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Profile of the Sri Lankan Electrical Engineering Industry

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Abstract: The electrical and electronic industry in Sri Lanka, although relatively small in itself, is a key service industry to other industrial sectors as well. In the study presented, a sample of around 300 companies/industries has been the surveyed from around 500 identified companies to obtain the profile of the electrical engineering industry. From the surveyed companies, more than 76.8% are in the electrical industry and these companies account for over 81.1% of the total employment provided. The energy supply sub sector provided 36.7% of the total employment, and is influenced heavily by the large workforce of the CEB. The electrical services industry, which is mostly dominated by the small enterprises, contributes to 20.9%, while electrical products sector accounts for 23.5% of the employment.

The majority of the industry's employment is concentrated in the operational grades (75.8%) where the technical skills requirements are quite specific for a particular role and quite diverse for different roles. The skills requirement becomes more generalized, with more emphasis for managerial qualifications, as one goes higher up in the occupational structure.

At the operational levels, the vast majority of the workers are with either GCE O/L or A/L qualifications (65.2%). On the other hand, higher education qualifications are much more sought after at the managerial level and decision making level with 72.2% of the managers and 88.8% of the decision makers possessing a degree or above qualifications.

The growth potential of the electrical and electronic industry has been estimated, based on census and statistics of GDP growth rates of similar industries, by categorising the industry into five sub-sectors, namely energy supply, electrical products, electrical services, export oriented electronics, and local consumer electronics and services. The forecasted annual growth of employment for the industry is 14.4% (Electrical industry 13.7% and electronics industry 16.8%).

Keywords: Profile, Electrical, Electronic, Engineering, Industry, Survey

1. Introduction

The electrical and electronic industry plays an important part in the global industrial landscape as a key service industry to other industrial sectors as well by creating large quantities of employment opportunities.

The paper is based mainly on a study that the authors, together with some of their colleagues, have undertaken for the Tertiary and Vocational Education Commission of Sri Lanka. The paper analyses the profile of the electrical and electronic engineering industry and tries to match the training with that required by industry. The electrical and electronics industry in Sri Lanka, is centred in the Western Province (Figure 1.1), and that too mainly around Colombo.

Presently only the Universities, both local and foreign-affiliated, offer Electrical and Electronics Engineering Degrees. In addition, there are number of other institutions that offer Certificate and Diploma courses.

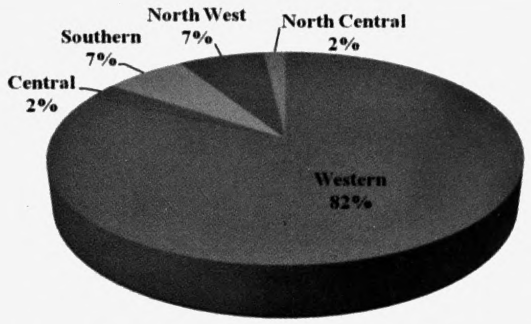

Figure 1.1- Geographical distribution of establishments

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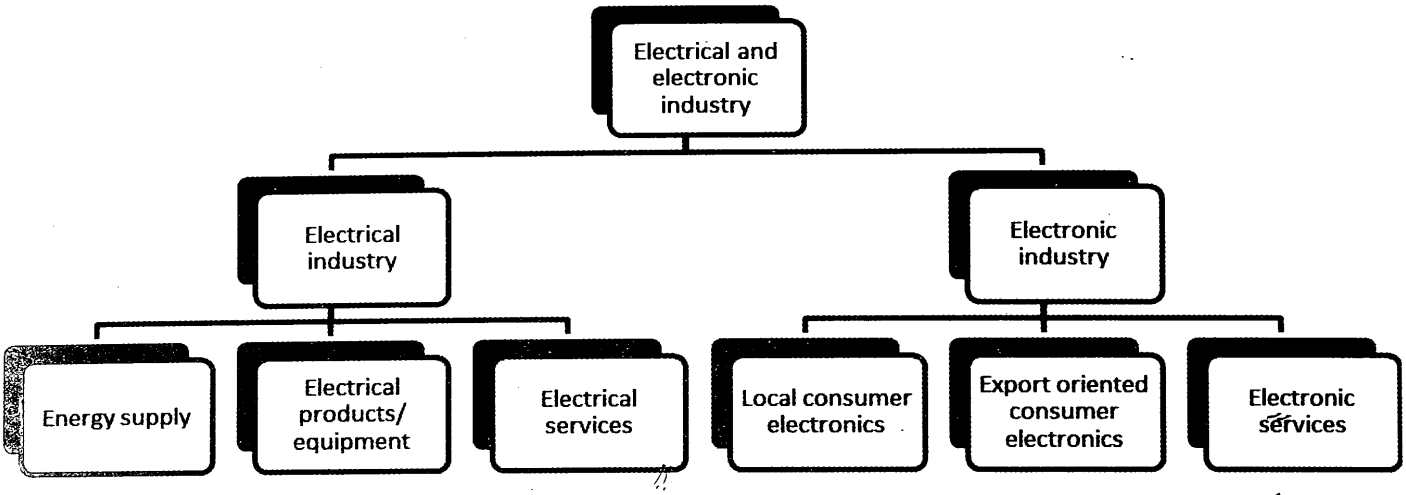

