



OCCUPATIONAL FRAMEWORK

SECTION J: INFORMATION AND COMMUNICATION

DIVISION 61: TELECOMMUNICATIONS

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ABSTRACT

An Occupational Framework is the outcome of Occupational Analysis of identifying the work scope of the occupational areas in terms of competencies. It is used to analyse skilled human resource competency requirement for the sector. The development of the Occupational Structure is a preliminary process in developing relevant National Occupational Skills Standard (NOSS). The NOSS in turn will be developed to be used as the basis to conduct skills training and certification of competent personnel. This document is divided into five chapters, the first two chapters being an industrial overview highlighting the definition and scope of the sector, the current analysis of the local sector and its skilled worker requirements, Government bodies and development plans supporting the growth of the sector. The third chapter will explain the methodology used in Occupational Framework development such as qualitative analysis through brainstorming discussion sessions. Workshops were held to get a better understanding of the organisational structure, job titles, and main activities of the specified positions. The final chapters will present the findings of the Occupational Framework that is translated into the Occupational Structures, levels of competencies and critical job areas. These findings will in turn be the basis of reference for the development of the NOSS document. The NOSS will serve not only as a reference of skills standards for certification but also as a guide to develop the skills training curriculum. The OF for Telecommunications is based on the Malaysian Standards Industrial Classification 2008 (MSIC 2008) under Section J: Information and Communication, Division 61: Telecommunications. This industry represents one of the most potential sectors in the economy and a key player in the next industrial revolution – Industry Revolution 4.0. The total number of job area identified is 46 with 291 job titles. A total of 18 job titles identified as relevant to Industry Revolution 4.0 and 56 job titles are classified as critical jobs in the industry. In order to develop the OF on the Telecommunications., all information related to the aforesaid group was gathered through literature review and workshop sessions with industry experts.

ABSTRAK

Kerangka Pekerjaan (OF – *Occupational Framework*) adalah hasil Analisis Pekerjaan (OA – *Occupational Analysis*) untuk mengenal pasti skop kerja dalam bidang pekerjaan dari segi kompetensi. Ia digunakan untuk menganalisis keperluan kompetensi sumber manusia untuk sektor ini. Pembangunan Kerangka Struktur Pekerjaan (OS – *Occupational Structure*) adalah proses awal dalam membangunkan Standard Kemahiran Pekerjaan Kebangsaan (SKPK) yang berkaitan. SKPK pula akan dibangunkan untuk digunakan sebagai asas untuk menjalankan latihan kemahiran dan pensijilan kakitangan yang kompeten. Dokumen ini dibahagikan kepada lima bab, dua bab pertama menjadi gambaran industri yang menjelaskan mengenai definisi dan skop sektor, analisis semasa sektor tempatan dan keperluan pekerja mahir, badan-badan kerajaan yang terlibat dan pelan pembangunan yang menyokong pertumbuhan industri berkaitan. Bab ketiga menerangkan metodologi yang digunakan dalam pembangunan Kerangka Pekerjaan seperti analisis kualitatif melalui analisis dokumen berkaitan dan sesi perbincangan fokus berkumpulan. Bengkel diadakan untuk mendapatkan pemahaman yang lebih baik mengenai struktur organisasi, tajuk pekerjaan dan aktiviti utama jawatan yang ditentukan. Bab-bab terakhir akan membentangkan penemuan Kerangka Pekerjaan yang diterjemahkan ke dalam Struktur Pekerjaan, tahap kompetensi dan bidang kerja kritikal. Penemuan ini akan menjadi asas rujukan untuk pembangunan dokumen SKPK. SKPK akan berkhidmat bukan sahaja sebagai rujukan piawaian kemahiran untuk pensijilan tetapi juga sebagai panduan untuk membangunkan kurikulum latihan kemahiran. Kerangka Pekerjaan Telekomunikasi adalah berdasarkan Klasifikasi Perindustrian Piawaian Malaysia 2008 (MSIC 2008) di bawah Seksyen J : Informasi dan Komunikasi, Bahagian 61 : Telekomunikasi. Industri ini mewakili salah satu sektor yang paling berpotensi dalam ekonomi dan pemain utama dalam revolusi industri seterusnya – Revolusi Industri 4.0. Jumlah bidang penjawatan yang dikenalpasti adalah 46 dengan 291 pekerjaan. Sejumlah 18 pekerjaan yang dikenal pasti berkaitan dengan Revolusi Industri 4.0 dan 56 pekerjaan diklasifikasikan sebagai pekerjaan kritikal dalam industri. Dalam usaha untuk membangunkan Kerangka Pekerjaan Telekomunikasi, semua maklumat yang berkaitan dengan kumpulan tersebut telah dikumpulkan melalui kajian kepustakaan dan bengkel dengan pakar industri.

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LIST OF ABBREVIATION

AES	Annual Economic Survey
BRAS	Broadband Remote Access Server
CBT	Competency Based Training
CFM	Communication and Multimedia Consumer Forum of Malaysia
CMCF	Communications and Multimedia Content Forum of Malaysia
EC	Economic Census
GDP	Gross Domestic Product
ICT	Information and Communication Technology
DSD	Department of Skills Development
KPI	Key Performance Index
LOS	Line of Sight
MAFB	Malaysian Access Forum Bhd
MCI	Malaysia Co-operative Institute
MCM	Ministry of Communications and Multimedia
MCMC	Malaysian Communications and Multimedia Commission
MDEC	Malaysia Digital Economy Corporation
MOSQF	Malaysia Occupational Skills Qualification Framework
MQF	Malaysia Qualifications Framework
MSIC	Malaysian Standard Industrial Classification
MTSFB	The Malaysian Technical Standards Forum Bhd
NCS	National Competency Standards
NFCP	National Fiberisation And Connectivity Plan
NFM	Network Field Maintenance
NOC	Network Operation Centre
NOSS	National Occupational Skills Standard
OF	Occupational Framework
OD	Occupational Description
OS	Occupational Structure
SME	Small and Medium Enterprise
TEC	Telecommunication Engineering College

GLOSSARY

3R	3R (as in letter R) are basic skills taught in schools: reading, writing and arithmetic.
Application	A computer program or a suite of computer programs that performs a particular function for the user, such as a word-processor
Broadband	Broadband is a descriptive term for evolving digital technologies that provide consumers a signal switched facility offering integrated access to voice, high-speed data service, video-demand services, and interactive delivery services.
Compatibility	Pieces of hardware and/or software which are capable of being used together are described as compatible
Copyright	New technologies have raised all kinds of new issues relating to copyright, mainly because it has become so easy to copy materials from a variety of digital sources.
Data	An information in a form which can be processed by a computer. It can be text or sets of figures on which a computer program operates
Database	A structured collection of data that can be used for a variety of purposes. Databases are usually stored on a Hard Disc inside your computer, on a CD-ROM, or at a website
Debug	To test a program and remove all the bugs. Permanent bugs that defy eradication are often referred to ironically as "features".
IP	Internet Protocol. Packet-based protocol for delivering data across networks.
Mobile Service	Radiocommunications services between ships, aircraft, road vehicles, or hand-held terminal stations for use while in motion or between such stations and fixed points on land.
Network	Any connection of two or more computers that enables them to communicate. Networks may include transmission devices, servers, cables, routers and satellites. The phone network is the total infrastructure for transmitting phone messages.

CHAPTER 1: INTRODUCTION

1.1 Introduction

Telecommunications are considered as one of the industries that is growing in a fast pace due to its increasing demand by time. The development of telecommunications industry does not only occur in global market but also in domestic market. Based on annual gross domestic product (GDP) 2018, telecommunications in information and communications industry increased from RM48,976 Million to RM53,377 Million¹ in 2017 to 2018. This figure solidified how this industry developed and will be one of the potential industries for country development in the future. The fast development of telecommunications industry is due to the advancement of technology, high market competition and demand, internet as one of vital needs in daily life, the increasing of demands in telecommunications and also the introduction of new technologies².

This chapter starts with the short overview of current scenario of telecommunications industry, followed by the problem statement, objective of study, scope of study and justification for MSIC 2008 section selection of the Occupational Framework (OF) for the telecommunications industry.

1.2 Problem Statement

With the fast development of telecommunications industry, the demands of skilled worker in the industry will be increased from time to time. The advancement and development of technology in this industry also strengthen the reason of why this industry is in dire need to develop Occupational Framework. Therefore, it is vital to develop an Occupational Framework (OF) for telecommunications industry in order to identify the overview and the

¹ Department of Statistics Malaysia. 2019. National Accounts Gross Domestic Products. 2018. Page 31

² Hajar, M. A., Ibrahim, D. N., & Al-Sharafi, M. A. (2018, June). Value Innovation in the Malaysian Telecommunications Service Industry: Case Study. In International Conference of Reliable Information and Communication Technology (pp. 892-901). Springer, Cham.

structure of telecommunications industry thus identify the critical or hard to fill jobs in the industry. Even though there are numerous numbers of National Occupational Skills Standard (NOSS) documents developed for telecommunications industry, the full industry overview regarding Occupational Structure (OS) for this industry is not being done yet.

Therefore, it is important for this study to be conducted in order to ensure the Occupational Framework (OF) for this industry is correlated with the development of the NOSS based on MSIC sections and divisions. In general, the targets of these studies are to establish the industry occupational structure, occupational description, demand for the skills, jobs title, and critical jobs and jobs title related to IR4.0.

1.3 Objectives of Study

In general, the objective of this study is to produce OS of telecommunication industry.

In particular, the objectives of this study are:

- a) To construct telecommunications industry OS based on MSIC 2008;
- b) To determine the competency in demand for telecommunications industry;
- c) To determine the critical job titles for the telecommunications industry;
- d) To identify the telecommunications industry relevant jobs title that is correlated with IR4.0; and
- e) To create telecommunications industry Occupational Description (OD) for each job title based on present industry OS.

1.4 Scope of Study

The scope of this study was to construct OF for telecommunications industry. This study focused on the respondents that is the industry player to gain the current overview of the industry. According to Economic Census 2016, there were 1,135 numbers of establishments in telecommunications industry³. This research focused on about 64 establishments under telecommunications industry as a number of establishment sample for the respondents of this study under 2 digits MSIC 2008 division 61: Telecommunications all over the country.

³ Department of Statistics Malaysia. 2016. Economic Census 2016- Information and Communication. Page 90

The industry representatives were the unit of analysis for this study. This study begun with the review of current scenario of the industry. This was followed by consulting and interviewing the pertinent industry representatives to attain their professional views and feedbacks and the deployment of survey to solidify the gathered data from document analysis and focus group discussion. This study was only focusing on 2 digits MSIC 2008 division 61: Telecommunications and exclude another division in 1 digits MSIC 2008 section J: Information and Communications.

1.5 Justification for MSIC 2008 Section Selection

The scope of telecommunications industry is in tandem with description of 2 digits MSIC 2008 Division 61: Telecommunications. This division includes the activities of providing telecommunications and related service activities, i.e. transmitting voice, data, text, sound and video. The transmission facilities that carry out these activities may be based on a single technology or a combination of technologies. The commonality of activities classified in this division is the transmission of content, without being involved in its creation. The breakdown in this division is based on the type of infrastructure operated. In the case of transmission of television signals this may include the bundling of complete programming channels (produced in division 60) in to programmed packages for distribution.

1.6 Structure of Chapters

This chapter concludes with a concise overview of the study which includes:

a) Chapter 1

This chapter explains about research introduction which consists of introduction, problem statement, research objective, research scope and justification for MSIC 2008 Section Selection.

b) Chapter 2

This chapter provides a literature review about the research which gives a further understanding about the research purpose.

c) Chapter 3

This chapter explains about the overall approach of the study and method deployed to achieve the objective of the study.

d) Chapter 4

This chapter shows the results and findings of the research based on the approach and method deployed in this chapter; and

e) Chapter 5

This chapter explains about the discussion, summary and conclusion of the research done. Besides that, recommendations from the industry experts are also listed here.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides a brief overview of the telecommunications in Malaysia, key stakeholders, related legislations, key government initiatives and policies for the industry and industry intelligence. Findings in this chapter were obtained primarily through literature review and confirmed by the development panel members to obtain insight on the matters at hand from the practitioner's perspective.

2.1.1 National Skills Development Act 2006 (Act 652)

The National Skills Development Act, 2006 (Act 652) came into effect on 1st September 2006 after it was officially gazetted on 29th June 2006, with the mandate of promoting, through skills training, the development and improvement of a person's abilities, which are needed for vocation, and to provide for other matters connected therewith. The Act 652 is significant because for the first time in the history of skills training in Malaysia, a national legislation has been enacted solely and exclusively for skills training and development. In addition, the meaning and scope of skills training have been clarified and given a statutory interpretation that can be used to distinguish it from other components of the country's national education and training system.

The Act 652 also provides for the implementation of a Malaysia Skills Certification System, leading to the award of five (5) levels of national skills qualification, namely

Malaysia Skills Certificate Level 1, 2 and 3; Malaysia Skills Diploma; and Malaysia Skills Advanced Diploma⁴.

2.1.2 Malaysia Qualification Framework (MQF)

The Malaysian Qualification Act 2007 (Act 679) which was adopted on the 29th August 2007, Establishes the Malaysian Qualifications Agency, sets out its composition, functions and responsibilities. This act repeals the *Lembaga Akreditasi Negara* Act 1996 [Act 556] and dissolves the *Lembaga Akreditasi Negara*. The Malaysia Qualification Framework (MQF) refers to the policy framework that satisfies both the national and international recognised qualifications. It consists of titles and guidelines, together with the principles and protocols covering articulation and issuance of qualifications and statements of attainment⁵. Elements of the qualification’s framework indicate the achievement for each qualification title. It will also provide progression routes for all the graduates in the respective occupational fields. The MQF has eight levels of qualifications in three sectors and it is supported by lifelong education pathways as shown in Figure 2.1. DSD governs the skills sector, in which there are five (5) levels of skills qualification. The definition for each level of skills qualification is specified in the Malaysia Occupational Skills Qualification Framework (MOSQF) can be referred in Annex 1.

Table 2.1 Malaysian Qualification Framework (MQF chart)

(Source: Malaysian Qualification Framework 2nd Edition)

MQF LEVEL	MINIMUM GRADUATING CREDIT	ACADEMIC SECTOR	TVET SECTOR	LIFELONG LEARNING/APEL CRITERIA FOR APEL(A)
8	No credit rating	PhD by Research		Admission criteria: 35 years old Bachelor’s degree in relevant field/equivalent
	80	Doctoral Degree by Mixed Mode		5 years’ work experience Passed APEL assessment

⁴ National Skills Development Act 652 (2019, September 2) retrieved from <http://www.agc.gov.my/agcportal/index.php>

⁵ Malaysian Qualification Agency. 2018. Malaysian Qualification Framework 2nd Edition

MQF LEVEL	MINIMUM GRADUATING CREDIT	ACADEMIC SECTOR	TVET SECTOR	LIFELONG LEARNING/APEL CRITERIA FOR APEL(A)
		& Coursework		
7	No credit rating	Master's by Research		Admission criteria: 30 years old STPM/Diploma/equivalent Relevant work experience Passed APEL assessment
	40	Master's by Mixed Mode & Coursework		
	30	Postgraduate Diploma		
	20	Postgraduate Certificate		
6	120	Bachelor's degree		Admission criteria: 21 years old Relevant work experience Passed APEL assessment
	66	Graduate Diploma		
	36	Graduate Certificate		
5	40	Advanced Diploma	5	
4	90	Diploma	4	Admission criteria: 20 years old Relevant work experience Passed APEL assessment
3	60	Certificate	3	Admission criteria: 19 years old Relevant work experience Passed APEL assessment
2	30	Certificate	2	3R
1	15	Certificate	1	3R

2.1.3 Occupational Framework (OF)

The Occupational Framework (OF) is described as the outcome of the occupational analysis process to identify the occupational structure of an industry. The OF which was previously known as Occupational Analysis (OA) consists of Occupational Structure (OS), Occupation Description (OD) and Competency in Demand. The development of the OF is a preliminary process in developing relevant National Occupational Skills Standard (NOSS). Once

developed, the NOSS can be used as the basis to conduct skills training and skills certification of competent personnel⁶.

2.1.4 National Occupational Skills Standard (NOSS) and National Competency Standard (NCS)

The National Occupational Skills Standard (NOSS) is defined as a specification of the competencies expected of a skilled worker who is gainfully employed in Malaysia for an occupational area, level and pathway to achieve the competencies and is gazetted in Part IV of the National Skills Development Act, 2006 (Act 652). NOSS is developed by industry experts based on the needs of the industry and is utilised as the main tool in the implementation of Malaysia Skills Certification System in which the performance of existing industry workers and trainees are assessed based on the NOSS to award the Malaysia Skills Certificate⁷. Meanwhile, National Competency Standard (NCS) is described as the knowledge, skills and attitudes needed to perform in a particular occupation but also do not directly relate to any particular job classification. Standards are developed by the industry experts based on the needs of the industry and is utilised as the main tool in the implementation of Malaysian Skills Certification System in which the performance of existing industry workers and trainees are assessed based on Standards for awarding of Malaysian Skills Certificate⁸.

2.1.5 Competency Based Training (CBT)

Competency Based Training (CBT) is an approach to vocational training which emphasises what a person can do in a work place as a result of education and training obtained. CBT is based on performance standards which are set by the industry with the main focus to measure the performance while taking-into-account knowledge and attitude rather than the duration

⁶ Department of Skill Development (2019, August 27) retrieved from <https://www.dsd.gov.my/jpkv4/index.php/my/perkhidmatan/noss>

⁷ Department of Skill Development (2019, August 29) retrieved from <https://www.dsd.gov.my/jpkv4/index.php/en/what-is-noss>

⁸ Department of Skill Development (2019, August 27) retrieved from <https://www.dsd.gov.my/jpkv4/index.php/my/>

taken to complete the course. CBT is a learner-centric, outcome-based approach to training which allows each individual to develop skills at their own pace for a similar outcome. Thus, training practices can be customised for each individual to achieve a similar outcome⁹. CBT concept is the basis of Malaysia Skills Certification system which is coordinated by DSD.

2.2 Scope of Occupational Framework Based on MSIC 2008

This section provides the details of MSIC 2008 scope on telecommunications industry. The definition of MSIC 2008 and title selection criteria are explained in this section.

2.2.1 Malaysian Standard Industrial Classification 2008 (MSIC 2008) Definition

The MSIC 2008 is intended to be a standard classification of productive economic activities. Its main purpose is to provide a set of activity categories that can be utilised for the collection and presentation of statistics according to such activities. Therefore, MSIC 2008 aims to present these set of activity categories in such a way that entities can be classified according to the economic activity that they carry out. For purposes of international comparability, the MSIC 2008 Version 1.0 conforms closely to the International Standard Industrial Classification of All Economic Activities (ISIC) Revision 4, published by the United Nations Statistics Division, with some modifications to suit national requirements. The objective of an industrial classification system is to classify data in respect of the economy according to categories of activities and the characteristics of which will be similar. The MSIC 2008 is a classification of all types of economic activities and is not a classification of goods & services nor is it a classification of occupations¹⁰.

⁹ Department of Skill Development (2019, August 31) retrieved from <https://www.dsd.gov.my/jpkv4/index.php/my/>

¹⁰ Department of Statistics Malaysia. (2008). Malaysia Standard Industrial Classification (MSIC).

2.2.2 Title Selection Criteria

In order to review that the scope of the telecommunications is comprehensively covered in this OF research, the definition of telecommunications has to be spelt out clearly. Under MSIC, the area being researched falls under the Section and Division listed below:

Table 2.2: Summary of MSIC 2008 by Section, Division and Group

(Source: MSIC 2008)

Section	J	Information and Communication
Division	61	Telecommunications
Group	611	Wired telecommunications activities
	612	Wireless telecommunications activities
	613	Satellite telecommunications activities
	619	Other telecommunications activities

To further understand the scope of this particular Occupational Framework based on MSIC 2008, Table 2.3 below can be referred.

Table 2.3: Description of MSIC 2008 by Section, Division, Group, Class and Item

(Source: MSIC 2008)

CLASSIFICATION	CODE	DESCRIPTION
Section	J	Information and communication
Division	61	<p>Telecommunications</p> <p>This division includes the activities of providing telecommunications and related service activities, i.e. transmitting voice, data, text, sound and video. The transmission facilities that carry out these activities may be based on a single technology or a combination of technologies. The commonality of activities classified in this division is the transmission of content, without being involved in its creation. The breakdown in this division is based on the type of infrastructure operated.</p> <p>In the case of transmission of television signals this may include the bundling of complete programming</p>

CLASSIFICATION	CODE	DESCRIPTION
		channels (produced in division 60) in to programmed packages for distribution.
Group	611	<p>Wired telecommunications activities</p> <p>This group includes the activities of operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound, and video using a wired telecommunications infrastructure. The transmission facilities that carry out these activities, may be based on a single technology or a combination of technologies.</p> <p>More specifically these activities include: 1) operating and maintaining switching and transmission facilities to provide point-to-point communications via landlines, microwave, or a combination of landlines and satellite linkups, 2) operating of cable distribution systems (e.g. for distribution of data and television signals), and 3) furnishing telegraph and other non-vocal communications using their own facilities. Purchasing access and network capacity from owners and operators of networks and providing telecommunications services using this capacity to businesses and households is included here.</p> <p>This class also includes the provision of internet access by the operator of the wired infrastructure.</p>
Class	6110	<p>Wired telecommunications activities</p> <p>Includes:</p> <p>(a) operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound and video using a wired telecommunications infrastructure, including operating and maintaining switching and transmission facilities to provide point-to-point communications via landlines, microwave or a combination of landlines and satellite linkups; operating of cable distribution systems (e.g. for distribution of data and television signals); furnishing telegraph and other non-vocal communications using own facilities</p> <p>(b) purchasing access and network capacity from owners and operators of networks and providing</p>

CLASSIFICATION	CODE	DESCRIPTION
		<p>telecommunications services using this capacity to businesses and households</p> <p>(c) provision of Internet access by the operator of the wired infrastructure</p> <p>Excludes: telecommunications resellers, see 61903</p>
Item	61101	Wired telecommunications services
Item	61102	Internet access providers by the operator of the wired infrastructure
Group	612	<p>Wireless telecommunications activities</p> <p>This group includes the activities of operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound, and video using a wireless telecommunications infrastructure. These facilities provide omnidirectional transmission via airwaves and they may be based on a single technology or a combination of technologies. Activities of maintaining and operating paging as well as cellular and other wireless telecommunications networks are included here.</p> <p>Purchasing access and network capacity from owners and operators of networks and providing wireless telecommunications services (except satellite) using this capacity to businesses and households is included here.</p> <p>This group also includes the provision of Internet access by the operator of the wireless infrastructure.</p>
Class	6120	<p>Wireless telecommunications activities</p> <p>Includes:</p> <p>(a) operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound, and video using a wireless telecommunications infrastructure</p> <p>(b) maintaining and operating paging as well as cellular and other wireless telecommunications networks</p> <p>(c) purchasing access and network capacity from owners and</p>

CLASSIFICATION	CODE	DESCRIPTION
		<p>(a) operators of networks and providing wireless telecommunications services (except satellite) using this capacity to businesses and households</p> <p>(d) provision of Internet access by the operator of the wireless</p> <p>(b) Infrastructure</p> <p>Excludes: telecommunications resellers, see 61903</p>
Item	61201	Wireless telecommunications services
Item	61202	Internet access providers by the operator of the wireless infrastructure.
Group	613	<p>Satellite telecommunications activities</p> <p>This group includes the activities of operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound, and video using a satellite telecommunications infrastructure.</p> <p>This group also includes the delivery of visual, aural or textual programming received from cable networks, local television stations, or radio networks to consumers via direct-to-home satellite systems. The units classified here do not generally originate programming material.</p> <p>This group also includes the provision of Internet access by the operator of the satellite infrastructure.</p>
Class	6130	<p>Satellite telecommunications activities</p> <p>Includes:</p> <p>(a) operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound and video using a satellite telecommunications infrastructure</p> <p>(b) delivery of visual, aural or textual programming received from cable networks, local television stations or radio networks to consumers via direct-to-home satellite systems (the units classified here do not generally originate programming material)</p> <p>(c) provision of Internet access by the operator of the satellite</p> <p>(c) Infrastructure</p>

CLASSIFICATION	CODE	DESCRIPTION
		Excludes: telecommunications resellers, see 61903
Item	61300	Satellite telecommunications services
Group	619	Other telecommunications activities This group includes provision of specialized telecommunications applications, such as satellite tracking, communications telemetry, and radar station operations, operation of satellite terminal stations and associated facilities operationally connected with one or more terrestrial communications systems and capable of transmitting telecommunications to or receiving telecommunications from satellite systems, provision of Internet access over networks between the client and the ISP not owned or controlled by the ISP, such as dial-up Internet access, etc., provision of telephone and Internet access in facilities open to the public, provision of telecommunications services over existing telecom connections such as VOIP (Voice Over Internet Protocol) provision and telecommunications resellers (i.e. purchasing and reselling network capacity without providing additional services).
Class	6190	Other telecommunications activities Includes: (a) operation of satellite terminal stations and associated facilities operationally connected with one or more terrestrial communications systems and capable of transmitting telecommunications to or receiving telecommunications from satellite systems (b) provision of Internet access over networks between the client and the ISP not owned or controlled by the ISP (e.g. dial-up Internet access, etc.) (c) provision of telephone and Internet access in facilities open to the public (d) telecommunications resellers (e.g. purchasing and reselling network capacity without providing additional services)

CLASSIFICATION	CODE	DESCRIPTION
		Excludes: provision of Internet access by operators of telecommunications infrastructure, see 6110, 6120, 6130
Item	61901	Provision of Internet access over networks between the client and the ISP not owned or controlled by the ISP
Item	61902	Provision of telecommunications services over existing telecom connection
Item	61903	Telecommunications resellers
Item	61904	Provision of telecommunications services over existing telecom connections VOIP (Voice Over Internet Protocol) provision
Item	61905	Provision of specialized telecommunications applications Includes: satellite tracking, communications telemetry and radar station operations
Item	61909	Other telecommunications activities n.e.c.

2.3 Key Stakeholders

The stakeholders for the telecommunications industry in Malaysia comprise government agencies, regulatory bodies, industry associations and professional bodies. Stakeholder is defined as a person, group or organisation that has interest or concern in an organisation. Stakeholders can affect or be affected by the organisation's actions, objectives and policies. Some examples of key stakeholders are creditors, directors, employees, government (and its agencies), owners (shareholders), suppliers, unions, and the community from which the business draws its resources.

2.3.1 Government Agencies and Regulatory Bodies

For telecommunications industry, there are six main government agencies and regulatory bodies identified to regulate the industry. The regulatory bodies and relevant government agencies for the telecommunications industry can be referred in Table 2.4 below.

Table 2.4: List of Government Agencies and Regulatory Bodies for Telecommunications Industry

NO	ORGANISATIONS	OVERVIEW, ROLES, FUNCTION AND RESPONSIBILITIES
1.	Ministry of Communications and Multimedia (MCM)	Ministry of Communications and Multimedia is responsible for communications, multimedia, broadcasting, information, personal data protection, special affairs, media industry, film industry, domain name, postal, courier, mobile service, fixed service, broadband, digital signature, universal service, international broadcasting and content ¹¹ .
2.	Malaysian Communications and Multimedia Commission (MCMC)	<ul style="list-style-type: none"> a) Implement and enforce the provisions of the communications and multimedia law; b) Regulate all matters relating to communications and multimedia activities not provided for in the communications and multimedia law; c) Consider and recommend reforms to the communications and multimedia law; d) Supervise and monitor communications and multimedia activities;

¹¹Ministry of Communications and Media (MCM) (2019, August 29). Retrieved from <https://www.kkmm.gov.my/index.php/en/>

NO	ORGANISATIONS	OVERVIEW, ROLES, FUNCTION AND RESPONSIBILITIES
		<p>e) Encourage and promote the development of the communications and multimedia industry;</p> <p>f) Encourage and promote self-regulation in the communications and multimedia industry;</p> <p>g) Promote and maintain the integrity of all persons licenced or otherwise authorised under the communications and multimedia industry; and</p> <p>h) Render assistance in any form to, and to promote cooperation and coordination amongst, persons engaged in communications and multimedia activities¹².</p>
3.	CyberSecurity Malaysia	<p>Cybersecurity Malaysia is committed to providing a broad range of cybersecurity innovation-led services, programmes and initiatives to help reduce the vulnerability of digital systems, and at the same time strengthen Malaysia's self-reliance in cyberspace¹³.</p> <p>Provides specialised cyber security services, as follows:</p> <ul style="list-style-type: none"> a) Cyber Security Responsive Services b) Cyber Security Proactive Services c) Outreach and Capacity Building

¹² Malaysian Communications and Multimedia Commission (MCMC). (2019, August 20). Retrieved from <https://www.mcmc.gov.my/about-us/our-responsibility>

¹³ CyberSecurity Malaysia. (2019, August 20). Retrieved from <https://www.cybersecurity.my/en/index.html>

NO	ORGANISATIONS	OVERVIEW, ROLES, FUNCTION AND RESPONSIBILITIES
		<p>d) Strategic Study and Engagement</p> <p>e) Industry and Research Development</p>
4.	Malaysia Digital Economy Corporation (MDEC)	<p>MDEC was established to strategically advise the Malaysian Government on legislation, policies and standards for ICT and multimedia operations. Entrusted to oversee the development of the MSC Malaysia initiative, the platform to nurture the growth of local tech companies whilst attracting foreign direct investments (FDIs) and domestic direct investments (DDIs) from global multinational companies to invest and develop cutting-edge digital and creative solutions in Malaysia.</p> <p>Play a catalytic role in driving Malaysia's transition towards a developed digital economy by 2020. In 2012, Digital Malaysia was officially unveiled as the nation's transformational programme to achieve this objective. Digital Malaysia is a national agenda that is fully developed with a sustainable digital economy built upon a vibrant domestic ICT industry, transformative adoption of digital solutions by government, businesses and citizens, as well as a robust enabling ecosystem¹⁴.</p>
5.	Department of Occupational Safety and Health (DOSH)	The Department of Occupational Safety and Health (DOSH) is a department under the

¹⁴ Malaysia Digital Economy Corporation (MDEC). (2019, August 20). Retrieved from <https://mdec.my>

NO	ORGANISATIONS	OVERVIEW, ROLES, FUNCTION AND RESPONSIBILITIES
		Ministry of Human Resources. This department is responsible for ensuring the safety, health and welfare of people at work as well as protecting other people from the safety and health hazards arising from the activities sectors which includes construction ¹⁵ .
6.	The Public Works Department (JKR)	The Public Works Department (JKR) of Malaysia has been established since 1872 and serves as a technical agency for the Government of Malaysia. JKR is responsible for implementing infrastructure development and maintenance projects for various ministries, departments, statutory bodies and state governments such as roads, buildings, airports, ports and jetty ¹⁶ .

