans to establish the Advanced Manufacturing Centre in 2021 or 2022 for advanced manufacturing companies to quickly

translate innovative ideas into marketable quality products in:

- Medical, health and hospital devices and equipment;
- Biomedical engineering devices, implants and equipment;
- Smart electronics and optical equipment;
- Smart sensor fabrication, semiconductor advanced packaging;
- Robo-electronics and smart power devices for smart city applications.

Impact of free trade dispute

For manufacturers, the trade war had imposed reduction in the order and hence mainly affected company profit and long term planning. With regard to ROI, the companies would become more conservative in capital expenditure. Nevertheless, the trade war appeared to have little impact on the recruitment of manpower as the skilled workers were still in demand. In general, the supply chain would be adversely impacted as most of their products were manufactured in mainland China. If the products were made in Hong Kong, they would be exempted from heavy tariff and this could be a business opportunity for local companies providing that Hong Kong still benefited from the existing policy with the United States

Future Manpower Demand

Owing to the demand for technical professionals for the industry to handle projects related to the new technologies, it is anticipated that over 10% increase for the personnel involved in technical/product development such as design and web-posting especially related to IT development. On the other hand, the operation and frontline customer service personnel will be reduced by 5-10% due to the deployment of automation tools such as chatbots for customer service and operation. For the retail and trading sectors in electronics products, part-time workers could be recruited to update the webpage and the product categories and it would be difficult to recruit technical sales due to keen competition.

Principal Jobs of High Demand

Of the 8,400 relevant recruitment advertisements captured in desk research, the following top 10 principal jobs with the highest number of recruitment advertisements have been identified:

1	System Analyst/Software Engineer	31.40%
2	Programmer	18.88%
3	Sales Technician	13.45%
4	Electronics Engineer	10.10%
5	Mechanical Engineer	3.91%
6	Product/Graphic Designer	3.68%
7	Electronics Technician	3.61%
8	Web Developer/Designer	3.43%
9	Operator	3.26%
10	Manufacturing/Quality Assurance Engineer	2.48%

Compared with each principal job's manpower figures in the 2016 manpower survey, the number of

vacancies were particularly high for System Analyst/ Software Engineer, Programmer and Product/ Graphic Designer. This might be attributed to the high turnover rates of these jobs. Besides, the Sales Technician and Electronics Engineer are also in demand as they occupied over 10% of the advertisements. Most of the vacancies are found in the sector of trading and services within the period from Q3 2017 to Q2 of 2018.

Working Party members shared the view that there will be demand across the various skill level of manpower to meet the requirement of the new products/services arising from the new technologies such as 5G, Artificial Intelligence, Big Data and Smart City, etc. The employers have to provide on-the-job training to the new graduates since what the graduates of the educational institutions had learnt are always lagging behind that could not promptly meeting the expectation of the employers.

Training Needs

Advanced/ Emerging skills required in the advertisements

The advanced/ emerging skills identified from the advertisements are summarised in the following table.

Advanced Technology	Related Job Titles	Emerging Skills
Cloud Technologies	<ul style="list-style-type: none"> Cloud Engineer Cloud Solution Consultant 	Cloud Technologies
DevOps	<ul style="list-style-type: none"> DevOps Engineer 	SQL database
FinTech / Blockchain	<ul style="list-style-type: none"> Software Engineer / Developer 	Web development tools / Blockchain software tools
IoT	<ul style="list-style-type: none"> IoT Solution Architect 	Cloud services / wireless technologies
AI / Machine Learning	<ul style="list-style-type: none"> AI/Machine Learning Engineer 	AI tools
Cyber Security	<ul style="list-style-type: none"> Cyber Security Consultant 	Security tools
Big Data	<ul style="list-style-type: none"> Data scientist 	Data Modeling & Analytic tools
Robotics	<ul style="list-style-type: none"> Robotic/Automation Engineer 	Robotic Programming / Robotic Process Automation tools

It is anticipated that those new emerging skills are required by the employers to develop new products/ services to meet the requirement of existing and potential customers. In this connection, the related professionals who possess those skills are in demand in the industry.