Figure 2.1- Categorisation of Electrical and Electronic industry

There are also government institutions that offer vocational and short duration courses.

2. Methodology

2.1. Data Collection

Data collection was mainly through two survey questionnaires developed to achieve the objectives. Relevant industries were surveyed mainly to capture the industry profile and the human resource profile while the training institutions were surveyed to explore the available training capacity.

Face-to-face interviews, and e-mail based information enhanced the data collection. Clarifications on the answers provided were taken over the phone whenever required.

2.2. Determination of Industry Profile

In the determination of the Electrical and Electronic Engineering Industry Profile, the economic environment of the industry sector was targeted through the survey which was designed to capture the following information.

(a) Distribution of the Industry based on the Geographical distribution, and sector-wise distributions based on BOI and Non-BOI.

(b) Nature of the Industry based on products and services output and their composition in export market and local market.

(c) Technological level based on the main areas of operations in electrical and electronics industry (Figure 2.1).

2.3. Determination of Human Resource Profile

In the determination of the Human Resource Profile, the following was performed through the survey:

(a) An occupational mapping exercise to map the available occupations and the occupational categories.

(b) Distribution of the currently employed population by occupation, sex, district, age group, and educational level.

(c) Estimated manpower requirement in different categories of employment of the sector for next five years.

2.4. Determination of Training Profile

In order to capture the details regarding the existing training positions, the following information was captured from the survey:

(a) Currently available training positions by sector, district and mode of training.

(b) Deficits and excesses in the training provisions; calculated in comparison with the manpower requirement of the industry.

2.5. Extrapolations from the Survey

In the survey, in a given sub-categorisation, exact numbers of employees could be obtained only for the CEB. Thus the total employment obtained from the survey has to be adjusted to correspond to the fact that not all employees in the electrical and electronic sector are being sampled. From available information [3] the non-CEB employees in the sector, extrapolated for 2011 is 37,734. The corresponding number caught by the survey is 18,548. This gives a multiplying factor of 2.03 for correcting the data from the survey. Thus a factor of 2 was used in the analysis to correct all other sectors other than the CEB employees to obtain the total workforce.

The total workforce of the country is distributed among the main economic sectors: agriculture (32.5%), industry (24.6%) and

services (42.9%). The informal sector of the economy also plays a major role in the employment opportunities and income generation in the country.

The overall contribution of the informal sector employment is 62.6%, and 37.4% is from the formal sector [4]. The informal employment opportunities in the electrical and electronics industry sector are concentrated in areas such as self-employed personnel in electrical and electronics services sector, small scale home businesses and small scale industries. The majority of the trained personnel in operational grades find employment in informal industry sector and is assumed to correspond to the value of 62.6%. The current training capacity, for the formal sector, is thus calculated by assuming that the only 37.4% of the trained personnel remain.

Growth rates of the "energy supply" and "electrical services" subsectors are estimated based on the GDP growth rate of "electricity" category (around 10%), while the growth rates of other sub sectors are estimated based on the GDP growth rate of the "factory industry" category (around 15%) [5].

3. The determined Profiles

3.1. Industry Profile

Figure 3.1- BOI and Non - BOI distribution

The survey shows that around 21% of the establishments surveyed are BOI companies (Figure 3.1).

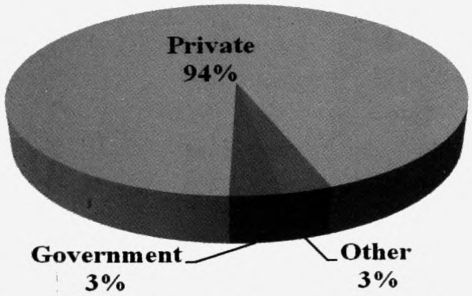

Figure 3.2- Distribution by ownership

It also shows that the majority of the companies engaged in the electrical and electronic industry is in the private sector (Figure 3.2).