2.3.2 Industry Associations and Professional Bodies

The Industry Associations and Professional Bodies for the telecommunications industry can be referred in Table 2.5 below. For this section, there are four main associations related directly to telecommunications industry.

¹⁵ Department of Safety and Health (2019, August 27) retrieved from <http://www.dosh.gov.my/index.php/en/about-us/dosh-profile>

¹⁶ The Public Works Department (2019, October 9). Retrieved from <https://www.jkr.gov.my/my/page/mengenai-kami?q=my/page/visi-misi-objektif-fungsi-profil-jkr>

Table 2.5: List of Related Industry Associations and Professional Bodies for Telecommunications Industry

NO	ORGANISATIONS	OVERVIEW, ROLES, FUNCTION AND RESPONSIBILITIES
1.	Communication and Multimedia Consumer Forum of Malaysia (CFM)	<p>CFM was established in February 2001 as a society with representation from all relevant parties, including the “supply and demand” side of the communications and multimedia industry. It was designated by MCMC as the Communications and Multimedia Consumer Forum in 2002 to protect the rights of consumers of that sector. This is in line with the requirements of the CMA which facilitates industry self-regulation.</p> <p>As a designated forum, CFM is tasked with, among others, the preparation of consumer codes that would be used as a base guideline for the provisioning of services by the communications and multimedia service providers. The General Consumer Code (GCC) was accepted by MCMC as an industry Code in 2002 along with the Internet Access Code¹⁷.</p>
2.	The Malaysian Technical Standards Forum Bhd (MTSFB)	<p>The Malaysian Technical Standards Forum Bhd (MTSFB) is a company limited by guarantee which was incorporated on 8 June 2004 and being designated as the Technical Standards Forum (TSF) by the Malaysian Communications and Multimedia Commission (MCMC) on 27 October 2004.</p> <p>MTSFB was established to enshrine the national policy and objective of self-regulation with the essence embraced in CMA 1998 by initiating and facilitating the development of</p>

¹⁷ Communication and Multimedia Consumer Forum of Malaysia (CFM). (2019, September 15). Retrieved from <https://cfm.my/corporate-overview/>

NO	ORGANISATIONS	OVERVIEW, ROLES, FUNCTION AND RESPONSIBILITIES
		<p>technical documents related to interoperability, safety and operation for Network Facility, Network Service or Network Application Providers.</p> <p>The primary roles of MTSFB are to develop, recommend, modify and update the Technical Codes for registration by MCMC as well as relevant Malaysian Standards for gazettal by DSM through SIRIM for both fixed and wireless network providers and other stakeholders in the country. This is achieved by establishing working groups (WGs) on focused subject matters. The WGs are represented by the members from the manufacturers, vendors, distributors, Standards Development Organisations (SDOs), academicians, service providers and other interested parties¹⁸.</p>
3.	Communications and Multimedia Content Forum of Malaysia (CMCF)	<p>CMCF was established in February 2001, as a Society, with representation from all relevant parties, including the supply and demand side of the communications and multimedia industry - to govern content and address content related issues disseminated by way of electronic networked medium.</p> <p>CMCF was designated on 29 March 2001 by the MCMC. The CMCF operates a Complaints Bureau that addresses grievances from consumers and industry members on matters relating to content over the electronic networked medium¹⁹.</p> <p>The key objective of The Content Forum is to establish Malaysia as a major global centre and hub for</p>

¹⁸ The Malaysian Technical Standards Forum Bhd (MTSFB). (2019, September 15). Retrieved from <https://www.mtsfb.org.my/content/mtsfb-roles>

¹⁹ Communications and Multimedia Content Forum of Malaysia (CMCF). (2019, September 15). Retrieved from <http://cmcf.my/history-mission>

NO	ORGANISATIONS	OVERVIEW, ROLES, FUNCTION AND RESPONSIBILITIES
		communications and multimedia information and content services.
4.	Malaysian Access Forum Bhd (MAFB)	<p>The MCMC designated the Malaysian Access Forum Berhad (MAFB) as the Access Forum in 2003. MAFB are represented by the representatives from the telecommunications industry. The main objective of the MAFB is to come up with the access code and to make recommendations to the MCMC regarding network services, and the network facilities and/ or content application services that should be added to or removed from the Access List.</p> <p>The Access List is a list of services and facilities which shall be made available by providers to any other provider who makes a written request to the former to use the latter's service or facility. Whatever it is, MCMC still has to be satisfied that MAFB consulted with interested persons and that MAFB's representatives were unanimous in supporting the recommendation.</p> <p>The main point of having the Access List is to promote cooperation and coordination amongst industry players, as it will set model terms and conditions for access to any of the facilities or services included in the Access List. The code may include rate methodologies, sharing of technical information and the protection of intellectual property and commercial information²⁰.</p>

²⁰ Malaysian Access Forum Bhd (MAFB). (2019, September 15). Retrieved from <https://www.skmm.gov.my/media/press-clippings/towards-self-regulation-cma-s-four-industry-forums>

2.3.3 Training Centre

For telecommunications industry, there are seven training centre for the telecommunications industry that can be referred in Table 2.6.

Table 2.6: List of Training Centre for Telecommunications Industry

NO	TRAINING CENTRE	ROLES, FUNCTION AND RESPONSIBILITIES
1.	Construction Industry Development Board (CIDB)	The Safety & Health Training Programme promotes awareness on the importance of having a safe and healthy working culture in the construction industry. Apart from producing competent personnel required by law such as Safety & Health Officers (SHO), Safety Site Supervisors (SSS) and Traffic Management Officers (TMO) various safety & health related courses are also offered for the benefits of the construction industry. Upon completion of the course, participants will be able to conduct Hazard Identification Risk Assessment and Risk Control (HIRARC), explain Occupational Safety & Health Management System (OSH MS), plan an OSH programme and interpret the legal requirement in OSH.
2.	National Institute of Occupational Safety and Health (NIOSH)	Training is an integral part of Occupational Safety & Health (OSH) to ensure the success of any OSH programme at the workplace, adequate and effective training must be implemented for all those responsible in OSH. Training enables managers, supervisors and workers to understand the working of safety management systems and the legal compliance required. They will then understand their own responsibilities and the necessary

NO	TRAINING CENTRE	ROLES, FUNCTION AND RESPONSIBILITIES
		<p>actions to be taken towards upgrading safety and health at their respective workplaces²¹.</p> <p>There are four (4) types of training programme related to telecommunications provided by NIOSH and recognised by TM:</p> <ul style="list-style-type: none"> a) OSH Practitioners Programmes; b) Competency / Certificate Programme; c) Trainer's Programme; and d) Safety Passport Programmes.
3.	IRATEC	<p>Provide professional training, backed by international standards in Work At Height (WAH) for on-site staff, providing international and recognised certificate for business²².</p> <ul style="list-style-type: none"> a) Aerial Rigger Level 1 & 2 b) PPE Familiarization c) WAH Introduction
4.	Max Safety & Engineering Services Sdn. Bhd.	<p>Responsible towards customer's business objective and the safety of their workers in particular. To meet this end, Max Safety & Engineering Services Sdn. Bhd provide the following services to customers:</p> <ul style="list-style-type: none"> a) Introduction and advice to a wide range of innovative safety product that provide maximum worker protection, worker acceptance and cost effectiveness. b) Assistance to the Safety Committee with updated catalogues and literatures, participate in their safety

²¹ National Institute of Occupational Safety and Health. (2019, September 15). Retrieved from <http://www.niosh.com.my/core-activities/training>

²² IRATEC. (2019, September 15). Retrieved from <http://www.iratec.com.my/our-solutions/work-at-height-training/>

NO	TRAINING CENTRE	ROLES, FUNCTION AND RESPONSIBILITIES
		<p>programs and activities like conduct of product training, product demonstrations and safety exhibitions, provide training aids like videos, product sample etc, conduct safety seminars and conduct safety surveys at the work place.</p> <p>c) Endeavour to provide quality after sales services for product maintenance and repairs and effective inventory management to ensure efficient delivery time²³.</p>
5.	Safety at Top	<p>SAT provides training, consultations and other services in Occupational Safety and Health. The training includes OSH Awareness, Working at Height Safety, Basic First Aid CPR, Basic Fire Fighting and Telecommunications Safety. SAT able to tailor-made the trainings according to specific needs or current demand. SAT develop the Training Need Analysis (TNA) to ensure the training modules could be delivered with high accuracy and efficient²⁴.</p>
6.	Docom Resource	<p>Docom Resources provides courses in its specialised mobile telecommunications market for the Malaysian market. In addition to telecommunications, students participating in the course will also be exposed to how to adapt basic skills as they begin their telecommunications career.</p> <p>DOCOM also does other telecommunications work such as Site Survey, Installation and testing & commissioning²⁵.</p>

²³ Max Safety & Engineering Services Sdn. Bhd. (2019, September 15). Retrieved from <https://www.maxsafety.com.my/100-about-us>

²⁴ Safety at Top PLT. (2019, September 15). Retrieved from <https://e-sat.my/>

²⁵ DOCOM Resource. (2019, September 15). Retrieved from <http://docomresources.blogspot.com/>

NO	TRAINING CENTRE	ROLES, FUNCTION AND RESPONSIBILITIES
7.	Telecommunication Engineering College (TEC)	TEC is the first vocational telecommunications college in Malaysia and has a direct relationship with the local Telco industry that keeps TEC abreast of the current market needs for vocational skills in Malaysia. In TEC installation rooms, it has a complete facility that can simulate just about every conceivable scenario that will be faced by an installation engineer from antenna azimuth and tilting to microwave ODU dish alignment or testing a distributed antenna system. TEC will create all the tasks that must be performed at site ²⁶ .

2.4 Legislation, Policy and Initiatives

It is imperative that, this research has to refer to legislation, by-laws and policies that are directly related to telecommunications industry.

2.4.1 Government Legislations

The following Table 2.7 indicates the relevant legislations to the overall information and communication industry which includes the telecommunications industry.

²⁶ Telecommunication Engineering College (TEC). (2019, August 20). Retrieved from <http://www.tec.edu.my/all-about-tec-who-we-are.html>

Table 2.7: List of Relevant Acts and Legislations for Telecommunications Industry

NO	LEGISLATIONS	DESCRIPTION OF LEGISLATIONS
1.	Malaysian Communications and Multimedia Commission 1998 (Act 588)	<p>An Act to provide for and to regulate the converging communications and multimedia industries, and for incidental matters. The details of the act are as follows:</p> <ul style="list-style-type: none"> a) Implement and enforce the provisions of the communications and multimedia laws; b) Regulate all matters relating to communications and multimedia activities not provided for in the communications and multimedia laws; c) Supervise and monitor communications and multimedia activities; d) Encourage and promote the development of the communications and multimedia industry including in the area of research and training²⁷.
2.	Copyright Act 1987 (Act 332)	<p>An Act to make better provisions in the law relating to copyright and for other matters connected therewith. The details of the act are as follows:</p> <ul style="list-style-type: none"> a) Make unauthorised transmission of copyright works over the Internet an infringement of copyright. b) Infringement of copyright to circumvent any effective technological measures aimed at restricting access to copyright works. c) Ensuring adequate protection of intellectual property rights for companies involved in content creation in the ICT and multimedia environment²⁸.

²⁷ Malaysian Communications and Multimedia Commission (MCMC). (2019, August 29). Retrieved from <https://www.skmm.gov.my/legal/acts>

²⁸ National Cyber Security Agency (NACSA). (2019, August 29). Retrieved from <https://www.nacsa.gov.my/legal.php>

NO	LEGISLATIONS	DESCRIPTION OF LEGISLATIONS
3.	Digital Signature Act 1997 (Act 562)	An Act to make provision for, and to regulate the use of, digital signatures and to provide for matters connected therewith ²⁹ .
4.	Electronic Government Activities Act 2007 (Act 680)	An Act to provide for legal recognition of electronic messages in dealings between the Government and the public, the use of the electronic messages to fulfil legal requirements and to enable and facilitate the dealings through the use of electronic means and other matters connected therewith ³⁰ .
5.	Personal Data Protection Act 2010 (Act 709)	Personal Data Protection Act 2010 is an act to regulate the processing of personal data in commercial transactions and to provide for matters connected therewith and incidental thereto. On 15 November 2013, the Personal Data Protection Act 2010 (PDPA) came into force in Malaysia with the objective of protecting the personal data of individuals with respect to commercial transactions ³¹ .
6.	Financial Services Act 2013 (Act 758)	The Financial Services Act 2013, is a Malaysian law which enacted to provide for the regulation and supervision of financial institutions, payment systems and other relevant entities and the oversight of the money market and foreign exchange market to promote financial stability and for related, consequential or incidental matters ³² .

²⁹ Malaysian Communication and Multimedia Commission. 2001. Digital Signature Act 1997. (2019, August 29). Retrieved from <https://www.mcmc.gov.my/legal/acts/digital-signature-act-1997-reprint-2002>

³⁰ Electronic Government Activities Act 2007 (2019, August 29). Retrieved from <http://www.agc.gov.my/agcportal/uploads/files/Publications/LOM/EN/Act%20680%20-%20Electronic%20Government%20Activities%20Act%202007.pdf>

³¹ Personal Data Protection Act 2010 (PDPA 2010). (2019, October 9). Retrieved from <https://www.pwc.com/my/en/services/assurance/pdpa.html>

³² Financial Services Act 2013. (2019, October 9). Retrieved from <http://www.agc.gov.my/agcportal/uploads/files/Publications>

NO	LEGISLATIONS	DESCRIPTION OF LEGISLATIONS
7.	Computer Crime Acts 1997 (Act 563)	Computer Crime Acts is an act provide for offenses relating to the misuse of computers. Amongst other things, it deals with unauthorized access to computer material, unauthorized access with intent to commit other offenses and unauthorized modification of computer contents. It also makes provisions to facilitate investigations for the enforcement of the Act ³³ .
8.	Consumer Protection Act 1999 (Act 559)	An act to provide for the protection of consumers, the establishment of the National Consumer Advisory Council and the Tribunal for Consumer Claims, and for matters connected therewith ³⁴ .
9.	Electronic Commerce Act 2006 (Act 568)	An Act to provide for legal recognition of electronic messages in commercial transactions, the use of the electronic messages to fulfil legal requirements and to enable and facilitate commercial transactions through the use of electronic means and other matters connected therewith ³⁵ .
10.	The Capital Markets and Services Act 2007 (Act 671)	The Capital Markets and Services Act 2007, is a Malaysian law which enacted to consolidate the Securities Industry Act 1983 [Act 280] and Futures Industry Act 1993 [Act 499], to regulate and to provide for matters relating to the activities, markets and intermediaries in the capital markets, and for matters

³³ Computer Crime Acts 1997. (2019, October 9). Retrieved from <http://www.agc.gov.my/agcportal/uploads/files/Publications>

³⁴ Consumer Protection Act 1999. (2019, October 9). Retrieved from <http://www.agc.gov.my/agcportal/uploads/files/Publications>

³⁵ Electronic Commerce Act 2006. (2019, October 9). Retrieved from <http://www.agc.gov.my/agcportal/uploads/files/Publications/LOM/EN/Act%20658.pdf>

NO	LEGISLATIONS	DESCRIPTION OF LEGISLATIONS
		consequential and incidental thereto ³⁶ .
11.	The Sedition Act 1948 (Act 15)	The Sedition Act 1948 is a law prohibiting discourse deemed as seditious. The act was originally enacted by the colonial authorities of British Malaya in 1948. The act criminalises speech with "seditious tendency", including that which would "bring into hatred or contempt or to excite disaffection against" the government or engender "feelings of ill-will and hostility between different races" ³⁷ .
12.	Strategic Trade Act 2010 (Act 708)	Strategic Trade Act 2010 is an act to provide for control over the export, transshipment, transit and brokering of strategic items, including arms and related material, and other activities that will or may facilitate the design, development and production of weapons of mass destruction and their delivery systems and to provide for other matters connected therewith, consistent with Malaysia's national security and international obligations ³⁸ .

2.4.2 Government Policies and Initiatives

This section provides information regarding related government policies and initiatives to telecommunications industry in Malaysia.

³⁶ The Capital Markets and Services Act 2007. (2019, October 9). Retrieved from <http://www.agc.gov.my/agcportal/uploads/files/Publications/LOM/EN/Act%20671%20-Reprint%202016.pdf>

³⁷ The Sedition Act 1948. (2019, October 9). Retrieved from <http://www.agc.gov.my/agcportal/uploads/files/Publications/LOM/EN/Act%2015.pdf>

³⁸ Strategic Trade Act 2010. (2019, October 9). Retrieved from http://www.agc.gov.my/agcportal/uploads/files/Publications/LOM/EN/Act%20708%2028_4_2015.pdf

a) National Telecommunication Policy of Malaysia

In 1994, the Malaysian Government introduced the National Telecommunication Policy of Malaysia (Policy) with the purpose of setting out the direction for the telecommunications industry between 1994 and 2020 and ensuring that the growth of telecommunications services and its use of technology support national development and are consistent with national objectives and aspirations³⁹. There are several strategies laid out to achieve the objectives of the Policy that include the following: -

- i) Expansion of services in a systematic and comprehensive manner;
- ii) Development of a strategic and export-oriented manufacturing industry;
- iii) Encouraging competitiveness;
- iv) Research and development to enhance the application of technology;
- v) Development of a dynamic and innovative human resource;
- vi) Upgrading rural telecommunication facilities;
- vii) Encouraging active Bumiputera participation; and
- viii) International strategic interaction.

b) The National Fiberisation and Connectivity Plan (NFCP)

National Fiberisation and Connectivity Plan (NFCP) is a government initiative to provide society with robust, pervasive, high quality and affordable digital connectivity.

NFCP implemented in 2019 is a five-year plan starting 2019 that will provide nationwide digital connectivity that is high quality and affordable for all Malaysians across the urban and rural divide.

³⁹National Telecommunication Policy of Malaysia. 1994. (2019, August 29). Retrieved from <https://www.pmo.gov.my/government-policies/archives/?highlight=National%20Telecommunication%20Policy%20of%20Malaysia>

NFCP comes with four strategies⁴⁰ to achieve the objectives of the NFCP as follows: -

- i) Manage funding for NFCP from a variety of sources in a prudent and sustainable manner; and leverage on relevant regulatory policies and instruments where necessary;
- ii) Optimise digital infrastructure development and deployment nationwide, and clear impediments;
- iii) Regional and international networks are connected extensively with domestic networks; and
- iv) Enhance connectivity in high impact socio-economic sectors such as education, agriculture and health care, small and medium enterprises and underserved areas.

c) Communications & Multimedia Blueprint 2018-2025

Public and private stakeholders in the Communication & Multimedia sector have already made significant improvements to the lives of the society. Beyond its economic contributions, the sector has a prominent role to play in encouraging inclusive development. Empowering all Malaysian citizens ensures that they have equitable access to information, and expands their horizons. Omnichannel communication strengthens the Malaysian social fabric by better connecting individuals and communities, and inspirational local content cultivates a strong national identity⁴¹.

Given the pervasive nature of communications, multimedia and digital technologies and the potential for broad based impact across industry and society, the Communications & Multimedia Blueprint 2018-2025 was developed with three objectives in mind:

- i) To position the C&M sector for sustainable growth amid digital disruption and broader technological advancement.

⁴⁰ The National Fiberisation And Connectivity Plan (NFCP). 2019. (2019, September 16). Retrieved from <https://www.nfcp.my>

⁴¹ Ministry of Communications and Multimedia. 2018. Communications & Multimedia Blueprint 2018-2025

- ii) To accelerate the growth and transformation of other sectors of the economy.
- iii) To create a connected, informed and empowered society.

There are six strategies and fifteen thrusts that have been assigned as a key performance indicator for 2020 and 2025 as stated in Figure 2.1, to quantify both the medium-term and the longer-term aspirations of this Blueprint. The 2020 outcomes reflect the medium-term aspiration to deliver the C&M promise for all and spur growth in a trusted, open, and robust platform-based society while the 2025 outcomes stretch performance and reflect the aspiration to position the C&M sector to capitalise on new opportunities and benefit from disruption. The strategies of establishing the fifteen thrusts are as follows:



Figure 2.1: Six Strategies and Fifteen Thrusts for Communications & Multimedia Blueprint

(Source: Ministry of Communications and Multimedia)

d) Mid Term Review Eleventh Malaysia Plan (11th MP)

The 11th Malaysia Plan (11th MP) is the final plan in achieving Vision 2020 and is the foundation for the country's future development and was launched

on May 21, 2015 with the theme 'People-Growing Growth'. People are the most important asset of the nation and the Government is committed to strengthening the prosperity of the people.

To achieve this goal, in 2020, the 11th Malaysia Plan is a sustainable growth through six strategic thrusts and six change drivers that will realise Malaysia's goal of achieving advanced and inclusive nation status⁴². The six strategic thrust of 11th MP can be referred to Figure 2.2.



Figure 2.2: 6 Strategic Thrust of 11th MP
(Sources: Eleventh Malaysia Plan 2016-2020)

More than that, Digital infrastructure plays a critical role in connecting businesses and individuals to the global marketplace, allowing people to communicate in ways never possible before due to rapid technological advances. Malaysia aspires to ensure that its citizens and economy keep pace with the digital global economy by expanding the successful roll-out of digital technologies such as the High-Speed Broadband (HSBB) and Digital Terrestrial Television (DTT).

⁴² Eleventh Malaysia Plan 2016-2020 - TalentCorp Malaysia. (2019, August 29). Retrieved from https://www.talentcorp.com.my/clients/TalentCorp_2016_7A6571AE-D9D0-4175-B35D-99EC514F2D24/contentms/img/publication/RMKe-11%20Book.pdf

This, coupled with efforts to increase the affordability of such services, and enhanced consumer protection standards, will pave the way for the ubiquity of fibre connectivity, ensuring that Malaysians have access to affordable, high-quality digital infrastructure on par with the world's developed economies. These aspirations will be achieved through four strategies as shown in Figure 2.3.



Figure 2.3: Four Strategies for Deployment of Digital Infrastructure
(Sources: Eleventh Malaysia Plan 2016-2020)

2.5 Industry and Market Intelligence

Industry and market intelligence are the collection and analysis of data of an industry by various sources of data to be utilised by the industry to make business decisions, manpower developments and training requirements. Industry intelligence is critical for developing strategies in the development of the industry, areas of manpower development and the impact of those developments. This section will provide information regarding telecommunications industry based on the industry growth and employment statistics.

2.5.1 Growth of Telecommunications Industry

Based on National Account Gross Domestic Product 2015-2018, Malaysia's economy grew by 4.7 per cent in 2018 compared to the previous year, 2017 at 5.7 per cent⁴³. Malaysia gross domestic product (GDP) in 2018 recorded RM1,361.5 billion where the main contributor came from services and manufacturing sector with 56.7 per cent and 22.4 per cent respectively. Meanwhile, the main influencer for expenditure was driven by Private Final Consumption Expenditure.

Other than that, for this research, it will focus on telecommunications industry in the services sector. As compared to previous years, percentage share to Malaysia GDP for service sector increased to 56.7 per cent in 2018 from to 55.6 per cent in 2017, 55.4 per cent in 2016 and 54.7 per cent in 2015 respectively⁴⁴. Besides that, percentage share of telecommunications industry to Malaysia GDP for 2015 to 2018 also showed a constant increase. It increased from 3.5 per cent in 2015, 3.7 per cent in 2016, and 3.8 per cent in 2017 to 3.9 per cent in 2018.

However, in terms of annual percentage change of telecommunications industry in 2018, it slightly decreased compared to previous years, 2016 and 2017. Annual percentage change of telecommunications industry decreased to 9.0 per cent in 2018 from 9.2 per cent in 2017 and 9.4 per cent in 2016 respectively⁴⁵.

⁴³ Department of Statistics Malaysia. 2019. National Account Gross Domestic Product 2018. Page 1

⁴⁴ Department of Statistics Malaysia. 2019. National Account Gross Domestic Product 2018. Page 46

⁴⁵ Department of Statistics Malaysia. 2019. National Account Gross Domestic Product 2018. Page 39

2.5.2 Employment Statistics

This section provides an overview regarding labour force, labour demand in Malaysia and employment statistics of telecommunication industry.

a) Labour Force in Malaysia

Labour force can be defined as the sum of persons in employment plus persons in unemployment. Together these two groups of the population represent the current supply of labour for the production of goods and services taking place in a country through market transactions in exchange for remuneration⁴⁶. The concept and definition of labour force in Malaysia are stated in Figure 2.4 below.

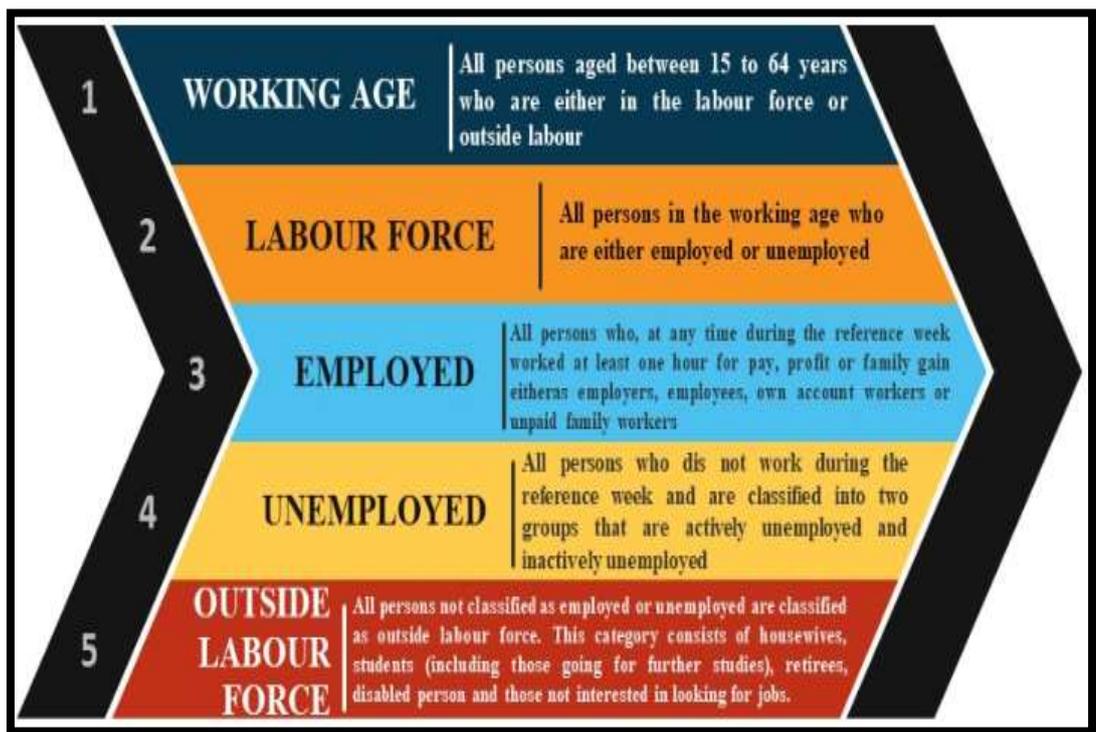


Figure 2.4: Concept and Definition of Labour Force in Malaysia

(Source: Department of Statistics Malaysia, 2019)

⁴⁶ International Labour Organization. 2018. Labour force (2019, 30 September) Retrieved from https://www.ilo.org/global/statistics-and-databases/statistics-overview-and-topics/WCMS_470304/lang--en/index.htm

Labour force in Malaysia increased by 2.0 per cent from 15.0 million persons in 2017 to nearly 15.3 million persons in 2018. The increment in labour force was contributed by 299,200 employed persons. Labour force participation rate (LFPR) in 2018 increased by 0.3 percentage points to 68.3 per cent as compared to 68.0 per cent in 2017⁴⁷. Hence, the remaining 31.7 per cent of the working age population was outside the labour force. On the other hand, the unemployment rate improved to 3.3 per cent in 2018 as compared to 3.4 percent in 2017. This shows that the country's economy is still operating with full employment where the unemployment rate is below 4.0 per cent.

b) Overview of services sector labour demand

Labour demand indicates the total labour that the economy is willing to employ at any given point of time. At the microeconomic level, labour demand by firm refers to positions in the company; and through the process of hires and separations, the information of filled positions and vacancies can be estimated. The concepts and definitions of the statistics on labour demand in this publication are as in Figure 2.5.