Recruitment Challenges

Due to the keen competition of the market, some of the employers have experienced difficulties in the recruitment process. This could be attributed to the following factors:

Preference of the young generation

Some new graduates had the preference to find jobs of working cosily in the office and avoid some repetitive groundwork jobs that required lengthy training time. Most of the millennials look for experiences instead of career planning. Without bearing any financial strain with backup from family, they wanted diversity and flexibility in the workplace.

Limited manpower supply in the market

Existing curricula of the tertiary institutions might not catch up with technological advancement, employers need to train up graduates for the skills required in workplace and sometimes employees need to acquire the necessary skills by self-learning.

Freelance or self-employed

Some people preferred to start their own business by using online channels (Facebook, Instagram, etc.) rather than work as full time employees. They are looking for flexibility and funs in the jobs.

Keen market competition

Limited supply of manpower had imposed keen competition among different sectors in the Electronics and Telecommunications industries especially in those areas involved with requirements for advanced or emerging skills.

Desk Research Findings

On the other hand, the desk research shows some 8,400 vacancy advertisements of the industry placed during the period from the Q3 of 2017 to the Q2 of 2018. In line with the 2016 Manpower Survey, similar salary range and education requirement were found in the vacancy advertisements. Details of the number of vacancy advertisements of popular recruitment media by job levels and sectors, principal job, monthly salary range and qualification requirements are at Appendices (a), (b), (c), and (d).

RECOMMENDATIONS

Measures to Meet the Training Needs

To meet the future development of the industry, it is considered essential for the government, education institutions and employers to provide suitable training opportunities to the employees or students in the following areas:

Education Institutions

Regular review of course curriculum

There is a time gap between the course contents provided by the education institutions and the expectation of the industry. Hence, course curriculum should be reviewed regularly so as to equip students with a robust foundation.

Border Scope of curriculum

Students should be trained up with a broader scope and embrace an attitude to strive for improvement by means of continuous professional development.

Closer collaboration with leading companies

Education institutions could work with leading companies in the industry, to provide updated training to teaching staff and cooperate in research project in order to fill up the lagging gap between the curriculum and the industry expectation.

Offer of standardised train-the-trainer STEM¹ programmes

Education institutions could offer more train-the-trainer STEM programmes to teachers in primary or secondary schools as well as trainers in private companies with standardised curriculum.

Enhanced soft and business skills

While most of the courses equipped students with technical skills, some business-related courses as well as soft skills such as presentation and communication techniques should be provided preparing them to meet clients' expectation.

Update course curriculum with advanced/ emerging skills needed

The education institutions should update the related curriculum of the modules with reference to the advanced/ emerging skills identified in the recruitment advertisements as those skills are in demand in the industry.

¹ STEM means Science, Technology, Engineering and Mathematics

Employers

Providing on-the-job training

Employers could be flexible in the recruitment requirements and to provide on-the-job training to the new recruits.

Incentive subsidised scheme

The employers should consider to make use of the government subsidised schemes to encourage their employees to upgrade their technical skills in order to meet the challenges and requirements of the transformation of new technologies.

Government Support

Image of a prospective career

Besides supporting the re-industrialisation and Industry 4.0 development, the government should promote the image of the industry by outlining a more promising perspective for local students to have aspirations to be recruited in some electronics and telecommunications related careers.

Importation of experienced professionals

In striking a balance of benefits between local and foreign workers, the Government should consider to relax the quota of importation of experienced professionals in advanced technologies so as to train up the local workforce.

Support for start-ups

In collaboration with the industry, more measures should be provided to help the entrepreneurs in the Hong Kong Science and Technology Parks Corporation and Hong Kong Cyberport, so that they could operate their business with necessary guidance and training. These entrepreneurs might form a pool of talents to meet the manpower demand in the future.