The study has also shown that the manufacturing industry is primarily assisted by the foreign investments. The key products manufactured are transformers, switches, plugs, holders, electric panel boards and electrical cables.

Electronics manufacturing industry is focused on production of a range of electronic components such as magnetic heads, ferrite cores, fiber optic related products, printed circuit boards, compact fluorescents, memory modules, toroidal coils, thermal outfits, bio medical engineering products, household appliances and energy saving lamps.

The Electrical and Electronic export market is mainly driven by the foreign investments. To achieve quality of products, these require skilled labour and qualified middle managers.

Table 3.1- Employment by area of operation

Field	Sub Category	No. of Companies	%	Total no. of Employees	%
Electrical	Energy supply	17	8.2	10,103	36.7
	Electrical products /equipment	51	24.6	6,480	23.5
	Electrical services	91	44.0	5,760	20.9
Electronics	Export oriented electronics	6	2.9	4,093	14.9
	Local consumer electronics and electronics services	42	20.3	1,099	4.0

Table 3.1 shows the distribution of the companies and the employment within each sub-category for 207 valid responses from a sample of 300 companies.

3.2. Human Resource Profile

The human resource profile is categorized into the following key areas

1. Electrical Industry
   a. Energy supply
   b. Electrical products/equipment
   c. Electrical services
2. Electronic Industry
   a. Export oriented electronics
   b. Local consumer electronics and electronic services

In each of the above categorizations, the occupational structure is broadly identified at the following level of hierarchy.

- Decision making level
- Managerial level
- Supervisory level
- Experienced skilled or skilled worker level
- Basic or semi-skilled worker level

The National Vocational Qualification (NVQ) Levels in Sri Lanka identifies seven levels for award of certificates [6]. These levels are equated to the identified hierarchy as given in table 3.2.

Table 3.2- Occupational categories with NVQ levels

Category		NVQ Level
Decision making		7
Managers		6
Supervisors		5
Operational Grades	Experienced skilled or skilled workers	3,4
	Basic or semi-skilled workers	1,2

Table 3.3 gives the numbers of positions available at the various occupational categories at present. A pie-chart is shown in Figure 3.3.

Table 3.3- Distribution by occupational category

Category		Number of positions
Decision making		642
Managers		1,911
Supervisors		4,096
Operational Grades	Experienced skilled workers	7,493
	Basic or semi-skilled workers	13,393

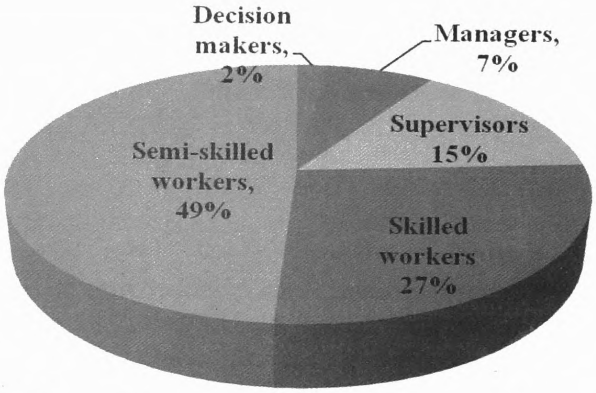

Figure 3.3- Distribution by occupational category

It is seen that the workers account for over three-quarters of the total workforce, while the decision makers and the managers account for less than one-tenth.

Figures 3.4 through 3.7 show the distribution of the highest qualifications. It is seen that the degree and management qualifications predominate at the higher categories, while the O-Level and the A-Level qualifications predominate at the lowest categories of workers.