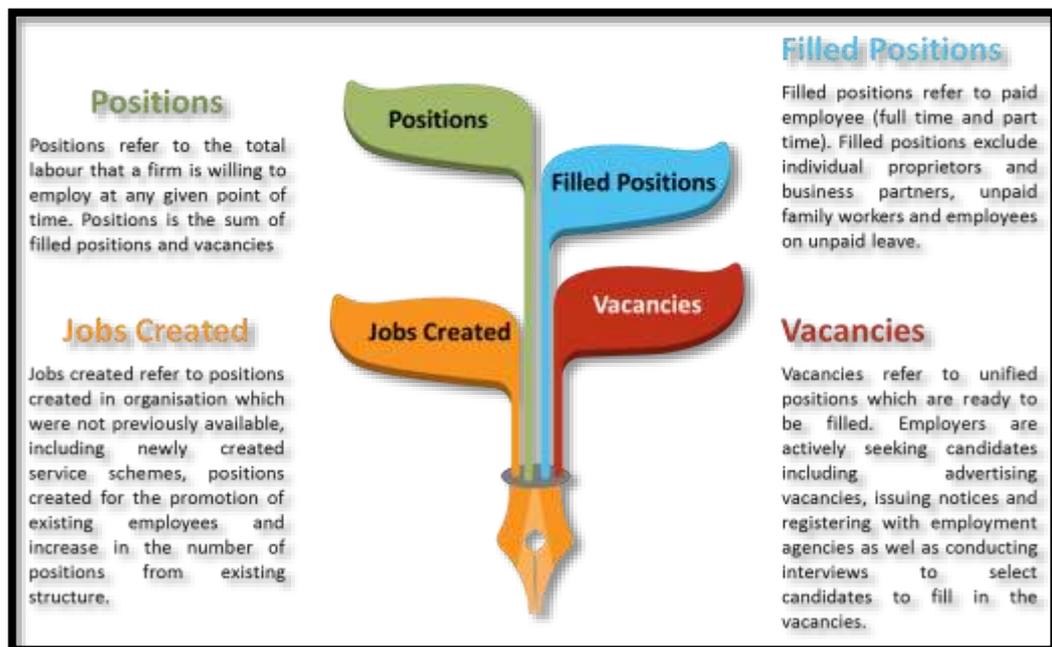


Figure 2.5: Concepts and Definitions of The Statistics on Labour Demand

(Source: Department of Statistics Malaysia, 2019)

⁴⁷ Department of Statistics Malaysia. 2019. The Labour Force Survey Report 2018. Page 12

As for telecommunications industry, the industry considered as one of sub sectors in services sector and due to the available data regarding workers are only explained by sector, services sector was chosen to be discussed in this section. The number of positions for services sector in 2018 was 4,421 thousand, went up 58 thousand from 4,363 thousand in 2017. The number of filled positions increased to 4,384 thousand (2017: 4,322 thousand) while vacancies in this sector decreased by 5 thousand. Meanwhile, in 2018, there were 51.0 thousand jobs created in the services sector⁴⁸.

Positions by skill in 2018 recorded an increase in percentage share for skilled worker to 32.7 per cent and semi-skilled worker to 47.1 per cent compare to in 2017 with 32.6 per cent and 46.8 per cent, respectively but for low skilled worker, the percentage share for position by skill in 2018 decreased from 20.6 per cent in 2017 to 20.2 per cent⁴⁹. The details of the information can be referred to Figure 2.6.

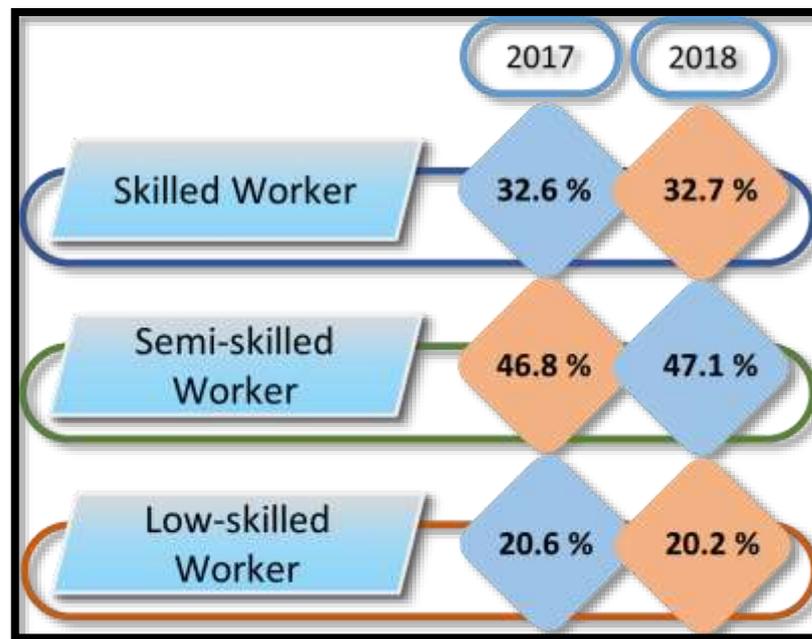


Figure 2.6: Positions by Skill in Services Sector by Percentage Share
(Source: Department of Statistics Malaysia, 2019)

⁴⁸ Department of Statistics Malaysia. 2019. Employment Statistics Second Quarter 2019. Page 15

⁴⁹ Department of Statistics Malaysia. 2019. Employment Statistics Second Quarter 2019. Page 32

Other than that, the percentage share for filled position by skill in services sector in 2018, 47.1 per cent was recorded for semi-skilled worker, 32.8 per cent for skilled worker and 20.1 per cent for low skilled worker⁵⁰. The comparison with 2017 can be referred to Figure 2.7.

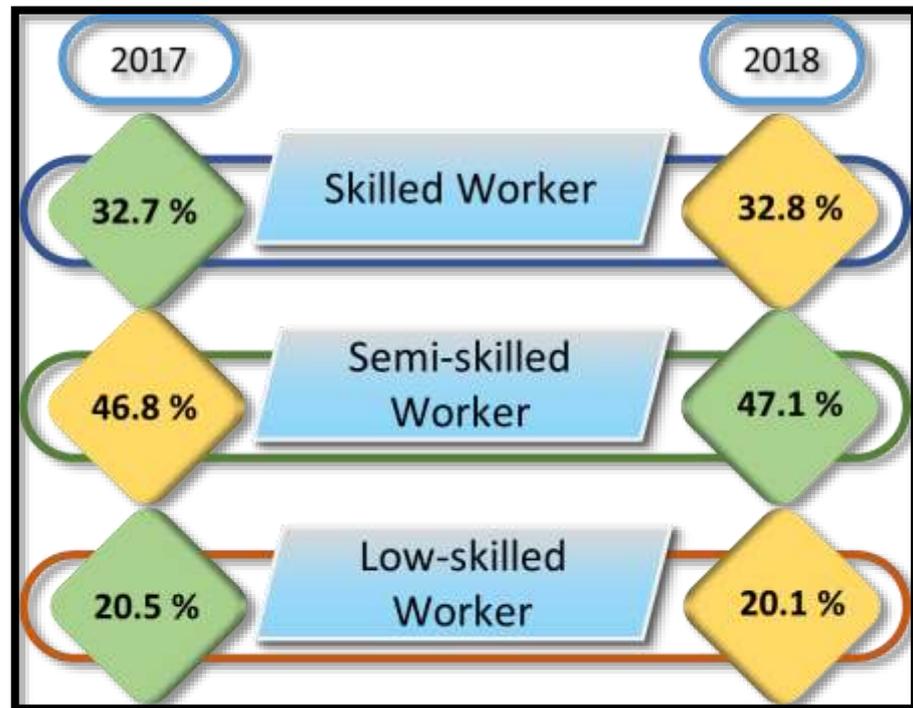


Figure 2.7: Filled Position by Skill in Services Sector by Percentage Share
(Source: Department of Statistics Malaysia, 2019)

More than that, for vacancies by skill in services sector by percentage share for 2018, 45.0 per cent was recorded for semi-skilled worker, 27.0 per cent for skilled worker and 28.0 per cent for low skilled worker⁵¹. The comparison with 2017 can be referred to Figure 2.8.

⁵⁰ Department of Statistics Malaysia. 2019. Employment Statistics Second Quarter 2019. Page 38

⁵¹ Department of Statistics Malaysia. 2019. Employment Statistics Second Quarter 2019. Page 44

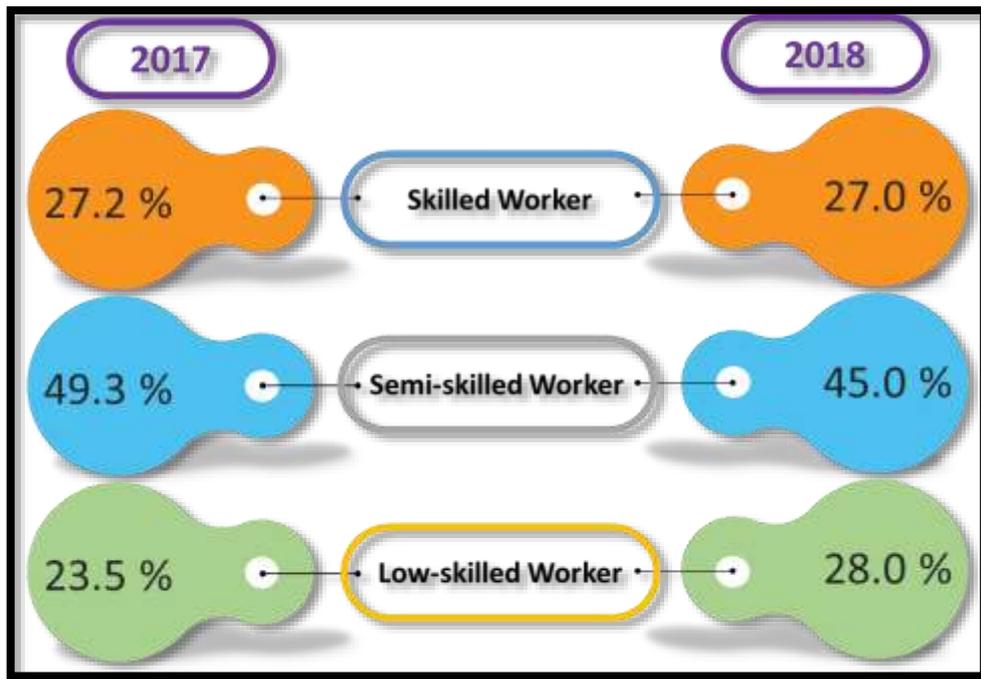


Figure 2.8: Vacancies by Skill in Services Sector by Percentage Share
(Source: Department of Statistics Malaysia, 2019)

For jobs created by skill in services sector by percentage share for 2018, 54.9 per cent was recorded for skilled worker, 38.0 per cent for semi-skilled worker and 7.1 per cent for low skilled worker⁵². The comparison with 2017 can be referred to Figure 2.9.

⁵² Department of Statistics Malaysia. 2019. Employment Statistics Second Quarter 2019. Page 50

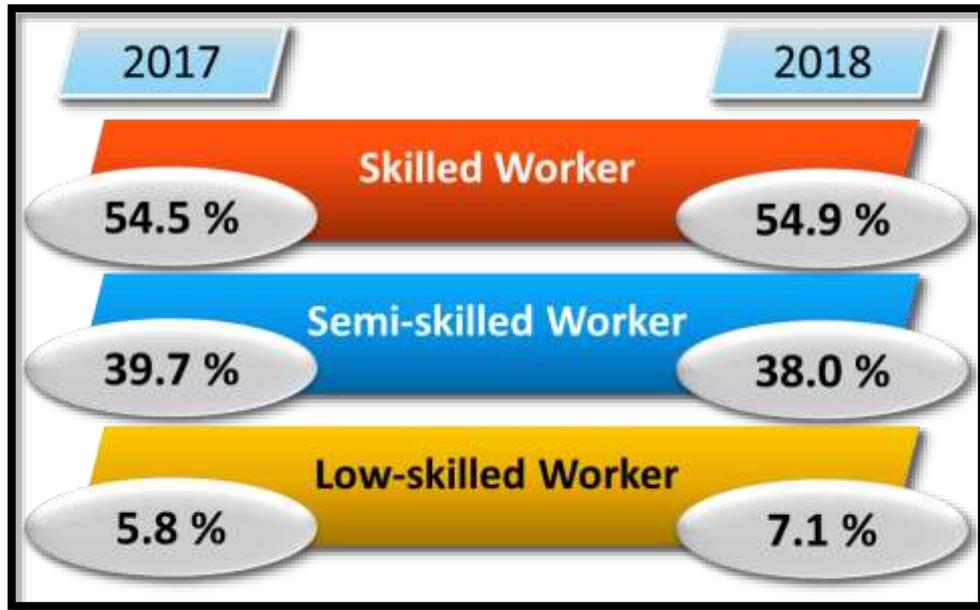


Figure 2.9: Jobs Created by Skill in Services Sector by Percentage Share
(Source: Department of Statistics Malaysia, 2019)

c) Employment growth of telecommunications industry

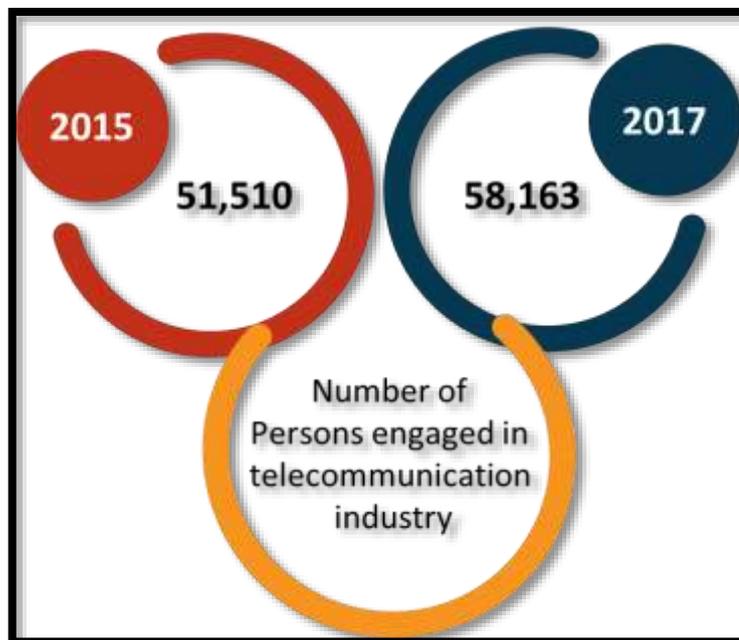


Figure 2.10: Number of Persons Engaged for Telecommunications Industry in 2015
And 2017

(Source: Department of Statistics Malaysia, 2018)

Figure 2.10 shows the number of persons engaged in telecommunications industry for 2015 and 2017. In 2015 to 2017, total number of persons engaged in telecommunications industry increased from 51,510 persons to 58,163 persons⁵³.

2.5.3 Conclusion

In conclusion, for telecommunications industry, in 2018, the contribution of this industry toward Malaysia GDP was at 3.9 per cent compared to 3.8 per cent in 2017.

More than that, for employment statistics, number of persons engaged with telecommunications industry increased from 51,510 persons in 2015 to 58,163 persons in 2017. The growth of this industry clearly shows that telecommunication industry is one of the potential industries to enhance country development in the future.

2.6 List of NOSS Relevant to MSIC 2008 Section J, Division 61

Currently there are 36 National Occupational Skills Standards (NOSS) developed by Department of Skills Development (DSD) that are relevant to areas in the telecommunications industry. The details of the existing NOSS relevant to the telecommunications industry are in the tables below.

Table 2.8: Summary of NOSS developed under the Division 61

(Source: NOSS Registry January 2019)

MSIC GROUP	CORRESPONDING NOSS/ LEVEL
J611 Wired telecommunications activities	1) D-030-1 Communication Operator (Electronic) (1997) 2) D-030-2 Communication Operator (Electronic) (1997) 3) D-030-3 Communication Personnel (Electronic) (1997) 4) D-500-2 Structured Cabling System Installer (2005) 5) D-500-3 Structured Cabling System Technician (2005) 6) EE-037-3:2012 Packet Switch Core Network Implementation & Development (NID) 7) EE-037-4:2012 Packet Switch Core Network Engineering

⁵³ Department of Statistic Malaysia (DOSM). (2018). Annual Economic Statistic 2018. Page 14

MSIC GROUP	CORRESPONDING NOSS/ LEVEL
	8) EE-037-5:2012 Packet Switch Core Network Architecture 9) EE-038-2 Circuit Switch Technician (2012) 10) EE-038-3 Circuit Switch Senior Technician (2012) 11) EE-039-2:2012 Cellular Phone Repair 12) EE-039-3:2012 Advanced Cellular Phone Repair 13) EE-321-3:2012 Transmission Infrastructure Installation and Maintenance 14) EE-321-4:2012 Wired Transmission Infrastructure Management 15) EE-321-5:2012 Wired Transmission Infrastructure Management
J612 Wireless telecommunications activities	1) EE-032-2 Technician (3G Switching) (2009) 2) EE-032-3 Senior Technician (3G Switching) (2009) 3) EE-040-3:2013 Wireless Land/Mobile Radio Installation and Maintenance 4) EE-033-2 Radio Access Network Technician (2009) 5) EE-033-3 Radio Access Network Senior Technician (2009) 6) EE-033-4 Radio Access Network Assistant Technical Executive (2009) 7) EE-033-5 Radio Access Network Technical Executive (2009) 8) EE-036-2 Radio Frequency Network Technician (2011) 9) EE-036-3 Radio Frequency Network Senior Technician (2011) 10) EE-035-2 Optical Transmission Network Technician (2011) 11) EE-035-3 Optical Transmission Network Senior Technician (2011) 12) EE-034-1 Mobile Telecommunication Junior Technician (2011)
J613 Satellite telecommunications activities	Not Available
J619 Other telecommunications activities	1) D-217-4 Telecommunication Assistant Engineer – Switching Operation (2002) 2) D-217-5 Telecommunication Engineer – Switching Operation (2002) 3) J619-001-3:2016 Telecommunications Facilities Maintenance 4) OT-011-4 Assistant Telecommunication Operational Manager- Logistic (2009) 5) OT-011-5 Telecommunication Operational Manager- Logistic (2009) 6) EE-200-3:2013 Radar Installation & Maintenance

MSIC GROUP	CORRESPONDING NOSS/ LEVEL
	7) EE-041-3:2013 Internet Protocol (IP) Network Elements Installation, Configuration & Maintenance 8) EE-041-4:2013 Internet Protocol (IP) Network Elements Testing & Troubleshooting 9) EE-041-5:2013 Internet Protocol (IP) Network Elements Planning & Advanced Troubleshooting

2.7 Overview of Telecommunications Industry in Developed Countries

This section provides an overview of developed countries in telecommunication industry. Iceland and South Korea were chosen to be discussed in this section due to their performance on telecommunication industry growth. Based on Information and Communication Technology (ICT) development index ranking top-20 countries⁵⁴ in 2017, Iceland was top in the chart with 8.98 points followed with South Korea with 8.85 points. The detailed overview of each countries is briefly discussed in Chapter 4.

2.8 Relation of Industry and Industrial Revolution (IR4.0)

Coined by German economist Klaus Schwab in 2015, the Fourth Industrial Revolution is used to describe the emergence of the Digital Economy and use of automation and data exchange in industrial technologies. Commonly referred to with the catchphrase IR 4.0 it also included the Internet of Things (IoT) and collaboration between networked machines and human beings in decision-making.

Technology experts are already speaking about the coming industrial revolution as one that has the potential to disrupt every industry in every country due to the exponential pace that is the nature of digital revolution which is at the heart of IR4.0. This is already happening in businesses and industries as robotics and artificial intelligence can take over jobs

⁵⁴Statista. 2017. Information and communication technology (ICT) development index ranking top-20 countries in 2017 (2019, August 31). Retrieved from <https://www.statista.com/statistics/267083/top-20-countries-in-ict-development-index/>

traditionally manned by human labour, in particular technical processes that can easily be computerised. The Figure 2.11 below depicts the progression of the industry revolutions.

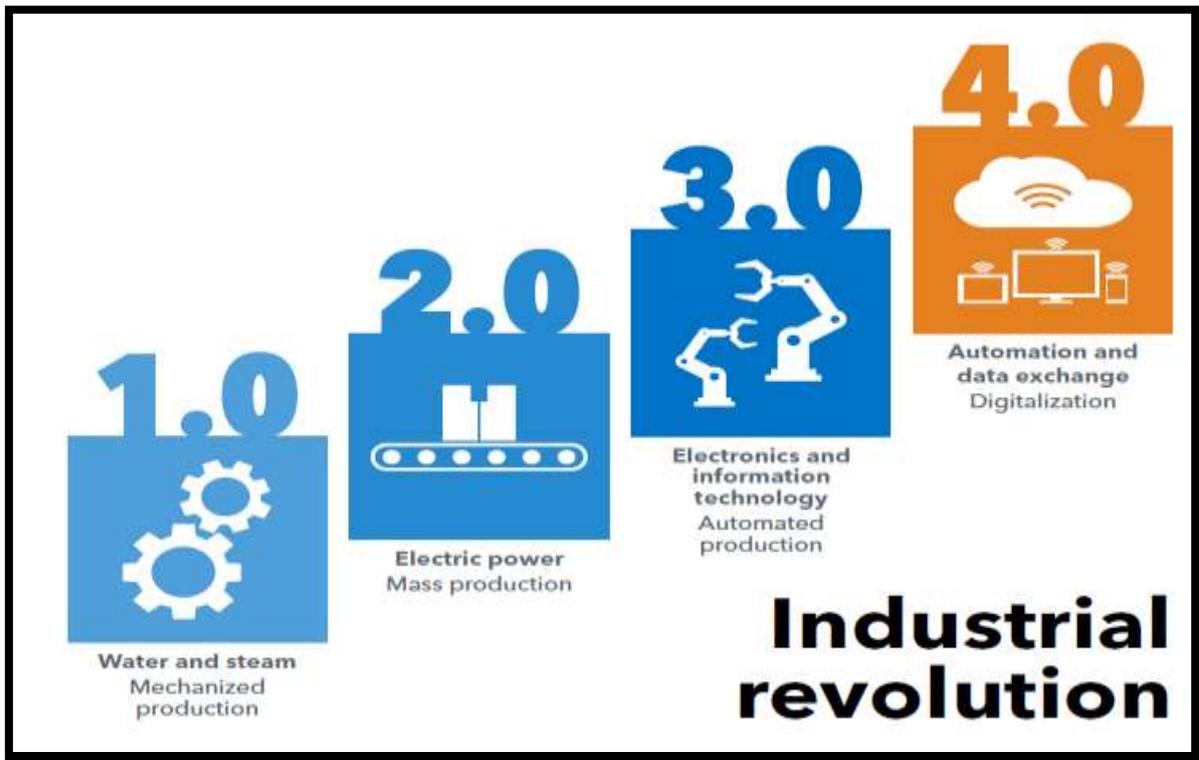


Figure 2.11: Industrial Revolution 4.0
(Source: The European Sting, 2018)

IR4.0 is a technological revolution, which starts from the First Industrial Revolution to the Third Industrial Revolution. Briefly, the First Industrial Revolution used water and steam power to mechanise production. The Second revolution used electric power to create mass production. The Third used electronics and information technology to automate production. The Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterised by a fusion and convergence of technologies that cut across the physical, digital, and biological spheres. The Ministry of International Trade and Industry (MITI) has identified the main pillars⁵⁵ of Industry Revolution 4.0 and the description⁵⁶ of each is given as in the Table 2.9.

⁵⁵ MITI. Industry 4.0. FAQ. www.miti.gov.my

⁵⁶ Vaidyaa, S., Ambadb, P., Bhoslec, S. (2018). Industry 4.0 – A Glimpse. 2nd International Conference on Materials Manufacturing and Design Engineering. Elsevier B.V.

Table 2.9: The 9 Pillars of Industry Revolution 4.0's Pillars Acknowledged by MITI

(Source: Ministry of International Trade and Industry (MITI))

NO.	IR4.0 PILLARS	BRIEF DESCRIPTION
1.	Autonomous Robots	Coordinated and automated actions of robots to complete tasks intelligently, with minimal human input.
2.	Big Data Analytics	The analysis of ever larger volumes of data. Circulation, collection, and analysis of information is a necessity because it supports productivity growth based on a real-time decision-making process.
3.	Cloud Computing	Storing and accessing data and programs over the Internet instead of your computer's hard drive.
4.	Internet of Things (IOT)	All machines and systems connected to the production plant (as well as other systems) must be able to collect, exchange and save these massive volumes of information, in a completely autonomous way and without the need of human intervention.
5.	Additive Manufacturing (3D printing)	Use in prototyping, design iteration and small-scale production and often described as "rapid prototyping" - produce the desired components faster, more flexibly and more precisely than ever before.
6.	System Integration	The process of linking together different computing systems and software applications physically or functionally to act as a coordinated

	whole via Internet of Things-IoT.
7. Cyber-security	With the increased connectivity and use of standard communications protocols, the need to protect critical industrial systems and manufacturing lines from cybersecurity threats is increasing.
8. Augmented Reality	Augmented-reality-based systems support a variety of services, such as selecting parts in a warehouse and sending repair instructions over mobile devices - provide workers with real-time information to improve decision making and work procedures.
9. Simulation	Simulations will leverage real-time data to mirror the physical world in a virtual model, which can include machines, products, and humans. This allows operators to test and optimize the machine settings for the next product in line in the virtual world before the physical changeover, thereby driving down machine setup times and increasing quality.

Telecommunication sector encounters big data issues due to the velocity of data flow. Internet of Things (IoT) is one of the approaches that can solve the problem. IoT data source can be used to meet up with requirements of communication service providers to ensure rapid response to events, reliability and security. IoT data sources help telecommunication companies to profit from a large amount of information to promote the sector. Due to the popularity of smart phones and other mobile devices, telecommunication service providers need to store and process this large volume of data that is being sent and received by

networks. IoT data sources can improve the profitability of telecommunication industry by improving customer's experience, security and optimising network service usage⁵⁷.

IoT data source helps in the management of security services. They also provide rapid response to an incident by correlating and utilising average data from firewalls, endpoint and network devices. Efficient data platforms can be created using the new technology innovations to achieve scalability and meet reliability standards. These new solutions will combine both event processing and machine learning algorithms to investigate and prevent security threats. Thus, the telecommunication industry applies IoT data sources in the area of network service optimisation and customer acquisition to enhance customer's satisfaction and improve reliability.

More than that, telecom operators are facing difficulties in dealing with the avalanche of data produced by connected devices, customer behaviours, social media networks, call data records, government portals, and billing information but big data and analytics solutions can transform such challenges into new opportunities efficiently. Big data and analytics solutions can help telecom operators to integrate new types of data in larger volumes and in real-time. Also, it can aid in optimising service, enhancing customer satisfaction, boosting revenues, and improving overall business value⁵⁸.

Other than that, cloud technology helps telecom players improve their services and gain competitive edge due to cloud's ability of enhancing agility and efficiency as compared to conventional IT infrastructures.

The following benefits of cloud computing are available for telecom industry;

- a) Improves quality and performance of services;
- b) Device and network independent access to communication and IT services; and
- c) Mitigates upfront costs while boosting TCO.

⁵⁷ Alexandre Figueiredo. (2016). How IoT Will Impact the Telecom Industry

⁵⁸ CloudOYE. 2018. Benefits of cloud hosting in telecom services. Retrieved from <https://www.cloudoye.com/telecom-industry-on-cloud>

2.9 Conclusion

Based on the literature review findings, the area of Telecommunications is seen as one of the main contributors to the economic performance and foreign investment. Currently there are several stakeholders in the industry comprising of government agencies (i.e. MCMC, NACSA, MDEC, etc.) involved in the development and monitoring of the industry in terms of compliance to the relevant acts and regulations.