Employees

Proactive to learn

Employees should have the capability to self-learn through on-line training courses and classroom training. They should keep abreast of the development with new technologies, and be creative to develop new products/ services using the new technologies.

Make use of Government's subsidy

Employees are encouraged to make use of the subsidies provided by the Government such as the Continuing Education Fund and the Reindustrialisation and Technology Training Programme to upgrade their knowledge and skills.

Number of Advertisements from Popular Recruitment Media (Q3 of 2017 to Q2 of 2018) by Job Levels and Sectors

Sector	Technologist		Technician		Craftsman		Operative		Total	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Manufacturing	75	0.89%	104	1.24%	9	0.11%	28	0.33%	216	2.57%
Trading and Services	3,717	44.27%	2,700	32.15%	178	2.12%	205	2.44%	6,800	80.98%
Telecommunications Services	273	3.25%	229	2.73%	2	0.02%	24	0.29%	528	6.29%
Wholesale	160	1.91%	129	1.54%	16	0.19%	15	0.18%	320	3.81%
Design Houses and Relevant Departments in University and Government	171	2.04%	8	0.10%	1	0.01%	0	0.00%	180	2.14%
Retail Shops for Electronics Products	36	0.43%	305	3.63%	10	0.12%	2	0.02%	353	4.20%
Total	4,432	52.78%	3,475	41.38%	216	2.57%	274	3.26%	8,397	100.00%

Number of Advertisements from Popular Recruitment Media
(Q3 of 2017 to Q2 of 2018) by Principal Job

Job Level	Principal Job	Total	%
Technologist	Electronics Engineer	848	10.10%
	Electrical Engineer	99	1.18%
	Mechanical Engineer	328	3.91%
	Manufacturing/Quality Assurance Engineer	208	2.48%
	Chemical Engineer	3	0.04%
	Product/Graphic Designer	309	3.68%
	System Analyst	2,637	31.40%
Technician	Electronics Technician	303	3.61%
	Mechanical Technician	12	0.14%
	Draughtsman	54	0.64%
	Manufacturing/Quality Assurance Technician	51	0.61%
	Supervisor/Foreman/Leader	53	0.63%
	Programmer	1,585	18.88%
	Web Developer/Designer	288	3.43%
	Sales Technician	1,129	13.45%
Craftsman	High Speed Data Network & Wireless Data System Integrator	0	0.00%
	Electronics Craftsman	12	0.14%
	Electrician	125	1.49%
	Mechanic	79	0.94%
Operative	Operator	274	3.26%
Total		8,397	100.00%

Number of Advertisements from Popular Recruitment Media
(Q3 of 2017 to Q2 of 2018) by Monthly Salary Range

Job Level	< \$10K	\$10K - \$15K	\$15K - \$20K	\$20K - \$25K	\$25K - \$30K	\$30K - \$50K	\$50K - \$70K	> \$70K	Unspecified	Total
Technologist	27	722	791	925	62	965	226	45	669	4,432
Technician	104	1,062	769	565	44	412	44	5	470	3,475
Craftsman	9	77	61	18	4	6	0	0	41	216
Operative	22	116	54	25	1	9	0	0	47	274
Total	162	1,977	1,675	1,533	111	1,391	270	51	1,227	8,397

Number of Advertisements from Popular Recruitment Media
(Q3 of 2017 to Q2 of 2018) by Qualification Requirements

Job Level	First Degree or above	Sub-Degree, Prof. Diploma or Certificate	Upper or lower Secondary	Primary, no requirements or unspecified
Technologist	49.77%	27.14%	8.30%	14.78%
Technician	26.71%	26.53%	28.66%	18.10%
Craftsman	0.00%	12.96%	50.00%	37.04%
Operative	6.20%	16.79%	61.31%	15.69%