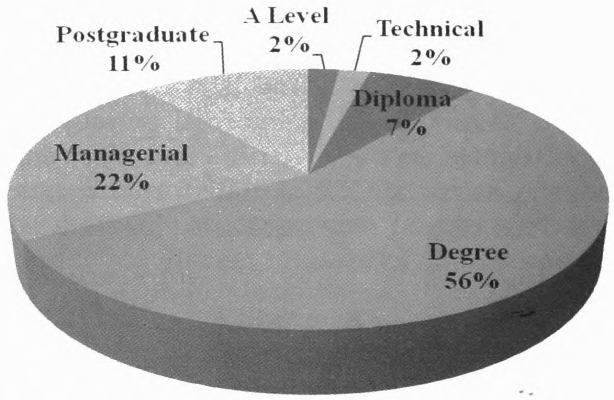

Figure 3.4- Decision Makers

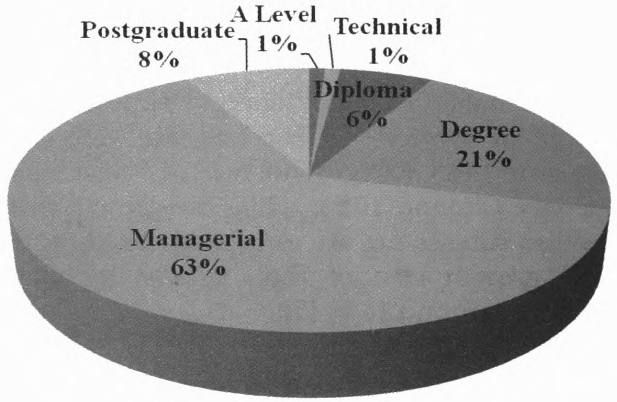

Figure 3.5- Managers

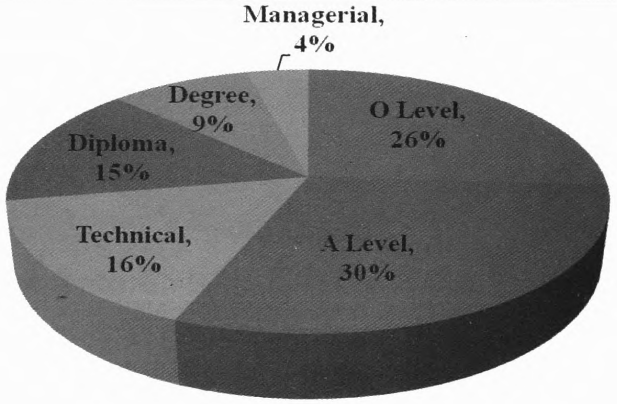

Figure 3.6- Supervisors

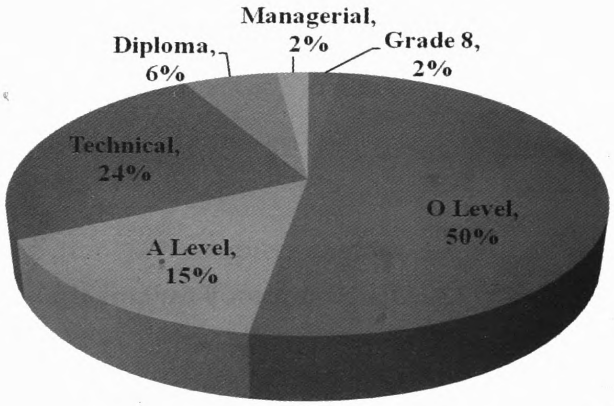

Figure 3.7- Operational grades

Table 3.4- Educational qualifications at each occupational level

Employment Category	Records	Grade 8	O/L	A/L	Tech Course	Diploma	Degree	Managerial Qualification (CIMA, MBA)	Post graduate
Decision making	516	0	3	10	10	35	289	113	56
Managers	1344	0	0	12	82	280	845	104	21
Supervisors	3196	0	821	949	521	492	289	124	0
Operative grades	746	12	372	114	182	45	1	20	0

Table 3.4 gives the details of the actual qualifications held, and it is seen that multiple qualifications held by the workers.

Table 3.5- Gender distribution of workforce by establishment type

Establishment type	Males	Females
Government establishment	1,272	160
Private establishment	3,790	4,679
Other establishment	6	3

Table 3.5 shows that although the females in the government establishments is very low at just over 11%, there is a higher employment of females in the private establishments, at around 55%.

The employment disposition by age is shown in Figure 3.8. It is seen that the industry prefers to retain the experience of the age group 30 - 50. High percentage of employees at the decision making category falls into the over 50 age group.

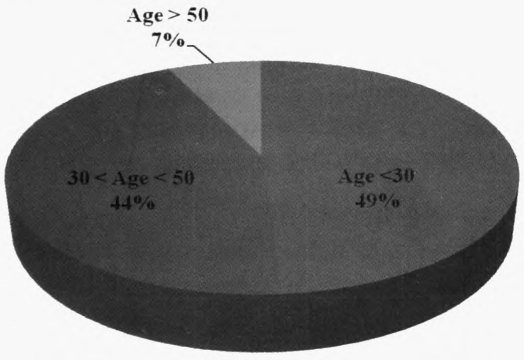

Figure 3.8- Composition of workforce by age

3.3. Training Profile

The profile of the training organisations was obtained mainly through the survey and from the web. The training requirements of the personnel in electrical and electronics industry depend on the employment category such as decision making, managers, supervisors and operational grades. The training capacities of organizations are summarised by considering the degree awarding universities, institutes offering diploma courses, and institutes for technical courses separately.