In order to increase employment mobility for the workforce, it is imperative that the occupational areas are redefined in the Occupational Structure. This is to allow scalability of skills and to accommodate the emerging skills required in the current Industrial Revolution, which is the IR4.0. Segmentation of the industry based on the Malaysia Standard Industrial Classification 2008 (MSIC 2008) is also taken into consideration in order to be in sync with data from the Department of Statistics on labour demographics. This industry in particular falls under 2 digits MSIC 2008 Division 61: Telecommunications.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The focus of this study is on telecommunications industry. Hence, this section provides a detailed description of the research methodology utilised in the study. It encompasses the overall review of the research approach and summary. In developing a better understanding regarding current development of telecommunications industry in Malaysia, a combination of research methods or the mixed methods (triangulation method) were utilised in the study in order to ensure the data collection and findings are relevant to the research investigation.

In order to get in-depth understanding on the results from the qualitative data, the qualitative approach was deployed. Document analysis and focus group discussion with industry experts are a key part of the methodology as it facilitates understanding of key factors that would influence the industry. Therefore, the semi-structured interviews seem to be a very practical way to reflect the realities of the industry under study.

In the quantitative and cross-sectional approaches, the method of data collection was mainly on survey. The scale was developed to contribute to the study industry. The questionnaires are directly administered to all the selected respondents in the telecommunications industry.

3.2 Research Approach

There are 7 phases of research approach was subjected in this research as discussed briefly below:

Phase 1: Identification of research problem: Before going through the research, the research problems were identified to get initial understanding on why it is important to do a research regarding occupational structure on telecommunications industry. The research problem was gathered through secondary data and literature review.

Phase 2: Document Analysis: Current market scenario and growth were identified through reviewing relevant information and data available from various source such as reports, published article, newspaper and websites.

Phase 3: Preparation of Qualitative Data Procedure: The interview protocol was in the form of semi structure questionnaire that was prepared in line with the objective of this study. The interview protocol was developed by the researchers themselves. The validity for this study was verified by employing triangulation strategy. In this approach, the researchers triangulated different data sources of information to build a coherent justification of the different themes in close relation to the aim of the study. Focus group discussion was conducted where respondent was from industry experts and practitioners were chosen.

Phase 4: Quantitative Instrument building: Questionnaire was verified in focus group discussion with the guidance of industry experts in order to ensure the elements in questionnaire are relevant with current industry scenario.

Phase 5: Quantitative data collection: After the questionnaire validation process, the data collection was deployed. Both self-administer and internet survey was carried out nationwide for generalisation purposes. Sample from the population was collected at random to be representative.

Phase 6: Data Analysis for the qualitative and quantitative data approach: descriptive analysis was utilised to describe issues related to demand for the skills, jobs title, and critical job titles for the telecommunications industry.

Phase 7: Discussion and recommendation: The discussion of the gathered data was performed and relevant recommendation was implemented to ensure the objective of the study is achieved and the collected data are relevant with current telecommunication industry scenario.

For this study, there are 3 approaches were employed to achieve the objective of the study as follows:

- a) Document Analysis;
- b) Focus Group Discussion; and
- c) Survey

3.2.1 Document Analysis

This approach requires reviewing or evaluating documents—both printed and electronic (computer-based and internet-transmitted) materials. Like other analytical methods in qualitative research, document analysis requires data to be examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge. The gathered data from this approach was discussed the current overview of the industry relevant to research objective and industrial need.

a) Data Collection Strategy

Basically, document analysis involves three main sources of data and information:

- i) Economic Database;
- ii) Official Reports and Databases from Relevant Public and Private agencies;
and
- iii) Published articles.

i) Economic Database

The information related to Malaysia's labour markets or demand is highly relevant to this study. Thus, the information from the Department of Statistics Malaysia (DOSM) - MSIC and Occupation categories at 1-digit MASCO, Mid-term review 11th Malaysia Plan, National Budget and Talent Corporation is gathered, analysed and reported.

The information from the Economic Database serves two purposes:

- Produces initial overview regarding current market situation and growth of the telecommunications industry.
- Serves as control figures and guideline database when evaluate data gathered through survey.

ii) Official Reports and Databases from Relevant Public and Private Agencies

In addition to the Economic Database reports, database from other government agencies (local and international agencies) that are relevant to telecommunications industry was collected and assessed. Based on initial observation, the following databases contain relevant information for the industry.

- Local database – Department of Skills Development (DSD), Ministry of Communications and Multimedia Malaysia (KKMM), and Malaysian Communications and Multimedia Commission (MCMC)
- International database – Organisation for Economic Co-operation and Development (OECD), World Bank, and European Union (EU).

In addition, online resources produced by regional and international agencies was gathered to be discussed as additional finding for this study.

b) Data Analysis Procedure

Based on the three sources of data and information, the following data analysis procedures were carried out.

- i) Evaluated the economic performances of the industry by looking at several macroeconomic indicators (such as GDP, employment and output).
- ii) Assessed the industry viewpoint in relation to provincial and global context.
- iii) Determined the related government agencies, statutory body, professional bodies and association in the industry.
- iv) Determined the related acts and legislation in the industry.
- v) Determined the government policies and initiatives for the industry.
- vi) Determined the review of the current and future workforce (such as occupations, and salaries and wages).
- vii) Analysed technological development in the industry (such as robotic & automation as well as element of IR4.0).

3.2.2 Focus Group Discussion

A focus group discussion (FGD) is a qualitative research approach in the social sciences, with a particular aim to extract the desired information through in depth discussion. In this study, FGD was deployed to collect the occupational structure of telecommunications industry, to identify job titles and occupational description, jobs and competencies in demands in the industry, critical jobs, assessment of curriculum and training programs; potential workforce challenges; future outlook and strategy for industry development.

FGD is a predetermined semi-structured interview led by a skilled and experience facilitator. More than that, for this study, FGD involved 6 industry experts who are selected and appointed for developing this occupational framework. The facilitator asks broad questions to elicit responses and generate discussion among the experts. The facilitator goal is to generate the maximum amount of discussion and opinions within a given time period to develop occupational standards in accordance with the format and formulas

prescribed by the DSD. Facilitators were commissioned by the DSD. In terms of industry experts, they have at least 7 years' industry experience and works in a company registered with *Suruhanjaya Syarikat Malaysia (SSM)*.

The semi structured questions developed for FGD were based on occupational structure, occupational description, competencies in demand, jobs title, critical jobs titles, jobs related to IR 4.0 and other related issues.

Five main semi-structured questions were constructed as follows:

- 1) What will be the industry occupational structure (OS) looks like?
- 2) What will be the occupational descriptions for each job title?
- 3) How to determine the demand for the industry skills?
- 4) How to determine the relevant jobs title that is in line with IR4.0?
- 5) How to determine the critical jobs for the industry?

a) Data Collection Strategy

For FGD, in the process of collecting the data, brainstorming technique was performed with the industry experts to gather the desired data and information. The information extracted from document analysis was discussed with industry experts to verify the collected data in order to correlate the data with the input obtained from FGD. Figure 3.2 shows the Focus Group Discussion flow chart.

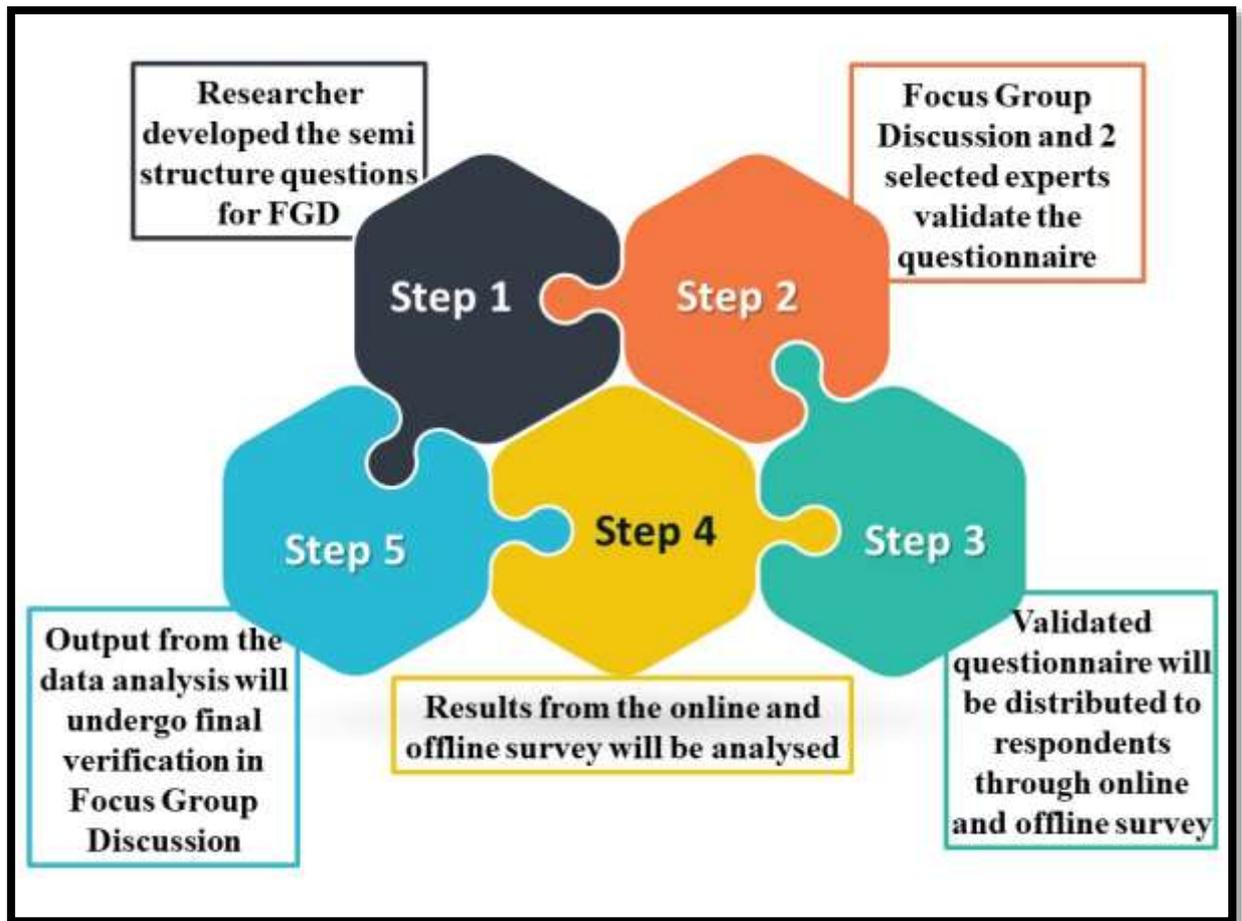


Figure 3.1: Focus Group Discussions Flow Chart

3.2.3 Survey

For this study, survey was used to accomplish the four keys critical information namely competency in demand, jobs in demand, emerging skills and related issues. Survey was also deployed to consolidate the information gathered from document analysis and focus group discussion. Google form was used for the survey. The survey was distributed to the related organisation based on organisational level.

The survey form was divided into 4 section as follows:

Section 1: Competency in Demand

This section explores the competency that is required by the industry. Another objective of this section is trying to figure out the skills gap and how to overcome the gap.

Section 2: Jobs in Demand

This section is aimed to determine which category of workers that is in shortage supply or over supply. The category is based on MASCO such as skilled workers, semi-skilled workers and low skilled workers.

Section 3: Emerging Skills

This section is trying to determine the readiness of industry players and the workers in the advent of Industry 4.0. The technology drives or pillars of IR4.0 are listed and the respondents have to decide the relevancy of each element in their line of duty.

Section 4: Related Issues

This section explores the common issues surrounding the industry. The respondents are asked to choose whether the issues are related to the industry.

a) Establishment and Sampling procedure

The establishment of this study consists of companies in Malaysia. According to the Economic Census 2016, there are 1,135 companies in Malaysia⁵⁹. This study used organisation as a unit of analysis and the respondents were owners/managers of the companies in Malaysia. Owner / managers are chosen because they are usually involved in day-to-day running of the businesses, and therefore they are in a better position to provide the needed, available and accurate information about their companies⁶⁰.

Based on the total population of about 1,135 companies from the sampling frame the appropriate sample size at 10 percent margin of error should be 64 respondents⁶¹. This sample size conforms to the rule of thumb as suggested by Roscoe (1975) that the optimum sample size should be between 30 and 500 for most

⁵⁹ Department of Statistics Malaysia. 2016. Economic Census 2016- Information and Communication. Page 93

⁶⁰ Chandler, G. N., & Hanks, S. H. (1994). Market attractiveness, resource-based capabilities, venture strategies, and venture performance. *Journal of business venturing*, 9(4), 331-349.

⁶¹ Baruch, Y., & Holtom, B. C. (2008). Survey response rate levels and trends in organizational research. *Human relations*, 61(8), 1139-1160.

research⁶². Thus, a sample of 64 respondents was the sample size representing the population in this study. For respondent's response rate, based on Brauch, Y & Holtom, B.C (2008), the average level of response rate is 52.7 per cent. Therefore, the number of targeted respondents is 34. However, to minimise errors in sampling and to take care issues of non-response, the size of sampled are doubled and a total of 70 questionnaire were distributed to selected companies or organizations⁶³. After data collection exercise was performed, there are 58 totals of questionnaire collected. The targeted respondents were among the managerial levels in the related company and association in the industry or human resources director.

This study adopts probability random sampling. Probability sampling design is chosen as opposed to non-probability sampling because of the need to generalise the findings of this study. This sampling design is also most suited for this study because each element in the population will have the same probability of being chosen.

Simple random sampling was used in selecting the sample. This sampling technique only requires the researcher to have a list of all members of the population which allows him to get access to any member who might be chosen. Being simple it poses the least bias and offers the most generalisability, and thus it is the best single way to obtain a representative sample⁶⁴. Other than that, the total number of establishments in telecommunications industry cannot be segregate based on MSIC 2008 group due to unavailability of reliable data regarding the number of establishments for telecommunications industry. Based on sample size calculator software Raosoft, the sample size was calculated and the results was shown in Table 3.1. This research used 10% margin of error based on Weisberg & Bowen (1977) which stated 10% margin of error are acceptable for this kind of research.

⁶² Roscoe, J. T. (1975). *Fundamental research statistics for the behavioral sciences* [by] John T. Roscoe.

⁶³ Hair, J. F., Wolfinbarger, M. F., & Ortinall, D. J.(2008). *Essential of marketing Research*.

⁶⁴ Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. John Wiley & Sons.

Table 3.1: Number of Targeted Respondents According to MSIC Group

SECTION	J	INFORMATION AND COMMUNICATION	NUMBER OF ESTABLISHMENT	NUMBER OF SAMPLE ESTABLISHMENT	NUMBER OF TARGETED RESPONDENTS	NUMBER OF ACTUAL RESPONDENTS
DIVISION	61	Telecommunications				
GROUP	611	Wired telecommunications activities	484	1,135	64	32
	612	Wireless telecommunications activities				
	613	Satellite telecommunications activities				
	619	Others telecommunications activities	651			
					58	

b) Questionnaire design

For this study, the questionnaires were designed based on the feedback from focus group discussion which are based on the four keys critical information which are competency in demand, jobs in demand, emerging skills and related issues.

To increase the response rate and consistent responses, the questionnaires was designed based on close ended question on interval scale appropriate to the instrument.

c) Measures and Instrumentation

Establishing the validity and reliability of the survey questionnaire before it could be used is important because it can determine the accuracy of the results as well as increase the credibility of the research findings.

The most commonly used validity test is content validity. Content or face validity is the extent to which all aspects of the intended constructs are represented in the measurement as well as the extent to which others believe the method of measurement makes sense or fits the defined concept⁶⁵. Content validity was performed in the pre-test stage by two experts from academic and industry sector. They are expected to identify the content, grammar, phrasing of sentences and understanding of the items used. After pre-testing stage is completed, a pilot test was conducted to pre-test the instruments of this study. 10 respondents were chosen and none of the items required modification

The questionnaire is divided into four sections namely: Section 1, Section 2, Section 3, and Section 4.

For Section 1, discussed regarding competency in demand and will use “tick where applicable” option from High in demand, Mid in demand and Low in demand measuring the competency in demands in telecommunications industry.

For Section 2, discussed on jobs in demand and will use “tick where applicable” option ranging from High in Demand, Mid demand, and Low in demand measuring the shortage of manpower in telecommunications industry.

⁶⁵Rucci, P., Rossi, A., Mauri, M., Maina, G., Pieraccini, F., Pallant, S., ... & Equip, P. I. G. (2007). Validity and reliability of the quality of life, enjoyment and satisfaction questionnaire, short form. *Epidemiology and Psychiatric Sciences*, 16(1), 82-87.

For Section 3, Emerging skills was discussed in this section. It contains multiple choice question to determine which emerging skills from 11 pillars of IR 4.0 are closely related to the telecommunications industry.

For Section 4, related issues regarding the industry was discussed using 4 interval scale ranging from 4 (Strongly Agree), 3 (Agree), 2 (Disagree) and 1 (Strongly disagree) measuring the key issues in telecommunications industry.

d) Data Collection Strategy

Costing is an important consideration that influences the determination of sampling size for a primary survey. The population of the industry is large and will require a significant financial budget if a nationally representative survey is the primary target. The consultation with related associations concluded that a nationally representative survey was not feasible. Instead of aiming for a nationally representative sample, the survey aims to increase only participation rates from industries.

Three strategies to increase the number of responds for the data collection were utilized as follows:

- i) Targeted of associations' members. The secretariat of each association has agreed to distribute the questionnaire;
- ii) Industry engagements/interviews/visits were scheduled over a period 2 months to seek their assistance to answer the survey and distribute to the members of the respective associations; and
- iii) Assistance from KKMM & MCMC to provide the institutional support when engaging the selected respondents.

e) Data Analysis Procedure

The following analyses were performed for the online survey:

- i) Analysis of critical occupations identified by the industry;
- ii) Analysis of future trend of the occupational demand by various skills category including TVET related occupations;
- iii) Analysis of skills gaps between supply and demand according to NOSS and MQA standards; and
- iv) Analysis of training provided by industries to employees.

3.3 Conclusion

In this section, the justification of each selected research methodology was discussed. The selected research methodologies are document analysis, survey and questionnaire and focus group discussion.

Document analysis was chosen due to its efficiency and effective way of gathering data because documents are manageable and practical resources. Documents are commonplace and come in a variety of forms, making documents a very accessible and reliable source of data. Obtaining and analysing documents is often far more cost efficient and time efficient than conducting the research and experiment. Document analysis was a suitable method for this research because this research requires more information such as current statistics for related industry and the growth of the industry.

More than that, the survey was deployed in this research because questionnaires may be taken anonymously or in private, this method may be more effective for gathering sensitive information or when you want statistical data about what the majority of a certain group of people think. The shorter and more concise the questionnaire and the more specific the group of respondents are, the more effective the results will be. Focus group discussion was deployed in this research due to the free and open discussion among the respondents results in generation of new ideas that can be very useful for decision-making. It is also a fast way to gain the needed information regarding job title in the related industry. This approach is time saving and an effective way to gather information from many sources.

CHAPTER 4: FINDINGS

4.1 Introduction

This chapter elaborates the findings of the study. The findings revolve around the objectives set for the study namely; to produce Occupational Structure (OS) for telecommunications industry, to determine competencies in demand for telecommunications industry, to identify, critical job titles in telecommunications industry; to identify job titles relevant to IR4.0 and to identify Occupational Descriptions (OD) of critical job titles from the OS.

4.2 Findings Analysis

This section provides findings analysis from survey and Focus Group Discussion (FGD) regarding telecommunications industry. There are 4 section discussed in this section namely jobs in demand, competencies in demand, emerging skills and related issues for telecommunications.

4.2.1 Discussion of Results

The identified job areas and job titles for the telecommunication industry were obtained through FGD with industry experts during the development workshop. Based on the discussion held during the development workshops, the industry experts had identified that the telecommunications industry OF were discussed based on the 4 main groups in Division 61 which were: -

- a) Wired Telecommunications activities
- b) Wireless Telecommunication activities
- c) Satellite Telecommunication activities
- d) Others Telecommunications activities

There are 58 totals respondents recorded after the data collection exercise performed. Based on number of target respondents on Table 3.1 in Chapter 3, the number of actual respondents collected are higher than number of target respondents which concluded that the number of respondents is sufficient to represent the industry.

4.2.2 Jobs in Demand

Jobs in Demand or critical job titles can be defined as the job titles that hard to fill, job titles that strategic to the industry and job titles that require specific skill experience. Based on the FGD with the expert panels of the industry, for this section certain category of skills correspond to the level of MQF are used in this research as listed in Table 4.1 below.

Table 4.1: Category of skills correspond to the level of MQF

Category of skills	Low Skilled Worker	Semi-Skilled Worker	Skilled Worker
Level	1	2 & 3	4 - 8

Based on the focus group discussion, jobs in demand, factors contributing to the demand and specific requirements and skills for the telecommunications industry were identified and listed in Table 4.2 below.

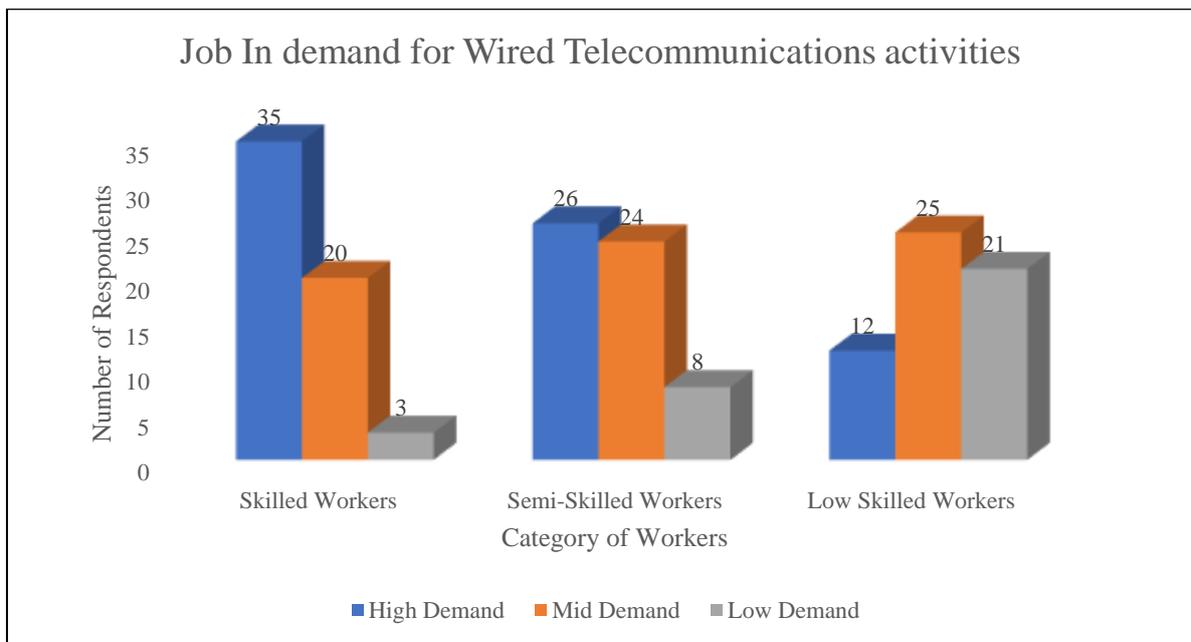
Table 4.2: Jobs in demand for Telecommunications Industry

No.	Category of Workers	Factor(s) contributing to the demand	Specific requirements and skills
1	Low Skilled Worker (Refer to Annex 4)	a) Difficulties in recruiting local workers due to terms and condition of the job being offered b) Salary scheme c) Working hour d) Working environment (remote area)	i) Demand for permanent job ii) Normal working hours iii) Able to adapt with work pressure

No.	Category of Workers	Factor(s) contributing to the demand	Specific requirements and skills
		<ul style="list-style-type: none"> e) Work pressure f) Lack of communication skills/ language barrier – liaise with stakeholder (supplier and client) g) Lack of certification (safety, well trained) h) Industry saturation i) Technology advancement j) Competition with foreign worker k) Job requirement – frequent traveling, work condition. 	
2	Semi-Skilled Worker (Refer to Annex 4)	<ul style="list-style-type: none"> a) Mismatch of qualification, knowledge and required skills to perform the job function b) High salary expectation c) Limited requirement for personnel in the sector d) Competition with foreign worker e) Government policies – foreign workers f) Know-who g) Governance of knowledge transfer from expatriate 	<ul style="list-style-type: none"> i) Qualification that is relevant to the job function ii) Knowledge that is required to perform the job function iii) Skills that are required to execute the task
3	Skilled Worker (Refer to Annex 4)	<ul style="list-style-type: none"> a) Mismatch of qualification, knowledge and required skills to perform the job function b) High salary expectation c) Limited requirement for personnel in the sector d) Competition with foreign worker e) Government policies – foreign workers f) Know-who g) Governance of knowledge transfer from expatriate 	<ul style="list-style-type: none"> i) Qualification that is relevant to the job function ii) Knowledge that is required to perform the job function iii) Skills that are required to execute the task iv) Operation and management skills v) Knowledge on current or latest technology

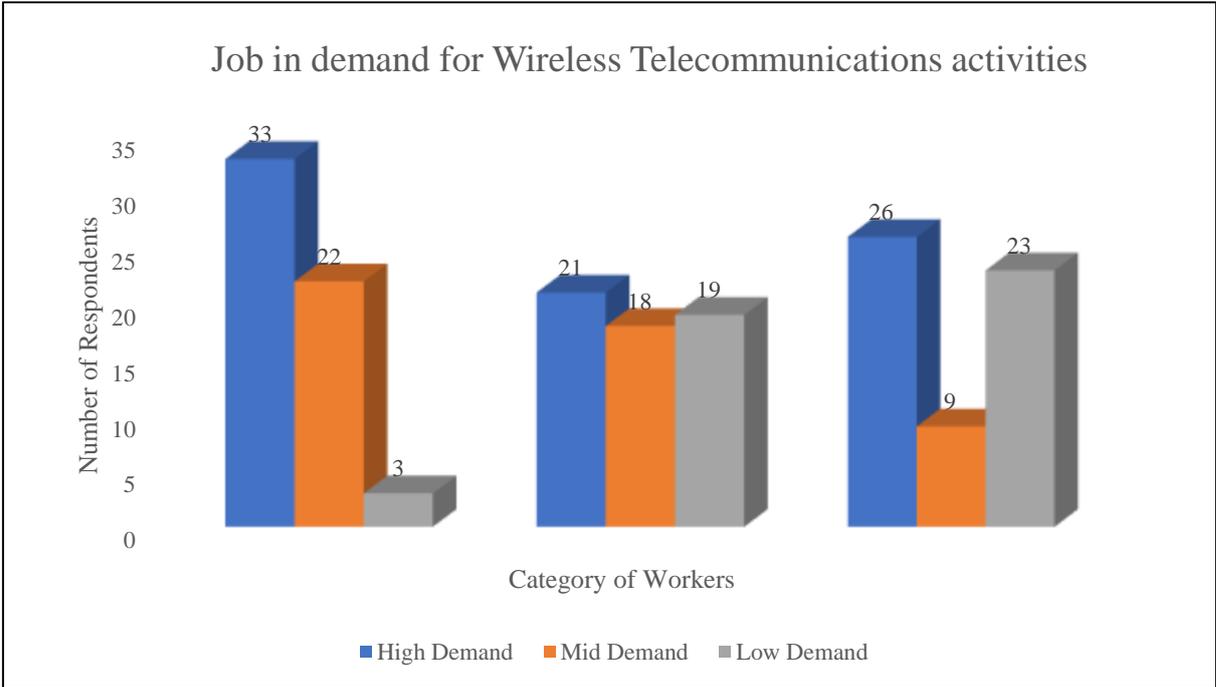
The jobs in demand for wired telecommunications activities, wireless telecommunications activities, satellite telecommunications activities and others telecommunications activities are obtained from the data survey of 58 respondents as shown in Figures 4.1, 4.2, 4.3 and 4.4 below.

Figure 4.1 shows jobs in demand for wired telecommunications activities in telecommunications industry. From the data survey obtained from 58 respondents, 35 respondents agreed that skilled workers are high in demand, followed by semi-skilled workers with 26 respondents agreed for mid in demand and for low-skilled workers 25 respondents agreed for mid in demand. This shows that skilled workers are more in demand, followed by semi-skilled workers and low skilled workers.