Technical and vocational education and training (TVET) has been implemented by a wide range of institutions in the public and private sectors. Most of the public sector institutions operate under the Ministry of Youth Affairs and Skills Development. In addition, many other ministries undertake training through departments and corporations as a secondary function. The available training capacities of the government training organisations for operational grades are summarised in Table A2.3. Similarly in the private sector some of the institutes provide training facilities and certificate courses suitable for operational grades. The training capacities of degree awarding institutions are given in Table A2.1. and the available capacities of diploma level courses are summarised in Table A2.2.

4. Matching the Training with Industry Needs

4.1. The Forecast of Future Human Resource Needs

The manpower requirement of the Electrical and Electronics industry sector has been estimated by considering not only the growth rate but also the employee movements and expansion plans of the industry obtained through the survey.

The estimated manpower opportunities in the electrical and electronic industry in the individual sub-sectors are given in Appendix A1 in tables A1.1 to A1.7 for the operational grades, supervisors and managers.

4.2. Training Provisions

The deficits and excesses in the training provisions are identified by mapping the estimated manpower requirements and current training capacity. The employment opportunities in both formal and informal industry sectors are considered mainly in the operational grades. The mapping of the formal manpower requirement to the current training capacity in operational grades is given in Table A 3.1.

As the training courses are limited in number, the relevant occupations have been grouped and mapped against them. The Further it is found that the occupations and the training courses for the electrician and related occupations are intermingled in nature and thus the training capacities for these have been grouped together although the manpower requirements have been split into four categories. While these categories have a manpower requirement of 1654 in 2012 the current training capacity is 929, which is 37.4% of the current training capacity. There is a deficit of 625 training provisions in electrician related areas. Similarly the other training programmes and related occupations are mapped. It is observed that there is a certain lack of capacity to deliver some skills/ competencies related to certain specialized fields such as skills/competencies related to automation and power plant operation. The training provisions in the diploma level and the degree level and the relevant manpower requirements are given in Appendix 1 and 2.

5. Discussion and Conclusion

A profile of the Electrical Engineering Industry including industry profile, human resource profile and training profile has been determined based on the data received from the survey.

The occupational structure has been broadly identified at occupational levels for the following sub-sectors in electrical and electronics industry: a) energy supply, b) electrical products/equipment, c) electrical services, d) export oriented electronics and e) Local consumer electronics and electronics services. From the surveyed companies, more than 76.8% are in the electrical industry and these companies account for over 81.1% of the total employment provided. The energy supply sub sector provided 36.7% of the total employment, and is influenced heavily by the large workforce of the CEB. The electrical services industry, which is mostly dominated by the small enterprises, contributes to 20.9%, while electrical products sector accounts for 23.5% of the employment. Further the electronics sector provides employment only for 18.9% of the workforce.

The majority of the industry's employment is concentrated in the operational grades (75.8%) where the technical skills requirements become quite specific for a particular role and quite diverse for different roles. The skills requirement become more generalized, with more emphasis for managerial qualifications, as one goes higher up in the occupational structure through supervisory (14.9%), managerial (6.9%) and decision making levels(2.3%).

At the operational levels, the vast majority of the workers are with either GCE O/L or A/L qualifications (65.2%). On the other hand, higher education qualifications are much more sought after at the managerial level and decision making level with 72.2% of the managers and 88.8% of the decision makers possessing a degree or above qualifications.

The growth potential of the electrical and electronic industry has been estimated, based on census and statistics of GDP growth rates of similar industries by categorising the industry into five sub-sectors. The forecasted annual growths of employment for the electrical and electronics industries are 13.7% and 16.8% respectively.

The training profile of the industry sector has been identified at operational grade level, diploma level and degree level. Further the estimated manpower requirements and the training provisions were mapped to identify the excess and deficits especially in the operational grades. The overall contribution of the informal sector employment (62.6%) has been considered in the mapping exercise.

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Appendix 1 – Estimated manpower requirements in individual subsectors

The estimated manpower requirements of electrical and electronics sectors are given in Table A1.1 and Table A1.2 respectively.

Table A1.1- Electrical sub sector

Sub sector	Category	Total workforce in 2011	Predicted Manpower Opportunity				
			2012	2013	2014	2015	2016
energy supply sector	Decision making	147	18	17	17	17	17
	Managers	880	109	105	103	101	100
	Supervisors	1,644	203	196	192	189	187
	Operative Grades	8,548	1,055	1,020	997	982	974
	Total	**11,219**	**1,385**	**1,338**	**1,309**	**1,289**	**1,278**
electrical services	Decision making	598	68	66	64	63	63
	Managers	1,056	121	117	115	113	112
	Supervisors	3,276	373	361	352	347	344
	Operative Grades	6,590	825	798	780	768	762
	Total	**11,520**	**1,387**	**1,342**	**1,311**	**1,291**	**1,281**
Electrical products	Decision making	268	45	45	45	46	46
	Managers	784	135	135	135	136	136
	Supervisors	964	164	164	165	165	166
	Operative Grades	10,944	1,879	1,884	1,888	1,893	1,898
	Total	**12,960**	**2,223**	**2,228**	**2,233**	**2,240**	**2,246**
Total Electrical Sector	Decision making	1013	131	128	126	126	126
	Managers	2720	365	357	353	350	348
	Supervisors	5884	740	721	709	701	697
	Operative Grades	26,082	3,759	3,702	3,665	3,643	3,634
	Total	**35,699**	**4,995**	**4,908**	**4,853**	**4,820**	**4,805**

Table A1.2- Electronics sub sector

Sub sector	Category	Total workforce in 2011	Manpower requirement				
			2012	2013	2014	2015	2016
Export oriented consumer electronics	Decision making	52	9	9	9	9	9
	Managers	152	25	25	25	25	25
	Supervisors	398	66	66	66	66	66
	Operative Grades	7,584	1,259	1,262	1,266	1,269	1,272
	Total	**8,186**	**1,359**	**1,362**	**1,366**	**1,369**	**1,372**
consumer electronics and electronic services	Decision making	140	24	24	24	24	24
	Managers	286	50	50	50	50	50
	Supervisors	554	94	94	94	95	95
	Operative Grades	1218	209	209	210	210	211
	Total	**2198**	**377**	**377**	**378**	**379**	**380**
Total Electronics sector	Decision making	192	33	33	33	33	33
	Managers	438	75	75	75	75	75
	Supervisors	952	160	160	160	161	161
	Operative Grades	8,802	1,468	1,471	1,476	1,479	1,483
	Total	**10,384**	**1,736**	**1,739**	**1,744**	**1,748**	**1,752**

The estimated manpower requirement of the major operational grades of the electrical and the electronics sectors are given in Table A1.3 and A1.4 respectively.

Table A1.3- Operational grades in Electrical sector

Occupation	Current workforce in 2011	*Estimated manpower requirement*				
		2012	2013	2014	2015	2016
Machine Operator	4,230	610	600	594	591	589
Electrician	2,824	406	400	396	393	392
Technician	2,322	335	330	326	324	324
Unskilled Worker	1,949	214	207	202	199	197
Worker	1,768	255	251	248	247	246
Semi-Skilled Technical Worker	1,522	167	161	158	155	154
Lineman	1,299	142	138	135	133	131
Trainee	1,022	147	145	144	143	142
Helper	908	131	129	128	127	127
Trainee Technician	824	93	90	88	87	87
Production Worker	788	114	112	111	110	110
Technician/Electrician	696	100	99	98	97	97
Electrical Assistant	478	69	68	67	67	67
Control Room Operator	419	46	44	43	43	42
Labourer	408	59	58	57	57	57
Production Assistant	400	58	57	56	56	56
Skilled Technical Worker	343	38	36	36	35	35

Table A1.4- Operational grades in Electronics sector

Occupation	Current workforce in 2011	*Estimated manpower requirement*				
		2012	2013	2014	2015	2016
Production Worker	3,944	658	659	661	663	665
Production Line Worker	2,336	390	390	392	393	394
Operator	948	158	158	159	159	160
Technician	376	63	63	63	63	63
Electrician	116	19	19	19	19	20
Technician/Electrician	106	18	18	18	18	18
Helper	80	13	13	13	13	13
Cleaner	60	10	10	10	10	10
Production Process Worker	48	8	8	8	8	8

The estimated manpower requirement of the major supervisory grades are given in Table A1.5 and A1.6 respectively.