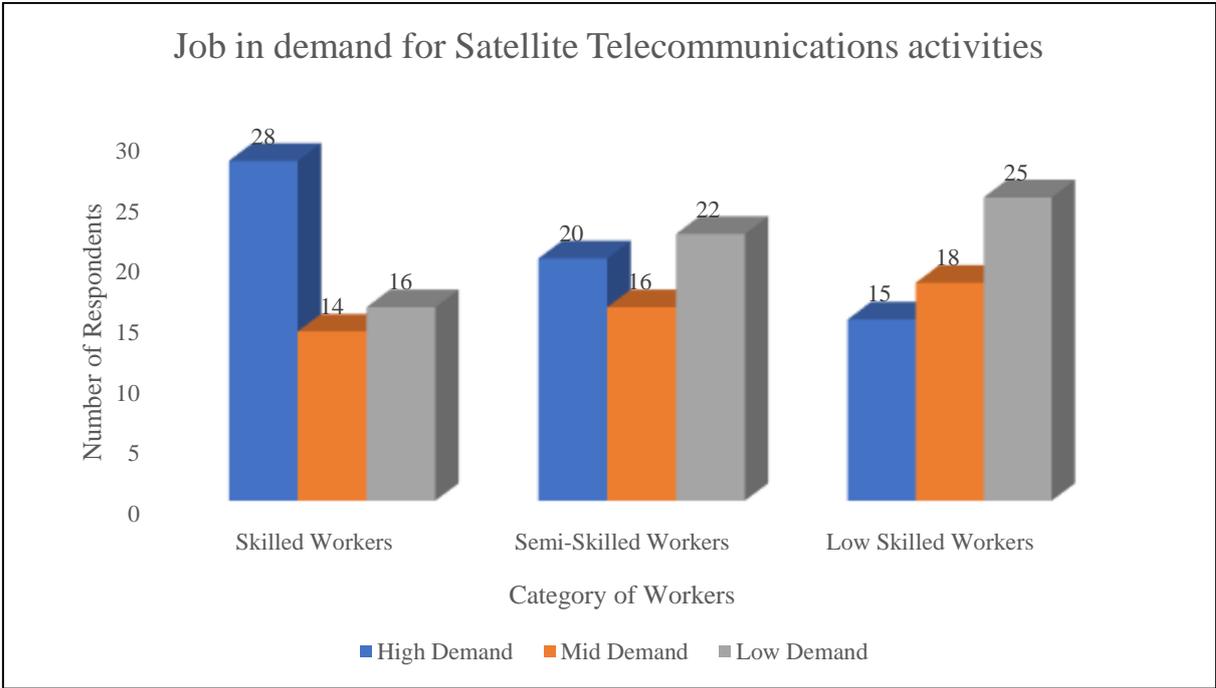


Figures 4.1: Jobs in Demand for Wired Telecommunications Activities

Figure 4.2 shows jobs in demand for wireless telecommunications activities in telecommunications industry. From the data survey obtained from 58 respondents, 33 respondents agreed that skilled workers are high in demand, followed by low skilled workers and semi-skilled workers with 20 and 26 respondents agreed for high in demand. This shows that skilled workers are more preferred, followed by low skilled workers and semi-skilled workers.



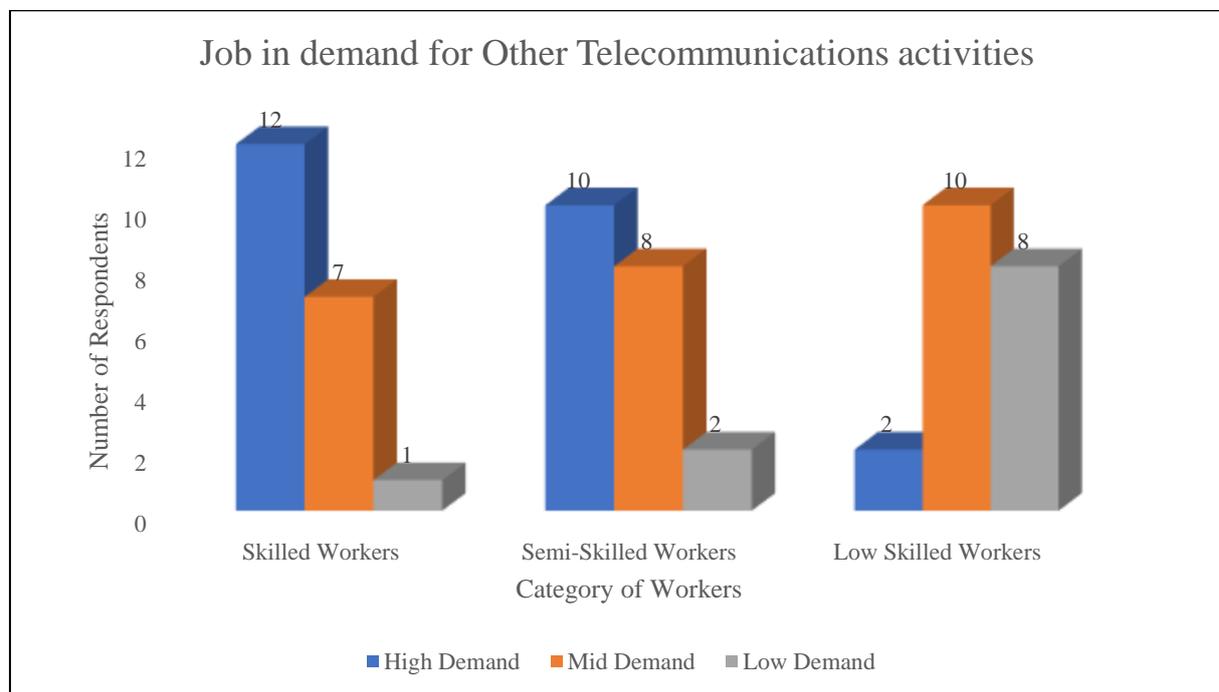
Figures 4.2: Jobs in Demand for Wireless Telecommunications Activities



Figures 4.3: Jobs in Demand for Satellite Telecommunications Activities

Figure 4.3 shows jobs in demand for satellite telecommunications activities in telecommunications industry. From the data survey obtained from 58 respondents, 25 respondents agreed that skilled workers are high in demand, followed by semi-skilled workers and low skilled workers with 22 and 25 respondents agreed for low in demand. This shows that skilled workers are more dominant, while low skilled workers and semi-skilled workers are low in demand in satellite telecommunications activities.

Figure 4.4 shows jobs in demand for other telecommunications activities in telecommunications industry. From the data survey obtained from 58 respondents, 12 respondents agreed that skilled workers are high in demand, followed by semi-skilled workers with 10 respondents agreed for high in demand. While for low skilled workers, 10 respondents agreed that they are in mid demand. This shows that skilled workers and semi-skilled workers are more dominant, while low skilled workers are low in demand in other telecommunications activities.



Figures 4.4: Jobs in Demand for Other Telecommunications Activities

In summary, based on the survey results, it can be concluded that most of the respondents agreed that the jobs in demand in telecommunications industry in wired telecommunications activities, wireless telecommunications activities, satellite telecommunications activities are for skilled and semi-skilled workers. However, for wireless telecommunications the low skilled workers are also identified as job in demand. Finally, it can be concluded that most of the jobs which have been listed based on FGD are parallel and related to the survey result obtained by respondents in telecommunications industry.

4.2.3 Competencies in Demand

This section provides competency in demand in telecommunications industry. Competency in demand are defined as a specific set of skills in particular job that is highly required by current industry.

There are 20 competencies in demand identified in FGD which are listed in Table 4.3. The factors contributing to the demand and specific requirements and skills can be referred to Table 4.3.

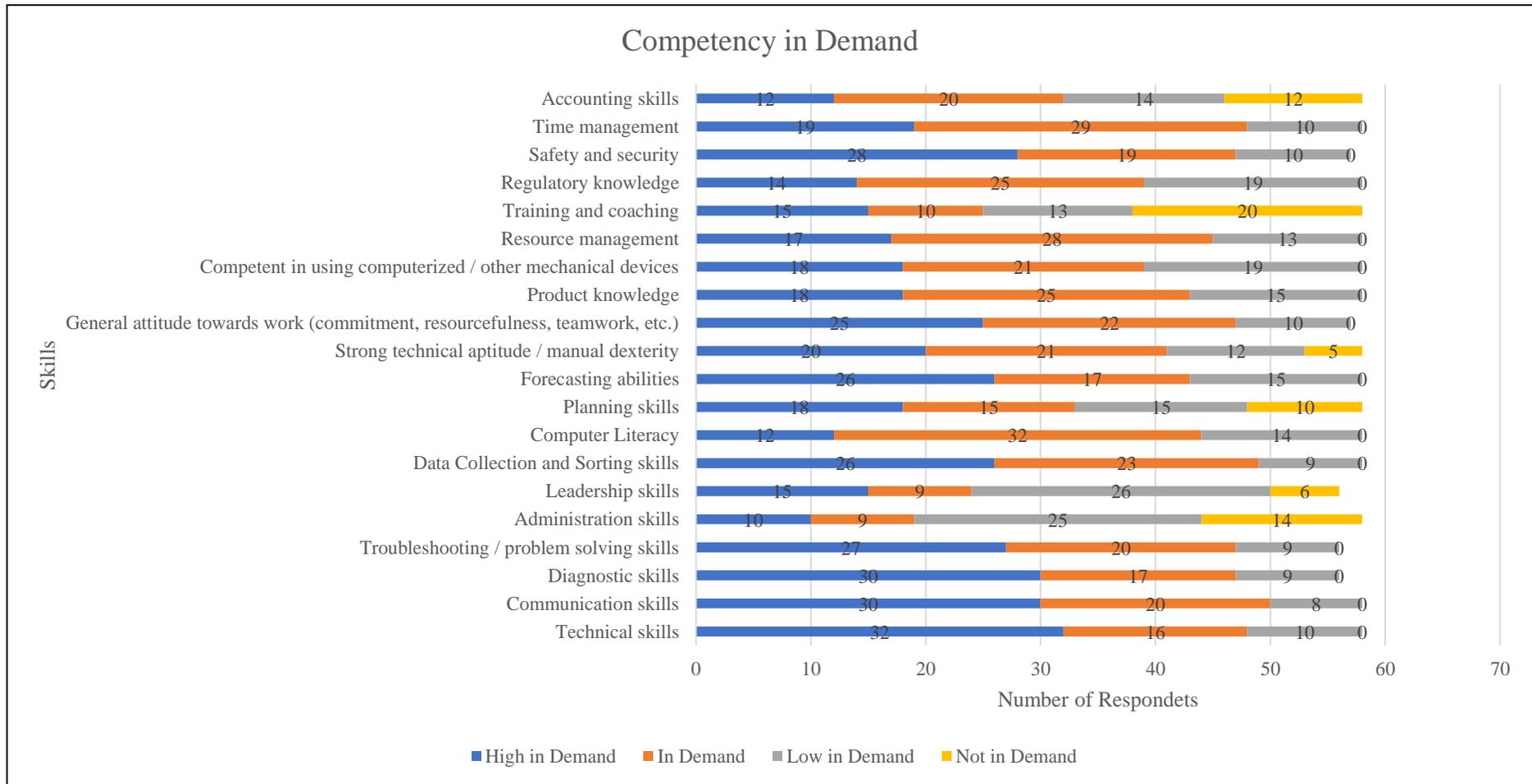
Table 4.3: Competencies in Demand for Telecommunications Industry

NO.	COMPETENCY IN DEMAND	FACTOR(S) CONTRIBUTING TO THE DEMAND	SPECIFIC REQUIREMENTS AND SKILLS
1	<ul style="list-style-type: none"> a) Technical skills b) Communication skills c) Diagnostic skills d) Troubleshooting / problem solving skills e) Administration skills f) Leadership skills g) Data collection and sorting skills h) Computer literacy 	<ul style="list-style-type: none"> i) No structured system to transfer skill to new successor. ii) Lack of exposure on process. iii) Lack of hands on experience on process. 	<ul style="list-style-type: none"> i) Training on related or similar areas ii) Review of training syllabus at training centre/ provider iii) Joint venture with industry player to provide facilities and exposure

<ul style="list-style-type: none"> i) Planning skills j) Forecasting abilities k) Strong technical aptitude / manual dexterity l) General attitude towards work m) Product knowledge n) Competent in using computerized / other mechanical devices o) Resource management p) Training and coaching q) Regulatory knowledge r) Safety and security s) Time management t) Accounting skills 	<ul style="list-style-type: none"> iv) No established written procedure on handling such product. v) No established written material on latest technology for reference. 	<ul style="list-style-type: none"> iv) Invite industry player to jointly carry out R&D programs
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Based on the survey distributed, respondents highlighted 5 top competencies in demand in telecommunications industry which are technical skills, communication skills, diagnostic skills, safety and security and troubleshooting or problem-solving skills. The result of the survey is shown in Figure 4.5 above and the description of skills can be referred in Table 4.4.

In summary, based on FGD and survey distributed, the top 5 competencies highlighted for skills in demand for telecommunications industry are technical skills, communication skills, diagnostic skills, safety and security and troubleshooting or problem-solving skills. Both FGD and survey comprise the same results.



Figures 4.5: Competency in Demand for Telecommunications Industry

Table 4.4: List of Competencies in Telecommunications Industry

NO.	COMPETENCY	NO.	COMPETENCY
1	Technical skills The qualities acquired by using and gaining expertise in performing physical or digital tasks.	11	Strong technical aptitude / manual dexterity Manual dexterity is the ability to use your hands in a skilful, coordinated way to grasp and manipulate objects and demonstrate small, precise movements.
2	Communication skills a) Abilities to use when giving and receiving different kinds of information b) Communication skills involve listening, speaking, observing and empathizing	12	General attitude towards work (commitment, resourcefulness, teamwork, etc.) The ability to deploy general attitude towards work.
3	Diagnostic skills Knowledge and experience required in identifying and understanding cause-and-effect relationships between symptoms and their underlying source(s).	13	Product knowledge An understanding of a good or service that might include having acquired information about its application, function, features, use and support requirements.
4	Troubleshooting / problem solving skills a) An ability to solve problems in an effective and timely manner without any impediments. b) An ability to identify and define the problem, generate alternative solutions, evaluate and select the best alternative, and implement the selected solution.	14	Competent in using computerized / other mechanical devices The knowledge and expertise needed to accomplish complex actions, tasks and processes relating to computational and physical technology as well as a diverse group of other enterprises.
5	Administration skills Qualities that help complete tasks related to managing a team or business.	15	Resource management Acquiring, allocating and managing the resources, such as individuals and their skills, finances, technology, materials, machinery and natural resources required for a project.
6	Leadership skills The strengths and abilities individuals demonstrate that help	16	Training and coaching A process that aims to improve performance and focus on the ‘here and

NO.	COMPETENCY	NO.	COMPETENCY
	to oversee processes, guide initiatives and steer their employees toward the achievement of goals.		now' rather than on the distant past or future.
7	Data Collection and Sorting skills The skills that an individual requires to effectively collect and curate data for research purposes.	17	Regulatory knowledge An ability to understand regulation and acts related to the industry.
8	Computer Literacy The knowledge and ability to utilise computers and related technology efficiently, with a range of skills covering levels from elementary use to computer programming and advanced problem solving.	18	Safety and security The protection of workers from the dangers of industrial accidents.
9	Planning skills The thinking skill that helps an individual develops strategies to accomplish goals.	19	Time management The process of organising and planning how much time you spend on specific activities.
10	Forecasting abilities Any measure of the accuracy and/or degree of association of prediction to an observation or estimate of the actual value of what is being predicted.	20	Accounting skills The ability to organise and synthesize information.

4.2.4 Emerging Skills

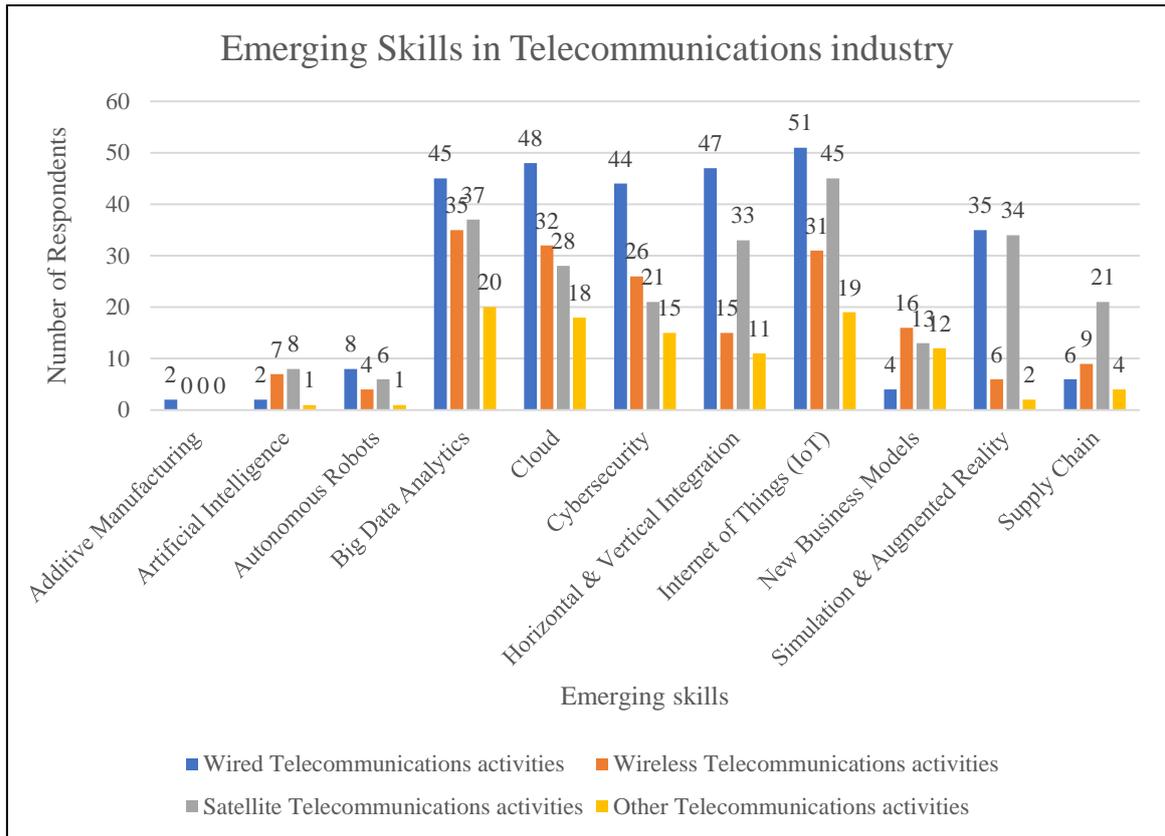
This section comprises emerging skills related to telecommunications industry. Emerging Skills are skills that are predicted to be imperative to the industry in the near future based on recent development, trend or study. Based on FGD, the emerging skills and job titles related to IR 4.0 are listed in Table 4.4.

Based on FGD, the emerging skills related to IR 4.0 are listed in Table 4.4 which include Big Data, Internet of Things (IoT), Cloud computing, Cybersecurity, Artificial intelligence, Simulation and Augmented Reality.

Table 4.5: Emerging Skills for Telecommunications Industry

No.	Emerging Skills	Job Titles Related to IR 4.0	Reason of Required Emerging Skills
1	a) Big Data b) Internet of Things (IoT) c) Cloud d) Cybersecurity e) Artificial intelligence, f) Horizontal & Vertical Integration g) Simulation & Augmented Reality.	Refer to Annex 5	i) Increase productivity, reduce cost and improve efficiency ii) Minimise human error iii) Fast decision making iv) Increase process effectiveness

Figure 4.6 shows the emerging skills in telecommunications industry based on survey results. Survey result shows that Big data analytics, Cloud computing, Cybersecurity, Internet of things (IOT), Horizontal and Vertical Integration and Simulation & Augmented Reality are emerging skills that are closely related to this industry. It is in line with FGD which concludes the same results.



Figures 4.6: Emerging skills in Telecommunications industry

4.2.5 Related Issues in Telecommunications Industry

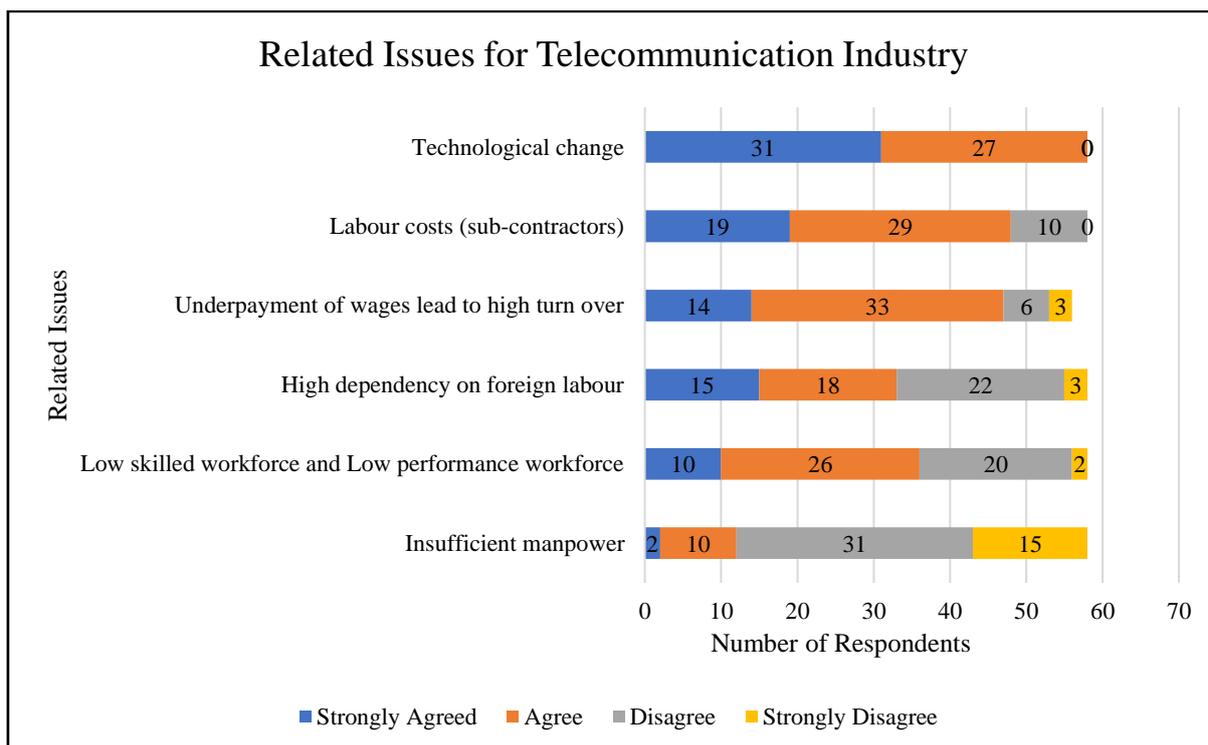
This section explores the common issues surrounding the industry. The related issues in the industry are identified in FGD and survey. Table 4.6 comprises the related issues in the industry based on FGD.

Table 4.6: Related Issues for Telecommunications Industry

No.	Key Issues	Discussion	Suggestion
1.	Insufficient manpower	<ul style="list-style-type: none"> • Demanding work condition • 3D (Dirty, Dangerous, Difficult) • Unattractive wages and fringe benefits • Negative perception by community 	<ul style="list-style-type: none"> • Minimum wage policy • Review wages scheme on productivity based
2.	Low skilled workforce	<ul style="list-style-type: none"> • Lack of training facilities and talent management from the employees 	Government Incentives and Intervention

No.	Key Issues	Discussion	Suggestion
		<ul style="list-style-type: none"> • Low motivation and rewards 	
3.	Low performance workforce	<ul style="list-style-type: none"> • Attitude problem 	High incentive for good worker
4.	High dependency on foreign labour	<ul style="list-style-type: none"> • 3D (Dirty, Dangerous, Difficult) • Reliable and favourable for higher productivity than local workers • Inability to convince young generation to participate in telecommunication industry. 	Both government and private sector should give concerted and continuous effort in controlling the intake of foreign labours and attract more locals.
5.	Underpayment of wages lead to high turn over	Salary wages does not match with productivity and job requirements.	Profit sharing – changing the mindset of the managerial to create harmonise salary scheme.
6.	Labour costs (sub-contractors)	<ul style="list-style-type: none"> • Too high commission percentage 	<ul style="list-style-type: none"> • Direct contracts awards • Improvement of procurement procedure
7.	Technological change	<ul style="list-style-type: none"> • Slow technological innovation and adoption • Lack of capital investment 	Financial facilities by public fund with incentives.

Figure 4.7 shows the related issues regarding telecommunications activities from the survey distributed. Based on the result, the most important issues regarding telecommunications activities are technological change, labour costs (wages), high dependency on foreign labour, underpayment of wages that leads to high turnover, low skilled and low performance workforce and insufficient manpower. The result of the survey is in line with FGD which also comprises the same related issues.



Figures 4.7: Related Issues for Telecommunications Industry

4.3 Comparative Study Analysis

This section provides an overview of developed countries in telecommunication industry. Iceland and South Korea were chosen to be discussed in this section due to their performance on telecommunication industry growth. Based on Information and communication technology (ICT) development index ranking top-20 countries⁶⁶ in 2017, Iceland was top in the chart with 8.98 points followed by South Korea with 8.85 points. The detailed overview of each countries is briefly discussed below.

a) Iceland

Information Technology (IT) has also been one of the fastest growing sectors of the Icelandic economy. Iceland's IT sector spans all areas of the digital economy. Data

⁶⁶Statista. 2017. Information and communication technology (ICT) development index ranking top-20 countries in 2017 (2019, August 31). Retrieved from <https://www.statista.com/statistics/267083/top-20-countries-in-ict-development-index/>

management systems, workflow systems, communications solutions, wireless data systems, mobile systems, Internet solutions, e-commerce content and solutions, gaming, healthcare solutions and of course fisheries technology systems are all exported to overseas markets⁶⁷. In 2018, information technology contributed 4.8 per cent from total GDP of Iceland. The number of establishments recorded for 2018 were 87 with number of persons engaged to the industry were 7,581.

Other than that, Iceland is looking to build another submarine cable to Ireland and UK. Iceland has one of the smallest yet most progressive telecom markets in Europe. There is an effective competition in the mobile and broadband markets, with a number of players having emerged to challenge the dominance of the two leading players Síminn and Sýn⁶⁸.

Based on the statistics on the Icelandic Telecommunications Market 2018, the development of telecommunications industry is increasing year by year with the total revenue of Iceland telecommunication industry in 2018 is Icelandic Króna 65.143 Million compared to 2017 with Icelandic Króna 57.392 Million⁶⁹. It clearly shows that the demand on the industry is increasing throughout the year. The total revenue for telecommunications industry in Iceland is divided into 6 categories which are fixed network, fixed network phone, mobile network, data transfer and internet services, television services and other income. More than that, the total investment is also showing increment from 2017 to 2018 with Icelandic Króna 10.660 Million to Icelandic Króna 11.269 Million. The development of telecommunication industry in Iceland is in line with Malaysia with total revenue increase year by year and shows that the industry is evolving rapidly and globally.

⁶⁷Export.gov. 2019 Iceland - Market Overview. (2019, August 31). Retrieved from <https://www.export.gov/article?id=Iceland-Market-Overview>

⁶⁸BuddeComm .2019. Iceland - Telecoms, Mobile and Broadband - Statistics and Analyses. (2019, August 31). Retrieved from <https://www.budde.com.au/Research/Iceland-Telecoms-Mobile-and-Broadband-Statistics-and-Analyses>

⁶⁹Post and Telecom Administration in Iceland .2018. Statistics on the Icelandic Telecommunications Market 2018. Page 43-44

b) South Korea

South Korea has transformed its economy to be one that is more progressively knowledge based. It has invested significantly in telecommunications infrastructure over the past decades. South Korea has one of the world's most active telecommunications and Information Technology (IT) markets with the strong encouragement from the government. As well as the commitment of the government, the sector is boosted by an innovative private sector and a technologically savvy population. Spending on ICT and high-technology equipment helped lead a transformation of the economy. The government aims to transform the country into a knowledge-based information society in a 'smart-age'⁷⁰.

Based on Korea: Telecoms, Media & Internet 2019, Korean telecommunications and internet industry recorded a total revenue of 37.9 trillion KRW in the year of 2016⁷¹. The total revenue is segmented to 3 sections namely wireless, fixed and lease/resale/intermediate with wireless recorded 25.1 trillion KRW that is major contribution in total revenue of telecommunication industry in South Korea.

⁷⁰ PR Newswire. 2019. South Korea - Telecoms, Mobile and Broadband - Statistics and Analyses. (2019, August 31). Retrieved from <https://www.prnewswire.com/news-releases/south-korea---telecoms-mobile-and-broadband---statistics-and-analyses-300864776.html>

⁷¹IGLC.com. 2018. Korea: Telecoms, Media & Internet 2019. (2019, August 31). Retrieved from <https://iclg.com/practice-areas/telecoms-media-and-internet-laws-and-regulations/korea>



Figure 4.8: Asian Telecoms Maturity Index vs GDP per Capita

(Source: IEEE Communication Society, 2018)

South Korea is ranked 1st out of 34 countries with an Asian Telecoms Maturity Index score of 92. (BuddeComm’s “Asian Telecoms Maturity Index”, is an index (on a scale between 0 and 100) that measures and ranks the relative maturity of the telecoms industry in all of the 34 countries in Asia.)⁷² with 8 per cent total contribution to total

⁷²IEEE Communication Society.2019. Paul Budde: What Does ‘Peak Telecom’ Mean for 5G? Asian Telecoms Maturity Index (2019, August 31). Retrieved from <https://techblog.comsoc.org/2019/06/15/paul-budde-what-does-peak-telecom-mean-for-5g-asian-telecoms-maturity-index/>

South Korea GDP compared to other Asian nations, South Korea has very high mobile and mobile broadband penetration and very high fixed broadband penetration. Fixed lines in South Korea have been gradually declining over the past five years. This trend is predicted to continue over the next five years to 2023. South Korea has the world's highest number of broadband services per capita. Korea's policy emphasis has been to establish an Ultra Broadband convergence Network (UBcN) with 1Gb/s speeds on fixed lines and 10Mb/s on wireless. Other than that, the number of establishments related to telecommunications industry in South Korea is 828 with 3,177 number of persons engaged with telecommunications industry.

In conclusion, the rapid advancement of technology in South Korea telecommunications industry shows that the industry is always evolved in order to fulfil the demand of the users. With the fast pace of telecommunications industry growth, the employments in the industry will also increase significantly.

Table 4.7: Comparative Analysis between Malaysia, Iceland and South Korea

	GDP PERCENTAGE SHARE (INFORMATION AND COMMUNICATION)	NUMBER OF ESTABLISHMENT	EMPLOYMENT STATISTICS
 Malaysia	5.8%	1,135	58,163
 Iceland	4.8%	87	7,581
 South Korea	8%	828	3,177

The comparative analysis is based on 3 main economic areas for each nation which are the GDP percentage (%) share of the industry, the numbers of establishment (company) and the employment statistic. The GDP percentage shares in the Table 4.7 above is based on the information and communication for each nation as it reflects the overall industry performance. It can be concluded from Table 4.7; South Korea has a highest GDP percentage share for information and communication industry compared to Malaysia and Iceland. For number of establishments and employment statistics, Malaysia recorded a highest number of establishments compared to Iceland and Korea.

4.4 Occupational Structure (OS)

Occupational structure can be defined as job classification, whereby similar or related occupations are group together according to specific criteria such as skills, functions and employment based on MSIC 2008 group. Based on the discussion with the expert panels from the telecommunications industry, a total of 46 job areas are listed out with 291 job titles related to this industry, 56 critical job titles and 18 job titles relevant to IR4.0. The result is listed in Table 4.8 until Table 4.24.

Table 4.8: Group 611 Occupational Structure (1 of 8)

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(611) WIRED TELECOMMUNICATIONS ACTIVITIES		
AREA	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	Wired Network Development (ND) - Design and Planning Core Network (Metro E)
LEVEL 8	Chief Network Officer	Chief Network Officer	Chief Network Officer
LEVEL 7	IPCore ND General Manager	IPCore ND General Manager	IPCore ND General Manager
LEVEL 6	Head of Department Core Network	Head of Department Core Network	Head of Department Core Network
LEVEL 5	Manager	Manager	Manager
LEVEL 4	Executive / Engineer	Executive / Engineer	Executive / Engineer*
LEVEL 3	Technician*	Technician*	Technician*
LEVEL 2	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level

Note: *Critical Job Titles

Table 4.9: Group 611 Occupational Structure (2 of 8)

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(611) WIRED TELECOMMUNICATIONS ACTIVITIES		
AREA	Wired Network Development (ND) – Network Implementation (BRAS)	Wired Network Development (ND) - Network Implementation (IP Core)	Wired Network Development (ND) - Network Implementation (Metro E)
LEVEL 8	Chief Network Officer	Chief Network Officer	Chief Network Officer
LEVEL 7	IPCore ND General Manager	IPCore ND General Manager	IPCore ND General Manager
LEVEL 6	Head of Department Core Network	Head of Department Core Network	Head of Department Core Network
LEVEL 5	Manager	Manager	Manager
LEVEL 4	Executive / Engineer	Executive / Engineer	Executive / Engineer*
LEVEL 3	Technician*	Technician*	Technician*
LEVEL 2	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level

Note: *Critical Job Titles

**Jobs relevant to IR 4.0

Table 4.10: Group 611 Occupational Structure (3 of 8)

SECTION	(J) INFORMATION AND COMMUNICATIONS	
DIVISION	(61) TELECOMMUNICATIONS	
GROUP	(611) WIRED TELECOMMUNICATIONS ACTIVITIES	
AREA	Wired Network Development (ND) - Transmission Network Design & Planning	Wired Network Development (ND) - Transmission Network Implementation
LEVEL 8	Chief Network Officer	Chief Network Officer
LEVEL 7	Transmission ND General Manager	Transmission ND General Manager
LEVEL 6	Head of Department (DWDM)	Head of Department (DWDM)
LEVEL 5	Manager	Manager
LEVEL 4	Executive / Engineer	Executive / Engineer
LEVEL 3	Technician*	Technician*
LEVEL 2	No Level	No Level
LEVEL 1	No Level	No Level

Note: *Critical Job Titles

Table 4.11: Group 611 Occupational Structure (4 of 8)

SECTION	(J) INFORMATION AND COMMUNICATIONS	
DIVISION	(61) TELECOMMUNICATIONS	
GROUP	(611) WIRED TELECOMMUNICATIONS ACTIVITIES	
AREA	Wired Network Development (ND) – Access Network Design & Planning	Wired Network Development (ND) - Access Network Implementation
LEVEL 8	Chief Network Officer	Chief Network Officer
LEVEL 7	Regional General Manager	Regional General Manager
LEVEL 6	Regional ND Head of Department	Regional ND Head of Department
LEVEL 5	Manager	Manager
LEVEL 4	Executive / Engineer	Executive / Engineer*
LEVEL 3	Technician	Technician*
LEVEL 2	No Level	No Level
LEVEL 1	No Level	No Level

Note: *Critical Job Titles

Table 4.12: Group 611 Occupational Structure (5 of 8)

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(611) WIRED TELECOMMUNICATIONS ACTIVITIES		
AREA	Wired Network Operation Centre (NOC) - IP Core (IP Core BB)	Wired Network Operation Centre (NOC) - IP Core (IP Core ME)	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)
LEVEL 8	Chief Network Officer	Chief Network Officer	Chief Network Officer
LEVEL 7	IP Core NOC General Manager	IP Core NOC General Manager	IP Core NOC General Manager
LEVEL 6	Head of Department	Head of Department	Head of Department
LEVEL 5	Manager	Manager	Manager*
LEVEL 4	Executive / Engineer	Executive / Engineer	Executive / Engineer*
LEVEL 3*	Technician	Technician	Technician
LEVEL 2*	Splicer*	Splicer*	Splicer*
LEVEL 1	No Level	No Level	No Level

Note: *Critical Job Titles

Table 4.13: Group 611 Occupational Structure (6 of 8)

SECTION	(J) INFORMATION AND COMMUNICATIONS	
DIVISION	(61) TELECOMMUNICATIONS	
GROUP	(611) WIRED TELECOMMUNICATIONS ACTIVITIES	
AREA	Wired Network Operation Centre (NOC) - Transmission (TX Submarine)	Wired Network Operation Centre (NOC) - Transmission (TX DWDM)
LEVEL 8	Chief Network Officer	Chief Network Officer
LEVEL 7	Transmission NOC General Manager	Transmission NOC General Manager
LEVEL 6	Head of Department	Head of Department
LEVEL 5	Manager	Manager
LEVEL 4	Executive / Engineer	Executive / Engineer
LEVEL 3	Technician	Technician
LEVEL 2	Splicer*	Splicer*
LEVEL 1	No Level	No Level

Note: *Critical Job Titles

Table 4.14: Group 611 Occupational Structure (7 of 8)

SECTION	(J) INFORMATION AND COMMUNICATIONS	
DIVISION	(61) TELECOMMUNICATIONS	
GROUP	(611) WIRED TELECOMMUNICATIONS ACTIVITIES	
AREA	Wired Network Operation Centre (NOC) - Access (Active Access)	Wired Network Operation Centre (NOC) - Access (Passive Access)
LEVEL 8	Chief Network Officer	Chief Network Officer
LEVEL 7	Access NOC General Manager	Access NOC General Manager
LEVEL 6	Head of Department	Head of Department
LEVEL 5	Manager	Manager
LEVEL 4	Executive / Engineer	Executive / Engineer*
LEVEL 3	Technician	Technician*
LEVEL 2	Splicer*	Splicer*
LEVEL 1	No Level	No Level

Note: *Critical Job Titles

Table 4.15: Group 611 Occupational Structure (8 of 8)

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(611) WIRED TELECOMMUNICATIONS ACTIVITIES		
AREA	Wired Network Field Maintenance (NFM) - Data Services	Wired Network Field Maintenance (NFM) - Cable	Wired Network Field Maintenance (NFM) - Installation
LEVEL 8	Chief Network Officer	Chief Network Officer	Chief Network Officer
LEVEL 7	General Manager	General Manager	General Manager
LEVEL 6	Head of Department	Head of Department	Head of Department
LEVEL 5	Manager	Manager	Manager
LEVEL 4	Executive / Engineer	Executive / Engineer	Executive / Engineer
LEVEL 3	Technician	Technician	Technician
LEVEL 2	Splicer*	Splicer*	Splicer*
LEVEL 1	No Level	No Level	No Level

Note: *Critical Job Titles

Table 4.16: Group 612 Occupational Structure (1 of 6)

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(612) WIRELESS TELECOMMUNICATIONS ACTIVITIES		
AREA	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)
LEVEL 8	Chief Technical Officer	Chief Technical Officer	Chief Technical Officer
LEVEL 7	Head of Department	Head of Department	Head of Department
LEVEL 6	Manager**	Manager**	Manager
LEVEL 5	Engineer**	Asst. Specialist/Engineer**	Engineer
LEVEL 4	Executive**	Executive / Supervisor**	Executive / Supervisor
LEVEL 3	No Level	Technical Team Leader***	Technical Team Leader*
LEVEL 2	No Level	Technician*	Technician*
LEVEL 1	No Level	Installer*	Installer*

Note: *Critical Job Titles

**Jobs relevant to IR 4.0

*** Critical Job Titles and Jobs relevant to IR 4.0

Table 4.17: Group 612 Occupational Structure (2 of 6)

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(612) WIRELESS TELECOMMUNICATIONS ACTIVITIES		
AREA	Wireless Network Development (ND) - Transmission (Network Design)	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	Wireless Network Development (ND) - Transmission (Network Implementation)
LEVEL 8	Chief Technical Officer	Chief Technical Officer	Chief Technical Officer
LEVEL 7	Head of Department	Head of Department	Head of Department
LEVEL 6	Manager**	Manager**	Manager
LEVEL 5	Engineer**	Engineer**	Engineer
LEVEL 4	Executive**	Executive / Supervisor**	Executive / Supervisor
LEVEL 3	No Level	Technical Team Leader***	Technical Team Leader*
LEVEL 2	No Level	Technician*	Technician*
LEVEL 1	No Level	Installer*	Installer*

Note: *Critical Job Titles

**Jobs relevant to IR 4.0

*** Critical job titles and job relevant to IR 4.0

Table 4.18: Group 612 Occupational Structure (3 of 6)

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(612) WIRELESS TELECOMMUNICATIONS ACTIVITIES		
AREA	Wireless Network Development (ND) - IP Core / IP RAN (Network Design)	Wireless Network Development (ND) - IP Core / IP RAN (Network Planning and Optimisation)	Wireless Network Development (ND) - IP Core / IP RAN (Network Implementation)
LEVEL 8	Chief Technical Officer	Chief Technical Officer	Chief Technical Officer
LEVEL 7	Head of Department	Head of Department	Head of Department
LEVEL 6	Manager	Manager	Manager
LEVEL 5	Engineer**	Engineer**	Engineer
LEVEL 4	Executive**	Executive / Supervisor**	Executive / Supervisor
LEVEL 3	No Level	No Level	No Level
LEVEL 2	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level

Note: **Jobs relevant to IR 4.0

Table 4.19: Group 612 Occupational Structure (4 of 6)

SECTION	(J) INFORMATION AND COMMUNICATIONS			
DIVISION	(61) TELECOMMUNICATIONS			
GROUP	(612) WIRELESS TELECOMMUNICATIONS ACTIVITIES			
AREA	Wireless Network Field Maintenance (NFM) - Switch & Core	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	Wireless Network Field Maintenance (NFM) - Transmission	Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
LEVEL 8	Chief Network Director / Officer	Chief Network Director / Officer	Chief Network Director / Officer	Chief Network Director / Officer
LEVEL 7	Senior Delivery Manager	Senior Delivery Manager	Senior Delivery Manager	Senior Delivery Manager
LEVEL 6	Manager	Manager	Manager	Manager
LEVEL 5	Engineer	Engineer	Engineer	Engineer
LEVEL 4	Executive / Supervisor	Executive / Supervisor	Executive / Supervisor	Executive / Supervisor
LEVEL 3	No Level	Technical Team Leader*	Technical Team Leader*	Technical Team Leader*
LEVEL 2	No Level	Technician*	Technician*	Technician*
LEVEL 1	No Level	Installer*	Installer*	Installer*

Note: *Critical Job Titles

Table 4.20: Group 612 Occupational Structure (5 of 6)

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(612) WIRELESS TELECOMMUNICATIONS ACTIVITIES		
AREA	Wireless Network Operation Centre (NOC)	Management Information System (MIS)	Wireless Back Office
LEVEL 8	Chief Network Director / Officer	Chief Network Director / Officer	Chief Network Director / Officer
LEVEL 7	Senior Delivery Manager	Senior Delivery Manager	Solution Manager
LEVEL 6	Manager	Manager	Solution Engineer
LEVEL 5	Senior NOC Engineer	Regional MIS Engineer	Test Engineer (Return & Repair)
LEVEL 4	NOC Engineer	No Level	Technical Executive
LEVEL 3	No Level	No Level	Technician
LEVEL 2	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level

Table 4.21: Group 612 Occupational Structure (6 of 6)

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(612) WIRELESS TELECOMMUNICATIONS ACTIVITIES		
AREA	Supply Chain, Warehouse, Return & Repair(R&R)	Wireless Network Planning and Optimization	Site Access & Permit
LEVEL 8	Chief Network Director / Officer	Chief Network Director / Officer	Chief Network Director / Officer
LEVEL 7	Senior Delivery Manager	Network Development Manager	Senior Site Acquisition & Access Manager
LEVEL 6	Warehouse Manager	Radio Frequency Manager	Site Access Manager
LEVEL 5	Assistant Warehouse Manager	Radio Frequency Engineer*	Site Access Executive
LEVEL 4	Storekeeper	Radio Frequency Drive Tester	No Level
LEVEL 3	Material Handler	Assistant Radio Frequency Drive Tester	No Level
LEVEL 2	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level

Note: *Critical Job Titles

Table 4.22: Group 613 Occupational Structure (1 of 2)

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(613) SATELLITE TELECOMMUNICATIONS ACTIVITIES		
AREA	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	Satellite Network Field Maintenance (NFM) - Earth Station	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
LEVEL 8	Chief Network Director / Officer	Chief Network Director / Officer	Chief Network Director / Officer
LEVEL 7	Senior Delivery Manager	Senior Delivery Manager	Senior Delivery Manager
LEVEL 6	Manager	Manager	Manager
LEVEL 5	Engineer	Engineer	Engineer
LEVEL 4	Executive / Supervisor	Executive / Supervisor	Executive / Supervisor
LEVEL 3	Technical Team Leader	Technical Team Leader	Technical Team Leader
LEVEL 2	Technician*	Technician*	Technician*
LEVEL 1	Installer*	Installer*	Installer*

Note: *Critical Job Titles

Table 4.23: Group 613 Occupational Structure (2 of 2)

SECTION	(J) INFORMATION AND COMMUNICATIONS	
DIVISION	(61) TELECOMMUNICATIONS	
GROUP	(613) SATELLITE TELECOMMUNICATIONS ACTIVITIES	
AREA	Satellite Network Operation Centre (NOC)	Satellite Network Optimization
LEVEL 8	Chief Network Director / Officer	Chief Network Director / Officer
LEVEL 7	Senior Delivery Manager	Optimization Manager
LEVEL 6	Senior Engineer	Optimization Engineer
LEVEL 5	Engineer	Satellite Data Analyst*
LEVEL 4	No Level	No Level
LEVEL 3	No Level	No Level
LEVEL 2	No Level	No Level
LEVEL 1	No Level	No Level

Note: *Critical Job Titles

Table 4.24: Group 619 Occupational Structure (1 of 1)

SECTION	(J) INFORMATION AND COMMUNICATIONS	
DIVISION	(61) TELECOMMUNICATIONS	
GROUP	(619) OTHER TELECOMMUNICATIONS ACTIVITIES	
AREA	Telecommunication Sales and Marketing	Telecommunication Business Development
LEVEL 8	Head of Marketing and Business Development	Head of Marketing and Business Development
LEVEL 7	Senior Sales and Marketing Manager	Senior Business Development Manager
LEVEL 6	Sales and Marketing Manager	Business Development Manager
LEVEL 5	Senior Sales Engineer	Senior Business Development Executive
LEVEL 4	Sales Engineer*	Business Development Executive
LEVEL 3	Sales Supervisor	No Level
LEVEL 2	Sales Promoter	No Level
LEVEL 1	No Level	No Level

Note: *Critical Job Titles

Table 4.25: Summary of Job Titles

No	Job Area	Level								Total Identified Job Titles	Total Critical Job Titles	Total Job Titles relevant to IR 4.0
		1	2	3	4	5	6	7	8			
611 WIRED TELECOMMUNICATIONS ACTIVITIES												
1	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	NL	NL	1	1	1	1	1	1	6	1	NA
2	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	NL	NL	1	1	1	1	1	1	6	1	NA
3	Wired Network Development (ND) - Design and Planning Core Network (Metro E)	NL	NL	1	1	1	1	1	1	6	2	NA
4	Wired Network Development (ND) – Network Implementation (BRAS)	NL	NL	1	1	1	1	1	1	6	1	NA
5	Wired Network Development (ND) - Network Implementation (IP Core)	NL	NL	1	1	1	1	1	1	6	1	NA
6	Wired Network Development (ND) - Network Implementation (Metro E)	NL	NL	1	1	1	1	1	1	6	1	NA
7	Wired Network Development (ND) - Transmission Network Design & Planning	NL	NL	1	1	1	1	1	1	6	1	NA
8	Wired Network Development (ND) - Transmission Network Implementation	NL	NL	1	1	1	1	1	1	6	1	NA
9	Wired Network Development (ND) – Access Network Design & Planning	NL	NL	1	1	1	1	1	1	6	NA	NA
10	Wired Network Development (ND) - Access Network Implementation	NL	NL	1	1	1	1	1	1	6	2	NA
11	Wired Network Operation Centre (NOC) - IP Core (IP Core BB)	NL	NL	1	1	1	1	1	1	6	1	NA
12	Wired Network Operation Centre (NOC) - IP Core (IP Core ME)	NL	1	1	1	1	1	1	1	7	1	NA
13	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	NL	1	1	1	1	1	1	1	7	1	NA

No	Job Area	Level								Total Identified Job Titles	Total Critical Job Titles	Total Job Titles relevant to IR 4.0
		1	2	3	4	5	6	7	8			
14	Wired Network Operation Centre (NOC) - Transmission (TX Submarine)	NL	1	1	1	1	1	1	1	7	3	NA
15	Wired Network Operation Centre (NOC) - Transmission (TX DWDM)	NL	1	1	1	1	1	1	1	7	1	NA
16	Wired Network Operation Centre (NOC) - Access (Active Access)	NL	1	1	1	1	1	1	1	7	1	NA
17	Wired Network Operation Centre (NOC) - Access (Passive Access)	NL	1	1	1	1	1	1	1	7	3	NA
18	Wired Network Field Maintenance (NFM) - Data Services	NL	1	1	1	1	1	1	1	7	1	NA
19	Wired Network Field Maintenance (NFM) - Cable	NL	1	1	1	1	1	1	1	7	1	NA
20	Wired Network Field Maintenance (NFM) - Installation	NL	1	1	1	1	1	1	1	7	1	NA
612 WIRELESS TELECOMMUNICATIONS ACTIVITIES												
21	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	NL	NL	NL	1	1	1	1	1	6	NA	3
22	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	1	1	1	1	1	1	1	1	6	2	4
23	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)	1	1	1	1	1	1	1	1	1	3	NA
24	Wireless Network Development (ND) - Transmission (Network Design)	NL	NL	NL	1	1	1	1	1	1	NA	3
25	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	1	1	1	1	1	1	1	1	2	3	4
26	Wireless Network Development (ND) - Transmission (Network Implementation)	1	1	1	1	1	1	1	1	8	3	2
27	Wireless Network Development (ND) - IP Core / IP RAN (Network Design)	NL	NL	NL	1	1	1	1	1	5	1	2

No	Job Area	Level								Total Identified Job Titles	Total Critical Job Titles	Total Job Titles relevant to IR 4.0
		1	2	3	4	5	6	7	8			
28	Wireless Network Development (ND) - IP Core / IP RAN (Network Planning and Optimisation)	NL	NL	NL	1	1	1	1	1	5	NA	NA
29	Wireless Network Development (ND) - IP Core / IP RAN (Network Implementation)	NL	NL	NL	1	1	1	1	1	5	NA	NA
30	Wireless Network Field Maintenance (NFM) - Switch & Core	NL	NL	NL	1	1	1	1	1	5	NA	NA
31	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	1	1	1	1	1	1	1	1	8	3	NA
32	Wireless Network Field Maintenance (NFM) -Transmission	1	1	1	1	1	1	1	1	8	3	NA
33	Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	1	1	1	1	1	1	1	1	8	3	NA
34	Wireless Network Operation Centre (NOC)	NL	NL	NL	1	1	1	1	1	5	NA	NA
35	Management Information System (MIS)	NL	NL	NL	NL	1	1	1	1	4	NA	NA
36	Wireless Back Office	NL	NL	1	1	1	1	1	1	6	NA	NA
37	Supply Chain, Warehouse, Return & Repair(R&R)	NL	NL	1	1	1	1	1	1	6	NA	NA
38	Wireless Network Planning and Optimization	NL	NL	1	1	1	1	1	1	6	1	NA
39	Site Access & Permit	NL	NL	NL	NL	1	1	1	1	4	NA	NA
613 SATELLITE TELECOMMUNICATIONS ACTIVITIES												
40	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	1	1	1	1	1	1	1	1	3	2	NA
41	Satellite Network Field Maintenance (NFM) - Earth Station	1	1	1	1	1	1	1	1	3	2	NA
42	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	1	1	1	1	1	1	1	1	3	2	NA
43	Satellite Network Operation Centre (NOC)	NL	NL	NL	NL	1	1	1	1	4	NA	NA

No	Job Area	Level								Total Identified Job Titles	Total Critical Job Titles	Total Job Titles relevant to IR 4.0
		1	2	3	4	5	6	7	8			
44	Satellite Network Optimization	NL	NL	NL	NL	1	1	1	1	4	1	NA
619 OTHER TELECOMMUNICATIONS ACTIVITIES												
45	Telecommunication Sales and Marketing	NL	1	1	1	1	1	1	1	7	1	NA
46	Telecommunication Business Development	NL	NL	NL	1	1	1	1	1	5	NA	NA
Grand Total of Identified Job Titles										291	56	18

NL – No Level

NA – Not Available

4.5 Occupational Responsibilities

This section provides the occupational responsibilities for each of the jobs titles and was purported for NOSS development. The occupational responsibilities for each job title are included but are not limited to the list.

DIVISION: 61 - TELECOMMUNICATIONS

GROUP: 611 – WIRED TELECOMMUNICATIONS ACTIVITIES

Table 4.26: List of Responsibilities for Group 611 Based on Table 4.8 (1 of 7)

AREA	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	Wired Network Development (ND) - Design and Planning Core Network (Metro E)
LEVEL 8	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance.

AREA	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	Wired Network Development (ND) - Design and Planning Core Network (Metro E)
	<ul style="list-style-type: none"> 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<ul style="list-style-type: none"> 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<ul style="list-style-type: none"> 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.
LEVEL 7	<p><u>IPCore ND General Manager</u></p> <ul style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the 	<p><u>IPCore ND General Manager</u></p> <ul style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the 	<p><u>IPCore ND General Manager</u></p> <ul style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs

AREA	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	Wired Network Development (ND) - Design and Planning Core Network (Metro E)
	<p>development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers.</p> <p>4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance.</p> <p>5) Decide problem solving for complex problem resolution.</p> <p>6) Track project and report status to appropriate management.</p> <p>7) Guide less experienced staff; and may instruct, direct and check their work.</p> <p>8) Examine network infrastructure and advise on next best up to date solutions.</p>	<p>development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers.</p> <p>4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance.</p> <p>5) Decide problem solving for complex problem resolution.</p> <p>6) Track project and report status to appropriate management.</p> <p>7) Guide less experienced staff; and may instruct, direct and check their work.</p> <p>8) Examine network infrastructure and advise on next best up to date solutions.</p>	<p>recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers.</p> <p>4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance.</p> <p>5) Decide problem solving for complex problem resolution.</p> <p>6) Track project and report status to appropriate management.</p> <p>7) Guide less experienced staff; and may instruct, direct and check their work.</p> <p>8) Examine network infrastructure and advise on next best up to date solutions.</p>
LEVEL 6	<p><u>Head of Department Core Network</u></p> <p>1) Evaluate the technical feasibility of network infrastructure and make recommendation to management with respect to technical issues and work with</p>	<p><u>Head of Department Core Network</u></p> <p>1) Evaluate the technical feasibility of network infrastructure and make recommendation to management with respect to technical issues and work with</p>	<p><u>Head of Department Core Network</u></p> <p>1) Evaluate the technical feasibility of network infrastructure and make recommendation to management with respect to technical issues and work with</p>

AREA	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	Wired Network Development (ND) - Design and Planning Core Network (Metro E)
	<p>vendors to create optimum cost-effective solutions.</p> <p>2) Make decision regarding design issues to create cost effective solutions.</p> <p>3) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required.</p> <p>4) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers.</p> <p>5) Consult with client, data processing management and staff in the design and implementation on few or modified telecommunication networks.</p>	<p>vendors to create optimum cost-effective solutions.</p> <p>2) Make decision regarding design issues to create cost effective solutions.</p> <p>3) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required.</p> <p>4) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers.</p> <p>5) Consult with client, data processing management and staff in the design and implementation on few or modified telecommunication networks.</p>	<p>vendors to create optimum cost-effective solutions.</p> <p>2) Make decision regarding design issues to create cost effective solutions.</p> <p>3) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required.</p> <p>4) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers.</p> <p>5) Consult with client, data processing management and staff in the design and implementation on few or modified telecommunication networks.</p> <p>6) Design networks and lead implementation process; coordinate supplies, contractors and operations.</p>

AREA	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	Wired Network Development (ND) - Design and Planning Core Network (Metro E)
	<p>6) Design networks and lead implementation process; coordinate supplies, contractors and operations.</p> <p>7) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance.</p> <p>8) Serve as point of escalation for complex problem resolution.</p> <p>9) Prepare and maintain technical specification and documents, drawings and system documentation.</p> <p>10) Interpret complex technical diagram in order to affect problem resolution.</p> <p>11) Assist in the evaluation of vendor proposals with respect to the hardware, communication protocols, switching methods, access methods and tariffs and in the procurement of software and equipment; recommend equipment for purchase or lease.</p> <p>12) Test and verify all changes to ensure changes occur without interruption.</p>	<p>6) Design networks and lead implementation process; coordinate supplies, contractors and operations.</p> <p>7) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance.</p> <p>8) Serve as point of escalation for complex problem resolution.</p> <p>9) Prepare and maintain technical specification and documents, drawings and system documentation.</p> <p>10) Interpret complex technical diagram in order to affect problem resolution.</p> <p>11) Assist in the evaluation of vendor proposals with respect to the hardware, communication protocols, switching methods, access methods and tariffs and in the procurement of software and equipment; recommend equipment for purchase or lease.</p> <p>12) Test and verify all changes to ensure changes occur without interruption.</p>	<p>7) Monitor the operation of the networks and system to ensure proper utilization of line, hardware and software. Tune networks for optimal system performance.</p> <p>8) Serve as point of escalation for complex problem resolution.</p> <p>9) Prepare and maintain technical specification and documents, drawings and system documentation.</p> <p>10) Interpret complex technical diagram in order to affect problem resolution.</p> <p>11) Assist in the evaluation of vendor proposals with respect to the hardware, communication protocols, switching methods, access methods and tariffs and in the procurement of software and equipment; recommend equipment for purchase or lease.</p> <p>12) Test and verify all changes to ensure changes occur without interruption.</p> <p>13) Track project and report status to appropriate management.</p>