Table A1.5- Supervisory grades in Electrical sector

Occupation	Current workforce in 2011	*Estimated manpower requirement*				
		2012	2013	2014	2015	2016
Electrical Supervisor	1,382	174	169	167	165	164
Electrical Superintendent	1,192	131	127	125	123	122
Workshop Supervisor	1,034	130	127	125	123	122
Supervisor	520	65	64	63	62	62
Engineering Assistant	279	34	32	32	32	32
Team Leader	164	21	20	20	20	19
Engineer	134	17	16	16	16	16
Superintendent	130	15	15	15	15	14
Assistant Engineer	100	13	12	12	12	12
Mechanical Superintendent	91	10	10	10	10	10
Foreman	76	10	9	9	9	9

Table A1.6- Supervisory grades in Electronics sector

Occupation	Current workforce in 2011	*Estimated manpower requirement*				
		2012	2013	2014	2015	2016
Supervisor	214	36	36	36	36	36
Engineer	196	33	33	33	33	33
Team Leader	106	18	18	18	18	18
Group Leader	86	14	14	14	15	15
Technical Officer	76	13	13	13	13	13
Electrical Supervisor	58	10	10	10	10	10

The estimated manpower requirements of major managerial grades of electrical and electronics sectors are given in Table A1.7 and A1.8 respectively.

Table A1.7- Managers in Electrical sector

Occupation	Current workforce in 2011	*Estimated manpower requirement*				
		2012	2013	2014	2015	2016
Electrical Engineer	876	103	100	99	98	97
Engineer	330	44	43	43	42	42
Manager	180	24	24	23	23	23
Engineer Mechanical/Civil/Other	155	18	18	18	18	17
Sales/Commercial/Customer Manager	108	14	14	14	14	14
HR and Administrative Manager	88	12	12	11	11	11
Executive	84	11	11	11	11	11
Assistant Engineer	80	11	11	10	10	10
Plant Manager	68	9	9	9	9	9
Project Manager	66	9	9	9	8	8
Assistant Manager	64	9	8	8	8	8
R&D and Technical Manager	56	8	7	7	7	7

Table A1.8- Managers in Electronics sector

Occupation	Current workforce in 2011	*Estimated manpower requirement*				
		2012	2013	2014	2015	2016
Engineer	114	20	20	20	20	20
Manager	88	15	15	15	15	15
Design Engineer	42	7	7	7	7	7
Executive	26	4	4	4	4	4
Assistant Manager	20	3	3	3	3	3
Quality Assurance Manager	18	3	3	3	3	3
HR and Administrative Manager	12	2	2	2	2	2
Operational Manager	12	2	2	2	2	2

Appendix 2 – Training Capacities in the Electrical and Electronics Industry

Table A2.1- Training capacity in universities

Institution	Course	Specialisation	Duration (years)	Nature	Annual Capacity
University of Moratuwa	Bachelor of Science of Engineering	Electrical Engineering	4	Fulltime	100
	Bachelor of Science of Engineering	Electronics and telecommunication Eng	4	Fulltime	100
University of Peradeniya	Bachelor of Science of Engineering	Electrical and Electronics Engineering	4	Fulltime	100
University of Ruhuna	Bachelor of Science of Engineering	Electrical and Information Engineering	4	Fulltime	75
Open University of Sri Lanka	Bachelor of Technology in Engineering	Electronic and Communication Engineering	4	Distance	
	Bachelor of Technology in Engineering	Electrical Engineering	4	Distance	
Kotalawala Defence Univeristy	Bachelor of Science of Engineering	Electrical and electronic Engineering	4	Fulltime	30
	Bachelor of Science of Engineering	Electronics and telecommunication engineering	4	Fulltime	30
UNIVOTEC	Bachelor of Technology	Mechatronics Technology	3 (basic) 4 (special)	Part time	25
	Bachelor of Technology	Building Services Technology	3 (basic) 4 (special)	Part time	25
Total					**485**

Note: Graduates from private universities and foreign universities are not included

Table A2.2- Training capacity of Diploma courses in electrical and electronics field

Institution	Course	Area	Duration (years)	Nature	Annual Capacity
ITUM	National Diploma in Technology (NDT)	Electrical	3 years	Full time	40
		Electronic and Telecommunication	3years	Full time	40
SLIATE	Higher National Diploma in Engineering (HNDE)	Electrical/ Electronics		Full time	
NAITA-IET	National Diploma in Engineering Sciences (NDES)	Electronics		Full time	30
		Electrical Power		Full time	50
Total					**160**

Table A2.3- Training capacity in government training institutions

Occupation Area		Institution	Course Name	Duration (months)	Annual Capacity	Total Capacity
Electrical Appliances Repairer	E	DTET	Certificate in Household Electrical Appliances Repairing	6	125	233
	E	VTA	Household Electrical & Electronic Equipment Repairer	6	108	
Electrical Installation worker	E	DTET	Electrical Installation work(MC)	6	17	17
Electrical Wiring related worker	E	DTET	Certificate in Electrical Trade	6	99	171
	E	DTET	Electrical wiring	6	9	
	E	DTET	Electrical wiring(MC)	6	63	
Electrician	E	DTET	Electrician-NVQ LEVEL 03	12	28	1902
	E	DTET	NCECP Industrial Electrician	24	750	
	E	DTET	Electrician(MC)	6	15	
	E	CGTTI	Electrical power	42	40	
	E	Youth Center-NYSC	Electrician	12	15	
	E	NAITA-ATI	Electrician (special)	36	36	
	E	VTA	Electrician	6	1018	
Electronic equipment repairer	EN	DTET	Certificate in Radio, TV, & Allied Equipment Repairing	6	14	161
	EN	VTA	Radio, TV And Allied Equipment Repairer	6	132	
	EN	Youth Center-NYSC	Radio and TV Allied Equipment Repairer	12	15	
Motor Winder	E	VTA	Electric Motor Winder	6	104	104
Technical Officer	E/ EN	DTET	National Certificate for Industrial Technicians (Electrical & Electronics Engineering)	24	117	117
Technician	EN	DTET	NCECP Electronics -	24	645	701
	EN	NAITA-ATI	Electronics Craftsman (Special)	36	56	
Computer hardware technician	EN	Youth Center-NYSC	Computer hardware technician	6	30	166
	EN	VTA	Computer Hardware Technician	6	136	

Note: E-Electrical, EN-Electronics, MC- Mahinda Chinthana
NCECP-National Certificate in Engineering Craft Practice

Sources: Statistical Handbook on Technical Education 2008/09, Department of Technical Education & Training, http://www.techedu.gov.lk [7]
Prospectus 2009 / 2010, , Department of Technical Education & Training, http://www.techedu.gov.lk
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Appendix A3 - Deficits and Excess in Training Provisions

Table A3.1: Mapping of manpower requirement to training capacity in operational grades

Relevant occupation	Manpower requirement in 2012	Area of Training Course	Current Training Capacity
Technician, Electrician, Electrical Assistant, Fitter, Electrical Helper, Electrical Trainee,	651	Electrician	929
Repairman, Fan Technician, Serviceman, AC Technician, Sewing Machine Technician	9	Electrical appliance repairer/ Electronics equipment repairer	
Wireman, Lineman, Jointer	152	Electrical wiring related worker	
Technician, Semi-Skilled Technical Worker, Trainee Technician, Skilled Technical Worker, Technical Assistant, Junior Technician, Test Bench Technician, Junior Foreman, Assembly Line Technician, Workshop Technician, Trainee, Trainee Worker	842	Electrician, EW, EAR, EER	
Sub-Total	1654		
Motor Winder, Winder	3	Motor Winder	**39**
Operator, Electronic Technician, Technician-EN, Technical Assistant-EN, Trainee Technician-EN, Craftsman, Hearing Aid Fitter, Programmer, Barcode Painter/Printer/Worker, Computer Repairman	246	Technician (Electronics)	**262**
Production Worker, Production Line Worker, Packaging Line Worker, Production Assistant, Factory Worker, Section Supervisor, Team Leader, Process Leader, Production Process Worker, Project Officer, Site Officer, Data Entry Operator	1257	In house training	-
Unskilled Worker, Worker, Helper, Labourer, Helper Loading, Helper Packing, Helper Production, Mechanical Helper, Helper Boiler, Helper Quality, Machine Helper, Office Assistant, Field Assistant, Workshop Helper, Maintenance Helper, Cleaner, Laboratory Assistant, Data Processor	834		-
Automation Technician	9	AT-NEW	-
Power Plant Operator, Power House assistant, Power Plant Assistant, Control Room Operator	78	PP-NEW	-
Total	**4081**		**1230**

Note: The current training capacity is calculated by assuming that the only 37.4% of trained personnel remain in the formal industry sector.