AREA	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	Wired Network Development (ND) - Design and Planning Core Network (Metro E)
	13) Track project and report status to appropriate management.	13) Track project and report status to appropriate management.	
LEVEL 5	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Formulate, analyse and develop a strategic and tactical customer access network master plan based on the consolidated demand forecast, network growth trend, network utilisation and technology option to fulfill customer demand in competitive environment. 2) Organise, design and plan Core Network (BRAS) project feasibility and viability for customer access network by assessing the market trend, growth and penetration, demand forecast, network utilisation and technology option to achieve an optimum and cost-effective network. 3) Plan, forecast, analyse and optimize power and space requirement for all Design and Planning Core Network (BRAS) types of equipment through 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Formulate, analyse and develop a strategic and tactical customer access network master plan based on the consolidated demand forecast, network growth trend, network utilisation and technology option to fulfill customer demand in competitive environment. 2) Organise, design and plan Core Network (IP Core) project feasibility and viability for customer access network by assessing the market trend, growth and penetration, demand forecast, network utilisation and technology option to achieve an optimum and cost-effective network. 3) Plan, forecast, analyse and optimize power and space requirement for all Design and Planning Core Network (IP Core) types of equipment through 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Formulate, analyse and develop a strategic and tactical customer access network master plan based on the consolidated demand forecast, network growth trend, network utilisation and technology option to fulfill customer demand in competitive environment. 2) Organise, design and plan Core Network (Metro E) project feasibility and viability for customer access network by assessing the market trend, growth and penetration, demand forecast, network utilisation and technology option to achieve an optimum and cost-effective network. 3) Plan, forecast, analyse and optimize power and space requirement for all Design and Planning Core Network (Metro E) types of equipment through evaluating the existing

AREA	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	Wired Network Development (ND) - Design and Planning Core Network (Metro E)
	<p>evaluating the existing infra-structure usage to support project implementation.</p> <p>4) Coordinate, consolidate and assure Design and Planning Core Network (BRAS) project listing is ready for Business Plan submission to meet customer requirement.</p> <p>5) Manage, review and collaborate synchronization master plan for Design and Planning Core Network (BRAS) fiber equipment for optimum service quality to customers.</p> <p>6) Forecast and collaborate the annual material required to Procurement for material forward planning and supplier contract management.</p> <p>7) Manage and ensure the financial management aspects of capital work programmed is adhered so as to improve the financial standing of the company.</p> <p>8) Manage and control Design and Planning Core Network (BRAS) project planning in order to assure agreed Ready for</p>	<p>evaluating the existing infra-structure usage to support project implementation.</p> <p>4) Coordinate, consolidate and assure Design and Planning Core Network (IP Core) project listing is ready for Business Plan submission to meet customer requirement.</p> <p>5) Manage, review and collaborate synchronization master plan for Design and Planning Core Network (IP Core) fiber equipment for optimum service quality to customers.</p> <p>6) Forecast and collaborate the annual material required to Procurement for material forward planning and supplier contract management.</p> <p>7) Manage and ensure the financial management aspects of capital work programmed is adhered so as to improve the financial standing of the company.</p> <p>8) Manage and control Design and Planning Core Network (IP Core) project planning in order to assure agreed Ready for</p>	<p>infra-structure usage to support project implementation.</p> <p>4) Coordinate, consolidate and assure Design and Planning Core Network (Metro E) project listing is ready for Business Plan submission to meet customer requirement.</p> <p>5) Manage, review and collaborate synchronization master plan for Design and Planning Core Network (Metro E) fiber equipment for optimum service quality to customers.</p> <p>6) Forecast and collaborate the annual material required to Procurement for material forward planning and supplier contract management.</p> <p>7) Manage and ensure the financial management aspects of capital work programmed is adhered so as to improve the financial standing of the company.</p> <p>8) Manage and control Design and Planning Core Network (Metro E) project planning in order to assure agreed Ready for Service date (with LOBs) are met to fulfill the customer needs.</p>

AREA	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	Wired Network Development (ND) - Design and Planning Core Network (Metro E)
	<p>Service date (with LOBs) are met to fulfill the customer needs.</p> <p>9) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p> <p>10) Develop competence and skill manpower according to latest technology to provide quality network with ensure all manpower attend courses and trained.</p> <p>11) Manage human and financial resources to facilitate high level of effectiveness.</p>	<p>Service date (with LOBs) are met to fulfill the customer needs.</p> <p>9) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p> <p>10) Develop competence and skill manpower according to latest technology to provide quality network with ensure all manpower attend courses and trained.</p> <p>11) Manage human and financial resources to facilitate high level of effectiveness.</p>	<p>9) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p> <p>10) Develop competence and skill manpower according to latest technology to provide quality network with ensure all manpower attend courses and trained.</p> <p>11) Manage human and financial resources to facilitate high level of effectiveness.</p>
LEVEL 4	<p><u>Executive / Engineer</u></p> <p>1) Coordinate and ensure all Design and Planning Core Network (BRAS) installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand.</p> <p>2) Execute and ensure the Design and Planning Core Network (BRAS) financial management aspects of capitol work</p>	<p><u>Executive / Engineer</u></p> <p>1) Coordinate and ensure all Design and Planning Core Network (IP Core) installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand.</p> <p>2) Execute and ensure the Design and Planning Core Network (IP Core) financial management aspects of capitol work</p>	<p><u>Executive / Engineer</u></p> <p>1) Coordinate and ensure all Design and Planning Core Network (Metro E) installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand.</p> <p>2) Execute and ensure the Design and Planning Core Network (Metro E) financial management aspects of capitol work</p>

AREA	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	Wired Network Development (ND) - Design and Planning Core Network (Metro E)
	<p>programmed is adhered so as to improve the financial standing of the company.</p> <p>3) Execute and control Design and Planning Core Network (BRAS) project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs.</p> <p>4) Monitor and control Design and Planning Core Network (BRAS) project implementation in order to assure implementation works follow/comply with OSH requirement.</p> <p>5) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p> <p>6) Manage human to facilitate high level of effectiveness.</p>	<p>programmed is adhered so as to improve the financial standing of the company.</p> <p>3) Execute and control Design and Planning Core Network (IP Core) project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs.</p> <p>4) Monitor and control Design and Planning Core Network (IP Core) project implementation in order to assure implementation works follow/comply with OSH requirement.</p> <p>5) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p> <p>6) Manage human to facilitate high level of effectiveness.</p>	<p>programmed is adhered so as to improve the financial standing of the company.</p> <p>3) Execute and control Design and Planning Core Network (Metro E) project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs.</p> <p>4) Monitor and control Design and Planning Core Network (Metro E) project implementation in order to assure implementation works follow/comply with OSH requirement.</p> <p>5) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p> <p>6) Manage human to facilitate high level of effectiveness.</p>

AREA	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	Wired Network Development (ND) - Design and Planning Core Network (Metro E)
LEVEL 3	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine procedure according to transmission ND Core Network (BRAS) SOP. 2) Perform Core Network (BRAS) fault handling and escalation. 3) Monitor Core Network (BRAS) transmission network alarm and performance. 4) Troubleshoot and rectification of the Core Network (BRAS) problem. 	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine procedure according to transmission ND Core Network (IP Core) SOP. 2) Perform Core Network (IP Core) fault handling and escalation. 3) Monitor Core Network (IP Core) transmission network alarm and performance. 4) Troubleshoot and rectification of the Core Network (IP Core) problem. 	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine procedure according to transmission ND Core Network (Metro E) SOP. 2) Perform Core Network (Metro E) fault handling and escalation. 3) Monitor Core Network (Metro E) Transmission network alarm and performance. 4) Troubleshoot and rectification of the Core Network (Metro E) problem.
LEVEL 2	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level

Table 4.27: List of Responsibilities for Group 611 Based on Table 4.8 (2 of 7)

AREA	Wired Network Development (ND) – Network Implementation (BRAS)	Wired Network Development (ND) - Network Implementation (IP Core)	Wired Network Development (ND) - Network Implementation (Metro E)
LEVEL 8	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.

AREA	Wired Network Development (ND) – Network Implementation (BRAS)	Wired Network Development (ND) - Network Implementation (IP Core)	Wired Network Development (ND) - Network Implementation (Metro E)
LEVEL 7	<p><u>IPCore ND General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance. 5) Decide problem solving for complex problem resolution. 6) Track project and report status to appropriate management. 	<p><u>IPCore ND General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance. 5) Decide problem solving for complex problem resolution. 6) Track project and report status to appropriate management. 7) Guide less experienced staff; and may instruct, direct and check their work. 	<p><u>IPCore ND General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance. 5) Decide problem solving for complex problem resolution. 6) Track project and report status to appropriate management. 7) Guide less experienced staff; and may instruct, direct and check their work.

AREA	Wired Network Development (ND) – Network Implementation (BRAS)	Wired Network Development (ND) - Network Implementation (IP Core)	Wired Network Development (ND) - Network Implementation (Metro E)
	7) Guide less experienced staff; and may instruct, direct and check their work. 8) Examine network infrastructure and advise on next best up to date solutions.	8) Examine network infrastructure and advise on next best up to date solutions.	8) Examine network infrastructure and advise on next best up to date solutions.
LEVEL 6	<u>Head of Department Core Network</u> 1) Evaluate the technical feasibility of network infrastructure and make recommendation to management with respect to technical issues and work with vendors to create optimum cost-effective solutions. 2) Make decision regarding design issues to create cost effective solutions. 3) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 4) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications	<u>Head of Department Core Network</u> 1) Evaluate the technical feasibility of network infrastructure and make recommendation to management with respect to technical issues and work with vendors to create optimum cost-effective solutions. 2) Make decision regarding design issues to create cost effective solutions. 3) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 4) Perform all the responsibilities of the Senior Network Engineer in the development of IP Core recommendations/plans/schematics for regional network/communications	<u>Head of Department Core Network</u> 1) Evaluate the technical feasibility of network infrastructure and make recommendation to management with respect to technical issues and work with vendors to create optimum cost-effective solutions. 2) Make decision regarding design issues to create cost effective solutions. 3) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 4) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications

AREA	Wired Network Development (ND) – Network Implementation (BRAS)	Wired Network Development (ND) - Network Implementation (IP Core)	Wired Network Development (ND) - Network Implementation (Metro E)
	<p>infrastructure with input from Regional Architect and Sr. Network Engineers.</p> <p>5) Consult with client, data processing management and staff in the design and implementation on few or modified telecommunication networks.</p> <p>6) Design networks and lead implementation process; coordinate supplies, contractors and operations.</p> <p>7) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance.</p> <p>8) Serve as point of escalation for complex problem resolution.</p> <p>9) Prepare and maintain technical specification and documents, drawings and system documentation.</p> <p>10) Interpret complex technical diagram in order to affect problem resolution.</p> <p>11) Assist in the evaluation of vendor proposals with respect to the hardware, communication protocols, switching methods, access methods and tariffs and in the procurement of software and</p>	<p>infrastructure with input from Regional Architect and Sr. Network Engineers.</p> <p>5) Consult with client, data processing management and staff in the design and implementation on few or modified telecommunication networks.</p> <p>6) Design networks and lead implementation process; coordinate supplies, contractors and operations.</p> <p>7) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance.</p> <p>8) Serve as point of escalation for complex problem resolution.</p> <p>9) Prepare and maintain technical specification and documents, drawings and system documentation.</p> <p>10) Interpret complex technical diagram in order to affect problem resolution.</p> <p>11) Assist in the evaluation of vendor proposals with respect to the hardware, communication protocols, switching methods, access methods and tariffs and in the procurement of software and equipment; recommend equipment for purchase or lease.</p>	<p>infrastructure with input from Regional Architect and Sr. Network Engineers.</p> <p>5) Consult with client, data processing management and staff in the design and implementation on few or modified telecommunication networks.</p> <p>6) Design networks and lead implementation process; coordinate supplies, contractors and operations.</p> <p>7) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance.</p> <p>8) Serve as point of escalation for complex problem resolution.</p> <p>9) Prepare and maintain technical specification and documents, drawings and system documentation.</p> <p>10) Interpret complex technical diagram in order to affect problem resolution.</p> <p>11) Assist in the evaluation of vendor proposals with respect to the hardware, communication protocols, switching methods, access methods and tariffs and in the procurement of software and equipment; recommend equipment for purchase or lease.</p>

AREA	Wired Network Development (ND) – Network Implementation (BRAS)	Wired Network Development (ND) - Network Implementation (IP Core)	Wired Network Development (ND) - Network Implementation (Metro E)
	<p>equipment; recommend equipment for purchase or lease.</p> <p>12) Test and verify all changes to ensure changes occur without interruption.</p> <p>13) Track project and report status to appropriate management.</p>	<p>12) Test and verify all changes to ensure changes occur without interruption.</p> <p>13) Track project and report status to appropriate management.</p>	<p>12) Test and verify all changes to ensure changes occur without interruption.</p> <p>13) Track project and report status to appropriate management.</p>
LEVEL 5	<p><u>Manager</u></p> <p>1) Formulate, analyse and develop a strategic and tactical customer access network master plan based on the consolidated demand forecast, network growth trend, network utilisation and technology option to fulfill customer demand in competitive environment.</p> <p>2) Organise network implementation (BRAS) project feasibility and viability for customer access network by assessing the market trend, growth and penetration, demand forecast, network utilisation and technology option to achieve an optimum and cost-effective network.</p> <p>3) Plan, forecast, analyse and optimize power and space requirement for all network implementation (BRAS) types of equipment through evaluating the</p>	<p><u>Manager</u></p> <p>1) Formulate, analyse and develop a strategic and tactical customer access network master plan based on the consolidated demand forecast, network growth trend, network utilisation and technology option to fulfill customer demand in competitive environment.</p> <p>2) Organise network implementation (IP Core) project feasibility and viability for customer access network by assessing the market trend, growth and penetration, demand forecast, network utilisation and technology option to achieve an optimum and cost-effective network.</p> <p>3) Plan, forecast, analyse and optimize power and space requirement for all network implementation (IP Core) types of equipment through evaluating the existing infra-structure usage to support project implementation.</p>	<p><u>Manager</u></p> <p>1) Formulate, analyse and develop a strategic and tactical customer access network master plan based on the consolidated demand forecast, network growth trend, network utilisation and technology option to fulfill customer demand in competitive environment.</p> <p>2) Organise network implementation (Metro E) project feasibility and viability for customer access network by assessing the market trend, growth and penetration, demand forecast, network utilisation and technology option to achieve an optimum and cost-effective network.</p> <p>3) Plan, forecast, analyse and optimize power and space requirement for all network implementation (Metro E) types of equipment through evaluating the existing infra-structure usage to support project implementation.</p>

AREA	Wired Network Development (ND) – Network Implementation (BRAS)	Wired Network Development (ND) - Network Implementation (IP Core)	Wired Network Development (ND) - Network Implementation (Metro E)
	<p>existing infra-structure usage to support project implementation.</p> <p>4) Coordinate, consolidate and assure network implementation (BRAS) project listing is ready for Business Plan submission to meet customer requirement.</p> <p>5) Manage, review and collaborate synchronization master plan for network implementation (BRAS) fiber equipment for optimum service quality to customers.</p> <p>6) Forecast and collaborate the annual material required to procurement for material forward planning and supplier contract management.</p> <p>7) Manage and ensure the financial management aspects of network implementation (BRAS) capital work programmed is adhered so as to improve the financial standing of the company.</p> <p>8) Manage and control network implementation (BRAS) project planning in order to assure agreed Ready for Service date (with LOBs) are met to fulfill the customer needs.</p> <p>9) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before</p>	<p>4) Coordinate, consolidate and assure network implementation (IP Core) project listing is ready for Business Plan submission to meet customer requirement.</p> <p>5) Manage, review and collaborate synchronization master plan for network implementation (IP Core) fiber equipment for optimum service quality to customers.</p> <p>6) Forecast and collaborate the annual material required to Procurement for material forward planning and supplier contract management.</p> <p>7) Manage and ensure the financial management aspects of network implementation (IP Core) capital work programmed is adhered so as to improve the financial standing of the company.</p> <p>8) Manage and control network implementation (IP Core) project planning in order to assure agreed Ready for Service date (with LOBs) are met to fulfill the customer needs.</p> <p>9) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing network implementation (IP Core) Project brief to ensure awareness with meeting or briefing.</p>	<p>4) Coordinate, consolidate and assure network implementation (Metro E) project listing is ready for Business Plan submission to meet customer requirement.</p> <p>5) Manage, review and collaborate synchronization master plan for network implementation (Metro E) fiber equipment for optimum service quality to customers.</p> <p>6) Forecast and collaborate the annual material required to Procurement for material forward planning and supplier contract management.</p> <p>7) Manage and ensure the financial management aspects of network implementation (Metro E) capital work programmed is adhered so as to improve the financial standing of the company.</p> <p>8) Manage and control network implementation (Metro E) project planning in order to assure agreed Ready for Service date (with LOBs) are met to fulfill the customer needs.</p> <p>9) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing network implementation (Metro E) Project brief to ensure awareness with meeting or briefing.</p>

AREA	Wired Network Development (ND) – Network Implementation (BRAS)	Wired Network Development (ND) - Network Implementation (IP Core)	Wired Network Development (ND) - Network Implementation (Metro E)
	<p>preparing network implementation (BRAS) Project brief to ensure awareness with meeting or briefing.</p> <p>10) Develop competence and skill manpower according to latest technology to provide quality network with ensure all manpower attend courses and trained.</p> <p>11) Manage human and financial resources to facilitate high level of effectiveness.</p>	<p>10) Develop competence and skill manpower according to latest technology to provide quality network with ensure all manpower attend courses and trained.</p> <p>11) Manage human and financial resources to facilitate high level of effectiveness.</p>	<p>10) Develop competence and skill manpower according to latest technology to provide quality network with ensure all manpower attend courses and trained.</p> <p>11) Manage human and financial resources to facilitate high level of effectiveness.</p>
LEVEL 4	<p><u>Executive / Engineer</u></p> <p>1) Coordinate and ensure all network implementation (BRAS) installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand.</p> <p>2) Execute and ensure the network implementation (BRAS) financial management aspects of capitol work programmed is adhered so as to improve the financial standing of the company.</p> <p>3) Execute and control network implementation (BRAS) project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs.</p> <p>4) Monitor and control network implementation (BRAS) project</p>	<p><u>Executive / Engineer</u></p> <p>1) Coordinate and ensure all network implementation (IP Core) installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand.</p> <p>2) Execute and ensure the network implementation (IP Core) financial management aspects of capitol work programmed is adhered so as to improve the financial standing of the company.</p> <p>3) Execute and control network implementation (IP Core) project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs.</p> <p>4) Monitor and control network implementation (IP Core) project implementation in order to assure</p>	<p><u>Executive / Engineer</u></p> <p>1) Coordinate and ensure all network implementation (Metro E) installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand.</p> <p>2) Execute and ensure the network implementation (Metro E) financial management aspects of capitol work programmed is adhered so as to improve the financial standing of the company.</p> <p>3) Execute and control network implementation (Metro E) project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs.</p> <p>4) Monitor and control network implementation (Metro E) project implementation in order to assure</p>

AREA	Wired Network Development (ND) – Network Implementation (BRAS)	Wired Network Development (ND) - Network Implementation (IP Core)	Wired Network Development (ND) - Network Implementation (Metro E)
	<p>implementation in order to assure implementation works follow/comply with OSH requirement.</p> <p>5) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p> <p>6) Manage network implementation (BRAS) human resources to facilitate high level of effectiveness.</p>	<p>implementation works follow/comply with OSH requirement.</p> <p>5) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p> <p>6) Manage network implementation (IP Core) human resources to facilitate high level of effectiveness.</p>	<p>implementation works follow/comply with OSH requirement.</p> <p>5) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p> <p>6) Manage network implementation (Metro E) human resources to facilitate high level of effectiveness.</p>
LEVEL 3	<p><u>Technician</u></p> <p>1) Provide quality support, follow and perform routine procedure according to network implementation (BRAS) SOP.</p> <p>2) Assist network implementation (BRAS) fault handling and escalation.</p> <p>3) Monitor network implementation (BRAS) alarm and performance.</p> <p>4) Troubleshoot and rectification of the network implementation (BRAS) problem.</p>	<p><u>Technician</u></p> <p>1) Provide quality support, follow and perform routine procedure according to network implementation (IP Core) SOP.</p> <p>2) Assist network implementation (IP Core) fault handling and escalation.</p> <p>3) Monitor network implementation (IP Core) alarm and performance.</p> <p>4) Troubleshoot and rectification of the network implementation (IP Core) problem.</p>	<p><u>Technician</u></p> <p>1) Provide quality support, follow and perform routine procedure according to network implementation (Metro E) SOP.</p> <p>2) Assist network implementation (Metro E) fault handling and escalation.</p> <p>3) Monitor network implementation (Metro E) alarm and performance.</p> <p>4) Troubleshoot and rectification of the network implementation (Metro E) problem.</p>
LEVEL 2	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level

Table 4.28: List of Responsibilities for Group 611 Based on Table 4.9 (3 of 7)

AREA	Wired Network Development (ND) - Transmission Network Design & Planning	Wired Network Development (ND) - Transmission Network Implementation
LEVEL 8	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.
LEVEL 7	<p><u>Transmission ND General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 	<p><u>Transmission ND General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics

AREA	Wired Network Development (ND) - Transmission Network Design & Planning	Wired Network Development (ND) - Transmission Network Implementation
	<ul style="list-style-type: none"> 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance. 5) Track project and report status to appropriate management. 6) Mentor less experienced staff; and may instruct, direct and check their work. 	<ul style="list-style-type: none"> for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance. 5) Track project and report status to appropriate management. 6) Mentor less experienced staff; and may instruct, direct and check their work.
LEVEL 6	<p><u>Head of Department (DWDM)</u></p> <ul style="list-style-type: none"> 1) Further develop process and procedures within the Transmission ND and overall integration with other ND. 2) Make recommendations for changes and improvements and communicate to senior management. 3) Ensure continual process improvement of the Transmission ND to include automation of Transmission ND activities, reporting, implementation of monitoring activities and administration, and establishing KPIs. 4) Manage operation staff team resources. 5) Oversee day to day Transmission ND operations, escalations, ticketing and communications with all client and stakeholder. 	<p><u>Head of Department (DWDM)</u></p> <ul style="list-style-type: none"> 1) Further develop process and procedures within the Transmission ND and overall integration with other ND. 2) Make recommendations for changes and improvements and communicate to senior management. 3) Ensure continual process improvement of the Transmission ND to include automation of Transmission ND activities, reporting, implementation of monitoring activities and administration, and establishing KPIs. 4) Manage operation staff team resources. 5) Oversee day to day Transmission ND operations, escalations, ticketing and communications with all client and stakeholder.
LEVEL 5	<p><u>Manager</u></p> <ul style="list-style-type: none"> 1) Formulate, analyse and develop a strategic and tactical customer access network master plan based on the 	<p><u>Manager</u></p> <ul style="list-style-type: none"> 1) Formulate, analyse and develop a strategic and tactical customer access network master plan based on the consolidated demand

AREA	Wired Network Development (ND) - Transmission Network Design & Planning	Wired Network Development (ND) - Transmission Network Implementation
	<p>consolidated demand forecast, network growth trend, network utilisation and technology option to fulfill customer demand in competitive environment.</p> <ol style="list-style-type: none"> 2) Organise Transmission Network Design & Planning project feasibility and viability for customer access network by assessing the market trend, growth and penetration, demand forecast, network utilization and technology option to achieve an optimum and cost-effective network. 3) Plan, forecast, analyze and optimize power and space requirement for all types of equipment through evaluating the existing infra-structure usage to support project implementation. 4) Coordinate, consolidate and assure Transmission Network Design & Planning project listing is ready for Business Plan submission to meet customer requirement. 5) Manage, review and collaborate synchronization Transmission Network Design & Planning master plan for fiber equipment for optimum service quality to customers. 6) Forecast and collaborate the annual material required to procurement for material forward planning and supplier contract management. 7) Manage and ensure the Transmission Network Design & Planning financial management aspects of capital work programmed is adhered so as to improve the financial standing of the company. 8) Manage and control Transmission Network Design & Planning project planning in order to assure agreed Ready for Service date (with LOBs) are met to fulfill the customer needs. 	<p>forecast, network growth trend, network utilisation and technology option to fulfill customer demand in competitive environment.</p> <ol style="list-style-type: none"> 2) Organise Transmission Network Implementation project feasibility and viability for customer access network by assessing the market trend, growth and penetration, demand forecast, network utilization and technology option to achieve an optimum and cost-effective network. 3) Plan, forecast, analyze and optimize power and space requirement for all types of equipment through evaluating the existing infra-structure usage to support project implementation. 4) Coordinate, consolidate and assure Transmission Network Implementation project listing is ready for Business Plan submission to meet customer requirement. 5) Manage, review and collaborate synchronization Transmission Network Implementation master plan for fiber equipment for optimum service quality to customers. 6) Forecast and collaborate the annual material required to Procurement for material forward planning and supplier contract management. 7) Manage and ensure the Transmission Network Implementation financial management aspects of capital work programmed is adhered so as to improve the financial standing of the company. 8) Manage and control Transmission Network Implementation project planning in order to assure agreed Ready for Service date (with LOBs) are met to fulfill the customer needs. 9) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.

AREA	Wired Network Development (ND) - Transmission Network Design & Planning	Wired Network Development (ND) - Transmission Network Implementation
	<p>9) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p> <p>10) Develop competence and skill manpower according to latest technology to provide quality network with ensure all manpower attend courses and trained.</p> <p>11) Manage human and financial resources to facilitate high level of effectiveness.</p>	<p>10) Develop competence and skill manpower according to latest technology to provide quality network with ensure all manpower attend courses and trained.</p> <p>11) Manage human and financial resources to facilitate high level of effectiveness.</p>
LEVEL 4	<p><u>Executive / Engineer</u></p> <p>1) Coordinate and ensure all installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand.</p> <p>2) Execute and ensure the Transmission Network Design & Planning financial management aspects of capitol work programmed is adhered so as to improve the financial standing of the company.</p> <p>3) Execute and control Transmission Network Design & Planning project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs.</p> <p>4) Monitor and control Transmission Network Design & Planning project implementation in order to assure implementation works follow/comply with OSH requirement.</p> <p>5) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p>	<p><u>Executive / Engineer</u></p> <p>1) Coordinate and ensure all installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand.</p> <p>2) Execute and ensure the Transmission Network Implementation financial management aspects of capitol work programmed is adhered so as to improve the financial standing of the company.</p> <p>3) Execute and control Transmission Network Implementation project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs.</p> <p>4) Monitor and control Transmission Network project implementation in order to assure implementation works follow/comply with OSH requirement.</p> <p>5) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p> <p>6) Manage Transmission Network Implementation human resources to facilitate high level of effectiveness.</p>

AREA	Wired Network Development (ND) - Transmission Network Design & Planning	Wired Network Development (ND) - Transmission Network Implementation
	6) Manage Transmission Network Design & Planning human resources to facilitate high level of effectiveness.	
LEVEL 3	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine procedure according to Transmission ND SOP. 2) Perform fault handling and escalation. 3) Monitor Transmission Network alarm and performance. 4) Troubleshoot and rectification of the Transmission ND simple problem. 	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine procedure according to Transmission ND SOP. 2) Perform fault handling and escalation. 3) Monitor Transmission Network alarm and performance. 4) Troubleshoot and rectification of the Transmission ND simple problem.
LEVEL 2	No Level	No Level
LEVEL 1	No Level	No Level

Table 4.29: List of Responsibilities for Group 611 Based on Table 4.9 (4 of 7)

AREA	Wired Network Development (ND) – Access Network Design & Planning	Wired Network Development (ND) - Access Network Implementation	Wired Network Operation Centre (NOC) - IP Core (IP Core BB)
LEVEL 8	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Developing the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.

AREA	Wired Network Development (ND) – Access Network Design & Planning	Wired Network Development (ND) - Access Network Implementation	Wired Network Operation Centre (NOC) - IP Core (IP Core BB)
LEVEL 7	<p><u>Regional General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance. 5) Track project and report status to appropriate management. 6) Mentor less experienced staff; and may instruct, direct and check their work. 	<p><u>Regional General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance. 5) Track project and report status to appropriate management. 6) Mentor less experienced staff; and may instruct, direct and check their work. 	<p><u>IP Core NOC General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance. 5) Track project and report status to appropriate management. 6) Mentor less experienced staff; and may instruct, direct and check their work.

AREA	Wired Network Development (ND) – Access Network Design & Planning	Wired Network Development (ND) - Access Network Implementation	Wired Network Operation Centre (NOC) - IP Core (IP Core BB)
LEVEL 6	<p><u>Regional ND Head of Department</u></p> <ol style="list-style-type: none"> 1) Evaluate the technical feasibility of network infrastructure and make recommendation to management with respect to technical issues and work with vendors to create optimum cost-effective solutions. 2) Make decision regarding design issues to create cost effective solutions. 3) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 4) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 5) Consult with client, data processing management and staff in the design and implementation on few or modified telecommunication networks. 	<p><u>Regional ND Head of Department</u></p> <ol style="list-style-type: none"> 1) Evaluate the technical feasibility of network infrastructure and make recommendation to management with respect to technical issues and work with vendors to create optimum cost-effective solutions. 2) Make decision regarding design issues to create cost effective solutions. 3) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 4) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 5) Consult with client, data processing management and staff in the design and implementation on few or modified telecommunication networks. 	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Further develop process and procedures within the IP Core NOC and overall integration with other NOC. 2) Make recommendations for changes and improvements and communicate to senior management. 3) Ensure continual process improvement of the IP Core NOC to include automation of IP Core NOC activities, reporting, implementation of monitoring activities and administration, and establishing KPIs 4) Manage operation staff team resources. 5) Oversee day to day IP Core NOC operations, escalations, ticketing and communications with all client and stakeholder.

AREA	Wired Network Development (ND) – Access Network Design & Planning	Wired Network Development (ND) - Access Network Implementation	Wired Network Operation Centre (NOC) - IP Core (IP Core BB)
	<p>6) Design networks and lead implementation process; coordinate supplies, contractors and operations.</p> <p>7) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance.</p> <p>8) Serve as point of escalation for complex problem resolution.</p> <p>9) Prepare and maintain technical specification and documents, drawings and system documentation.</p> <p>10) Interpret complex technical diagram in order to affect problem resolution.</p> <p>11) Assist in the evaluation of vendor proposals with respect to the hardware, communication protocols, switching methods, access methods and tariffs and in the procurement of software and equipment; recommend equipment for purchase or lease.</p> <p>12) Test and verify all changes to ensure changes occur without interruption.</p> <p>13) Track project and report status to appropriate management.</p>	<p>6) Design networks and lead implementation process; coordinate supplies, contractors and operations.</p> <p>7) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance.</p> <p>8) Serve as point of escalation for complex problem resolution.</p> <p>9) Prepare and maintain technical specification and documents, drawings and system documentation.</p> <p>10) Interpret complex technical diagram in order to affect problem resolution.</p> <p>11) Assist in the evaluation of vendor proposals with respect to the hardware, communication protocols, switching methods, access methods and tariffs and in the procurement of software and equipment; recommend equipment for purchase or lease.</p> <p>12) Test and verify all changes to ensure changes occur without interruption.</p> <p>13) Track project and report status to appropriate management.</p>	

AREA	Wired Network Development (ND) – Access Network Design & Planning	Wired Network Development (ND) - Access Network Implementation	Wired Network Operation Centre (NOC) - IP Core (IP Core BB)
	14) May mentor less experienced staff; and may instruct, direct and check their work.	14) May mentor less experienced staff; and may instruct, direct and check their work.	
LEVEL 5	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Formulate, analyse and develop a strategic and tactical customer access network master plan based on the consolidated demand forecast, network growth trend, network utilisation and technology option to fulfill customer demand in competitive environment. 2) Organise Access Network Design and Planning project feasibility and viability for customer access network by assessing the market trend, growth and penetration, demand forecast, network utilisation and technology option to achieve an optimum and cost-effective network. 3) Plan, forecast, analyse and optimize power and space requirement for all types of equipment through evaluating the existing infra-structure usage to support project implementation. 4) Coordinate, consolidate and assure Access Network Design and Planning project listing is ready for Business Plan 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Formulate, analyse and develop a strategic and tactical customer access network master plan based on the consolidated demand forecast, network growth trend, network utilisation and technology option to fulfill customer demand in competitive environment. 2) Organize Access Network Implementation project feasibility and viability for customer access network by assessing the market trend, growth and penetration, demand forecast, network utilisation and technology option to achieve an optimum and cost-effective network. 3) Plan, forecast, analyse and optimize power and space requirement for all types of equipment through evaluating the existing infra-structure usage to support project implementation. 4) Coordinate, consolidate and assure Access Network Implementation project listing is ready for Business 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Ensure maximum IP Core service availability and performance. 2) Perform IP Core incident management coordination among internal and external IP Core NOC team. 3) Oversee IP Core problem isolation, issue resolution, and escalation management according to pre-defined protocols. 4) Analyse and propose improvement of IP Core network performance. 5) Develop and establish operating policies, process and procedures for IP Core NOC 6) Responsible for managing outages, SLA, uptime, service availability, root cause analysis. 7) Develop, mentor and train staff; seek to improve processes and procedures with the goal of improving service to customers. 8) Analyse IP Core NOC activity and make recommendations for changes in the IP

AREA	Wired Network Development (ND) – Access Network Design & Planning	Wired Network Development (ND) - Access Network Implementation	Wired Network Operation Centre (NOC) - IP Core (IP Core BB)
	<p>submission to meet customer requirement.</p> <p>5) Manage, review and collaborate synchronization master plan for fiber equipment for optimum service quality to customers.</p> <p>6) Forecast and collaborate the annual material required to Procurement for material forward planning and supplier contract management.</p> <p>7) Manage and ensure the Access Network Design and Planning financial management aspects of capital work programmed is adhered so as to improve the financial standing of the company.</p> <p>8) Manage and control Access Network Design and Planning project planning in order to assure agreed Ready for Service date (with LOBs) are met to fulfill the customer needs.</p> <p>9) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p> <p>10) Develop competence and skill manpower according to latest technology to provide quality network</p>	<p>Plan submission to meet customer requirement.</p> <p>5) Manage, review and collaborate synchronization master plan for fiber equipment for optimum service quality to customers.</p> <p>6) Forecast and collaborate the annual material required to Procurement for material forward planning and supplier contract management.</p> <p>7) Manage and ensure the Access Network Implementation financial management aspects of capital work programmed is adhered so as to improve the financial standing of the company.</p> <p>8) Manage and control Access Network Implementation project planning in order to assure agreed Ready for Service date (with LOBs) are met to fulfill the customer needs.</p> <p>9) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.</p> <p>10) Develop competence and skill manpower according to latest</p>	<p>Core NOC procedures and systems to upper management.</p> <p>9) Communicate with other NOC functional managers and executive management to ensure issues are resolved.</p>

AREA	Wired Network Development (ND) – Access Network Design & Planning	Wired Network Development (ND) - Access Network Implementation	Wired Network Operation Centre (NOC) - IP Core (IP Core BB)
	<p>with ensure all manpower attend courses and trained.</p> <p>11) Manage Access Network Design and Planning human and financial resources to facilitate high level of effectiveness.</p>	<p>technology to provide quality network with ensure all manpower attend courses and trained.</p> <p>11) Manage Access Network Implementation human and financial resources to facilitate high level of effectiveness.</p>	
LEVEL 4	<p><u>Executive / Engineer</u></p> <p>1) Coordinate and ensure all Access Network Design and Planning installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand.</p> <p>2) Execute and ensure the Access Network Design and Planning financial management aspects of capitol work programmed is adhered so as to improve the financial standing of the company.</p> <p>3) Execute and control Access Network Design and Planning project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs.</p> <p>4) Monitor and control Access Network Design and Planning project implementation in order to assure</p>	<p><u>Executive / Engineer</u></p> <p>1) Coordinate and ensure all Access Network Implementation installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand.</p> <p>2) Execute and ensure the Access Network Implementation financial management aspects of capitol work programmed is adhered so as to improve the financial standing of the company.</p> <p>3) Execute and control Access Network Implementation project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs.</p> <p>4) Monitor and control Access Network Implementation project implementation</p>	<p><u>Executive / Engineer</u></p> <p>1) Provide highest level of support and communication to internal or external clients.</p> <p>2) Analyse of IP Core BB Network performance.</p> <p>3) Manage IP Core BB Network operation staff team performance.</p> <p>4) Solve or assist IP Core BB NOC technicians in solving non-routine or complex software, hardware, and procedure problems.</p> <p>5) Provide support to IP Core BB technical staff, vendors, and end users; identify, research and resolve technical issues.</p> <p>6) Escalate IP Core BB issues to outside vendors and clients as necessary.</p>

AREA	Wired Network Development (ND) – Access Network Design & Planning	Wired Network Development (ND) - Access Network Implementation	Wired Network Operation Centre (NOC) - IP Core (IP Core BB)
	<p>implementation works follow/comply with OSH requirement.</p> <p>5) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing project brief to ensure awareness with meeting or briefing.</p> <p>6) Manage Access Network Design and Planning human resources to facilitate high level of effectiveness.</p>	<p>in order to assure implementation works follow/comply with OSH requirement.</p> <p>5) Establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing project brief to ensure awareness with meeting or briefing.</p> <p>6) Manage Access Network Implementation human resources to facilitate high level of effectiveness.</p>	<p>7) Meet the standard IP Core BB client SOP and SLA.</p> <p>8) Monitor IP Core BB response times and efficiencies and resolve complex problems.</p>
LEVEL 3	<p><u>Technician</u></p> <p>1) Provide quality support, follow and perform routine procedure according to Access Network Design and Planning SOP.</p> <p>2) Assist Access Network Design and plan fault handling and escalation.</p> <p>3) Monitor Access Network alarm and performance.</p> <p>4) Troubleshoot and rectification of the Access Network problem.</p>	<p><u>Technician</u></p> <p>1) Provide quality support, follow and perform routine procedure according to Access Network Implementation SOP.</p> <p>2) Assist Access Network Implementation fault handling and escalation.</p> <p>3) Monitor Access Network alarm and performance.</p> <p>4) Troubleshoot and rectification of the Access Network problem.</p>	<p><u>Technician</u></p> <p>1) Provide IP Core BB quality support, follow and perform routine procedure according to IP Core BB NOC SOP.</p> <p>2) Handle fault and escalation.</p> <p>3) Monitor IP Core BB Network alarm and performance.</p> <p>4) Troubleshoot and rectification of the IP Core BB problem.</p>
LEVEL 2	No Level	No Level	<p><u>Splicer</u></p> <p>1) Perform cable installation, construction, maintenance and repair works.</p>

AREA	Wired Network Development (ND) – Access Network Design & Planning	Wired Network Development (ND) - Access Network Implementation	Wired Network Operation Centre (NOC) - IP Core (IP Core BB)
			<ul style="list-style-type: none"> 2) Locate and repair cables faults to maintain existing cable network without causing signal failure interruptions. 3) Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems. 4) Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines. 5) Test and locate cable faults, and maintain and repair cables. 6) Install communications equipment in offices, private homes, and buildings that are under construction. 7) Set up, rearrange, or replace routing and dialling equipment. 8) Inspect and service equipment, wiring, and phone jacks. 9) Repair or replace faulty, damaged, or malfunctioning equipment.
LEVEL 1	No Level	No Level	No Level

Table 4.30: List of Responsibilities for Group 611 Based on Table 4.10 (5 of 7)

AREA	Wired Network Operation Centre (NOC) - IP Core (IP Core ME)	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	Wired Network Operation Centre (NOC) - Transmission (TX Submarine)
LEVEL 8	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors 9) Develop the company’s strategy for using technological resources 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.

AREA	Wired Network Operation Centre (NOC) - IP Core (IP Core ME)	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	Wired Network Operation Centre (NOC) - Transmission (TX Submarine)
LEVEL 7	<p><u>IP Core NOC General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance. 5) Track project and report status to appropriate management. 6) Mentor less experienced staff; and may instruct, direct and check their work. 	<p><u>IP Core NOC General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance. 5) Track project and report status to appropriate management. 6) Mentor less experienced staff; and may instruct, direct and check their work. 	<p><u>Transmission NOC General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance. 5) Track project and report status to appropriate management. 6) Mentor less experienced staff; and may instruct, direct and check their work.

AREA	Wired Network Operation Centre (NOC) - IP Core (IP Core ME)	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	Wired Network Operation Centre (NOC) - Transmission (TX Submarine)
LEVEL 6	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Develop process and procedures within the Core - Metro Ethernet NOC and overall integration with other NOC. 2) Make recommendations for changes and improvements and communicate to senior management. 3) Ensure continual process improvement of the Core - Metro Ethernet NOC to include automation of Core - Metro Ethernet NOC activities, reporting, implementation of monitoring activities and administration, and establishing KPIs. 4) Manage operation staff team resources. 5) Oversee day to day Core - Metro Ethernet NOC operations, escalations, ticketing and communications with all client and stakeholder. 	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Develop process and procedures within the IP Core NOC and overall integration with other NOC. 2) Make recommendations for changes and improvements and communicate to senior management. 3) Ensure continual process improvement of the IP Core NOC to include automation of IP Core NOC activities, reporting, implementation of monitoring activities and administration, and establishing KPIs. 4) Manage operation staff team resources. 5) Oversee day to day IP Core NOC operations, escalations, ticketing and communications with all client and stakeholder. 	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Further develop process and procedures within the Transmission NOC and overall integration with other NOC. 2) Make recommendations for changes and improvements and communicate to senior management. 3) Ensure continual process improvement of the Transmission NOC to include automation of Transmission NOC activities, reporting, implementation of monitoring activities and administration, and establishing KPIs. 4) Manage operation staff team resources. 5) Oversee day to day Transmission NOC operations, escalations, ticketing and communications with all client and stakeholder.
LEVEL 5	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Ensure maximum IP Core ME service availability and performance 2) Perform IP Core ME incident management coordination among internal and external Core - Metro Ethernet NOC team. 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Ensure maximum service availability and performance. 2) Perform incident management coordination among internal and external Core - IP NOC team. 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Ensure maximum Transmission (TX Submarine) service availability and performance. 2) Perform incident management coordination among Transmission (TX Submarine) NOC team.

AREA	Wired Network Operation Centre (NOC) - IP Core (IP Core ME)	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	Wired Network Operation Centre (NOC) - Transmission (TX Submarine)
	<ul style="list-style-type: none"> 3) Oversee IP Core ME problem isolation, issue resolution, and escalation management according to pre-defined protocols. 4) Analyse and propose improvement of Core - Metro Ethernet network performance. 5) Develop and establish operating policies, process and procedures for Core - Metro Ethernet NOC. 6) Responsible for managing outages, SLA, uptime, service availability, root cause analysis. 7) Develop, mentor and train staff; seek to improve processes and procedures with the goal of improving service to customers. 8) Analyse Core - Metro Ethernet NOC activity and make recommendations for changes in the Core - Metro Ethernet NOC procedures and systems to upper management. 9) Communicate with other NOC functional managers and executive management to ensure issues are resolved. 	<ul style="list-style-type: none"> 3) Oversee problem isolation, issue resolution, and escalation management according to pre-defined protocols. 4) Analyse and propose improvement of Core - IP network performance. 5) Develop and establish operating policies, process and procedures for Core - IP NOC. 6) Responsible for managing outages, SLA, uptime, service availability, root cause analysis. 7) Develop, mentor and train staff; seek to improve processes and procedures with the goal of improving service to customers. 8) Analyse Core - IP NOC activity and make recommendations for changes in the Core - IP NOC procedures and systems to upper management. 9) Communicate with other NOC functional managers and executive management to ensure issues are resolved. 	<ul style="list-style-type: none"> 3) Oversee Transmission (TX Submarine) problem isolation, issue resolution, and escalation management according to pre-defined protocols. 4) Analyse and propose improvement of Transmission (TX Submarine) network performance. 5) Develop and establish operating policies, process and procedures for Transmission (TX Submarine) NOC. 6) Responsible for managing outages, SLA, uptime, service availability, root cause analysis. 7) Develop, mentor and train staff; seek to improve processes and procedures with the goal of improving service to customers. 8) Analyse Transmission (TX Submarine) NOC activity and make recommendations for changes in the Transmission (TX Submarine) NOC procedures and systems to upper management. 9) Communicate with other NOC functional managers and executive management to ensure issues are resolved.

AREA	Wired Network Operation Centre (NOC) - IP Core (IP Core ME)	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	Wired Network Operation Centre (NOC) - Transmission (TX Submarine)
LEVEL 4	<p><u>Executive / Engineer</u></p> <ol style="list-style-type: none"> 1) Provide highest level of support and communication to internal or external clients. 2) Analyse Core - Metro Ethernet Network performance. 3) Manage Core - Metro Ethernet Network operation staff team performance. 4) Solve or assist Core - Metro Ethernet NOC technicians in solving non-routine or complex software, hardware, and procedure problems. 5) Provide support to technical staff, vendors, and end users; identify, research and resolve technical issues. 6) Escalate issues to outside vendors and clients as necessary. 7) Monitor response times and efficiencies and resolve complex problems. 	<p><u>Executive / Engineer</u></p> <ol style="list-style-type: none"> 1) Provide highest level of support and communication to internal or external clients. 2) Analyse IP Core IP Network performance. 3) Manage IP Core IP Network operation staff team performance. 4) Solve or assist IP Core IP NOC technicians in solving non-routine or complex software, hardware, and procedure problems. 5) Provide support to technical staff, vendors, and end users; identify, research and resolve technical issues. 6) Escalate issues to outside vendors and clients as necessary. 7) Monitor response times and efficiencies and resolve complex problems. 	<p><u>Executive / Engineer</u></p> <ol style="list-style-type: none"> 1) Provide highest level of support and communication to internal or external clients. 2) Analyse Transmission (TX Submarine) network performance. 3) Manage Transmission (TX Submarine) Network operation staff team performance. 4) Solve or assist Transmission (TX Submarine) NOC technicians in solving non-routine or complex software, hardware, and procedure problems. 5) Provide support to technical staff, vendors, and end users; identify, research and resolve technical issues. 6) Escalate Transmission (TX Submarine) issues to outside vendors and clients as necessary. 7) Monitor response times and efficiencies and resolve complex problems.
LEVEL 3	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine procedure according to IP Core NOC SOP. 2) Handle fault and escalation. 	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine procedure according to IP Core NOC SOP. 2) Handle fault and escalation. 	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine procedure according to Transmission (TX Submarine) SOP. 2) Handle fault and escalation.

AREA	Wired Network Operation Centre (NOC) - IP Core (IP Core ME)	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	Wired Network Operation Centre (NOC) - Transmission (TX Submarine)
	3) Monitor IP Core Network alarm and performance. 4) Troubleshoot and rectification of the simple problem. 5) Meet the standard IP Core NOC client SOP and SLA.	3) Monitor IP Core Network alarm and performance. 4) Troubleshoot and rectification of the simple problem. 5) Meet the standard IP Core NOC client SOP and SLA.	3) Monitor Transmission (TX Submarine) Network alarm and performance 4) Troubleshoot and rectification of the Transmission (TX Submarine) problem. 5) Meet the standard Transmission NOC client SOP and SLA.
LEVEL 2	<u>Splicer</u> 1) Perform cable installation, construction, maintenance and repair works. 2) Locate and repair cables faults to maintain existing cable network without causing signal failure interruptions. 3) Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems. 4) Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines. 5) Test and locate cable faults, and maintain and repair cables. 6) Install communications equipment in offices, private homes, and buildings that are under construction.	<u>Splicer</u> 1) Perform cable installation, construction, maintenance and repair works. 2) Locate and repair cables faults to maintain existing cable network without causing signal failure interruptions. 3) Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems. 4) Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines. 5) Test and locate cable faults, and maintain and repair cables.	<u>Splicer</u> 1) Perform cable installation, construction, maintenance and repair works. 2) Locate and repair cables faults to maintain existing cable network without causing signal failure interruptions. 3) Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems. 4) Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines. 5) Test and locate cable faults, and maintain and repair cables. 6) Install communications equipment in offices, private homes, and buildings that are under construction. 7) Set up, rearrange, or replace routing and dialling equipment.

AREA	Wired Network Operation Centre (NOC) - IP Core (IP Core ME)	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	Wired Network Operation Centre (NOC) - Transmission (TX Submarine)
	7) Set up, rearrange, or replace routing and dialling equipment. 8) Inspect and service equipment, wiring, and phone jacks. 9) Repair or replace faulty, damaged, or malfunctioning equipment.	6) Install communications equipment in offices, private homes, and buildings that are under construction. 7) Set up, rearrange, or replace routing and dialling equipment. 8) Inspect and service equipment, wiring, and phone jacks. 9) Repair or replace faulty, damaged, or malfunctioning equipment.	8) Inspect and service equipment, wiring, and phone jacks. 9) Repair or replace faulty, damaged, or malfunctioning equipment.
LEVEL 1	No Level	No Level	No Level

Table 4.31: List of Responsibilities for Group 611 Based on Table 4.10 (6 of 7)

AREA	Wired Network Operation Centre (NOC) - Transmission (TX DWDM)	Wired Network Operation Centre (NOC) - Access (Active Access)	Wired Network Operation Centre (NOC) - Access (Passive Access)
LEVEL 8	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company's strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance 7) Use stakeholders' feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company's strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company's strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders' feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company's strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company's strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders' feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company's strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.

AREA	Wired Network Operation Centre (NOC) - Transmission (TX DWDM)	Wired Network Operation Centre (NOC) - Access (Active Access)	Wired Network Operation Centre (NOC) - Access (Passive Access)
LEVEL 7	<p><u>Transmission NOC General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. 5) Tune networks for optimal system performance. 6) Track project and report status to appropriate management. 7) Mentor less experienced staff; and may instruct, direct and check their work. 	<p><u>Access NOC General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. 5) Tune networks for optimal system performance. 6) Track project and report status to appropriate management. 7) Mentor less experienced staff; and may instruct, direct and check their work. 	<p><u>Access NOC General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, provide clear direction to Network Engineers where required. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. 5) Tune networks for optimal system performance. 6) Track project and report status to appropriate management. 7) Mentor less experienced staff; and may instruct, direct and check their work.

AREA	Wired Network Operation Centre (NOC) - Transmission (TX DWDM)	Wired Network Operation Centre (NOC) - Access (Active Access)	Wired Network Operation Centre (NOC) - Access (Passive Access)
LEVEL 6	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Further develop process and procedures within the Transmission NOC and overall integration with other NOC. 2) Make recommendations for changes and improvements and communicate to senior management. 3) Ensure continual process improvement of the Transmission NOC to include automation of Transmission NOC activities, reporting, implementation of monitoring activities and administration, and establishing KPIs. 4) Manage operation staff team resources. 5) Oversee day to day Transmission NOC operations, escalations, ticketing and communications with all client and stakeholder. 	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Further develop process and procedures within the Access NOC and overall integration with other NOC. 2) Make recommendations for changes and improvements and communicate to senior management. 3) Ensure continual process improvement of the Access NOC to include automation of Access NOC activities, reporting, implementation of monitoring activities and administration, and establishing KPIs. 4) Manage operation staff team resources. 5) Oversee day to day Access NOC operations, escalations, ticketing and communications with all client and stakeholder. 	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Further develop process and procedures within the Access NOC and overall integration with other NOC. 2) Make recommendations for changes and improvements and communicate to senior management. 3) Ensure continual process improvement of the Access NOC to include automation of Access NOC activities, reporting, implementation of monitoring activities and administration, and establishing KPIs. 4) Manage operation staff team resources. 5) Oversee day to day Access NOC operations, escalations, ticketing and communications with all client and stakeholder.
LEVEL 5	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Ensure maximum Transmission (TX DWDM) service availability and performance. 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Ensure Active Access maximum service availability and performance. 2) Perform incident management coordination among internal and external Access NOC team. 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Ensure Passive Access maximum service availability and performance. 2) Perform incident management coordination among internal and external Passive Access NOC team.

AREA	Wired Network Operation Centre (NOC) - Transmission (TX DWDM)	Wired Network Operation Centre (NOC) - Access (Active Access)	Wired Network Operation Centre (NOC) - Access (Passive Access)
	<ul style="list-style-type: none"> 2) Perform incident management coordination among Transmission (TX DWDM) NOC team. 3) Oversee Transmission (TX DWDM) problem isolation, issue resolution, and escalation management according to pre-defined protocols. 4) Analyse and propose improvement of Transmission (TX DWDM) network performance. 5) Develop and establish operating policies, process and procedures for Transmission (TX DWDM) NOC. 6) Responsible for managing outages, SLA, uptime, service availability, root cause analysis. 7) Develop, mentor and train staff; seek to improve processes and procedures with the goal of improving service to customers. 8) Analyse Transmission (TX DWDM) NOC activity and make recommendations for changes in the Transmission (TX DWDM) NOC procedures and systems to upper management. 	<ul style="list-style-type: none"> 3) Oversee Active Access problem isolation, issue resolution, and escalation management according to pre-defined protocols. 4) Analyse and propose improvement of Access network performance. 5) Develop and establish operating policies, process and procedures for Active Access NOC. 6) Responsible for managing outages, SLA, uptime, service availability, root cause analysis. 7) Develop, mentor and train staff; seek to improve processes and procedures with the goal of improving service to customers. 8) Analyse Active Access NOC activity and make recommendations for changes in the Active Access NOC procedures and systems to upper management. 9) Communicate with other NOC functional managers and executive management to ensure issues are resolved. 	<ul style="list-style-type: none"> 3) Oversee Passive Access problem isolation, issue resolution, and escalation management according to pre-defined protocols. 4) Analyse and propose improvement of Access network performance. 5) Develop and establish operating policies, process and procedures for Passive Access NOC. 6) Responsible for managing outages, SLA, uptime, service availability, root cause analysis. 7) Develop, mentor and train staff; seek to improve processes and procedures with the goal of improving service to customers. 8) Analyse Passive Access NOC activity and make recommendations for changes in the Passive Access NOC procedures and systems to upper management. 9) Communicate with other NOC functional managers and executive management to ensure issues are resolved.

AREA	Wired Network Operation Centre (NOC) - Transmission (TX DWDM)	Wired Network Operation Centre (NOC) - Access (Active Access)	Wired Network Operation Centre (NOC) - Access (Passive Access)
	9) Communicate with other NOC functional managers and executive management to ensure issues are resolved.		
LEVEL 4	<p><u>Executive / Engineer</u></p> <ol style="list-style-type: none"> 1) Provide highest level of support and communication to internal or external clients. 2) Analyse Transmission (TX DWDM) Network performance. 3) Manage Transmission Network operation staff team performance. 4) Solve or assist Transmission NOC technicians in solving non-routine or complex software, hardware, and procedure problems. 5) Provide support to technical staff, vendors, and end users; identify, research and resolve technical issues. 6) Escalate Transmission (TX DWDM) issues to outside vendors and clients as necessary. 7) Monitor Transmission (TX DWDM) response times and efficiencies and resolve complex problems. 	<p><u>Executive / Engineer</u></p> <ol style="list-style-type: none"> 1) Provide highest level of support and communication to internal or external clients. 2) Analyse Active Access Network performance. 3) Manage Active Access Network operation staff team performance. 4) Solve or assist Active Access NOC technicians in solving non-routine or complex software, hardware, and procedure problems. 5) Provide support to technical staff, vendors, and end users; identify, research and resolve technical issues. 6) Escalate Active Access issues to outside vendors and clients as necessary. 7) Meet the standard Active Access client SOP and SLA. 	<p><u>Executive / Engineer</u></p> <ol style="list-style-type: none"> 1) Provide highest level of support and communication to internal or external clients. 2) Analyse Passive Access Network performance. 3) Manage Passive Access Network operation staff team performance. 4) Solve or assist Passive Access NOC technicians in solving non-routine or complex software, hardware, and procedure problems. 5) Provide support to technical staff, vendors, and end users; identify, research and resolve technical issues. 6) Escalate Passive Access issues to outside vendors and clients as necessary. 7) Meet the standard Passive Access client SOP and SLA. 8) Monitor Passive Access response times and efficiencies and resolve complex problems.

AREA	Wired Network Operation Centre (NOC) - Transmission (TX DWDM)	Wired Network Operation Centre (NOC) - Access (Active Access)	Wired Network Operation Centre (NOC) - Access (Passive Access)
		8) Monitor Active Access response times and efficiencies and resolve complex problems.	
LEVEL 3	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine procedure according to Transmission SOP. 2) Assist Transmission (TX DWDM) Fault handling and escalation. 3) Monitor Transmission Network alarm and performance. 4) Troubleshoot and rectification of the Transmission (TX DWDM) problem. 5) Meet the standard Transmission NOC client SOP and SLA. 	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine procedure according to Active Access NOC SOP. 2) Active Access Fault handling and escalation. 3) Monitor Active Access Network alarm and performance. 4) Troubleshoot and rectification of the Active Access problem. 5) Meet the standard Access NOC client SOP and SLA. 	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine procedure according to Passive Access NOC SOP. 2) Passive Access Fault handling and escalation. 3) Monitor Passive Access Network alarm and performance. 4) Troubleshoot and rectification of the Passive Access problem. 5) Meet the standard Access NOC client SOP and SLA.
LEVEL 2	<p><u>Splicer</u></p> <ol style="list-style-type: none"> 1) Perform cable installation, construction, maintenance and repair works. 2) Locate and repair cables faults to maintain existing cable network without causing signal failure interruptions. 3) Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems. 	<p><u>Splicer</u></p> <ol style="list-style-type: none"> 1) Perform cable installation, construction, maintenance and repair works. 2) Locate and repair cables faults to maintain existing cable network without causing signal failure interruptions. 3) Pull electrical cables through underground pipes or conduits and 	<p><u>Splicer</u></p> <ol style="list-style-type: none"> 1) Perform cable installation, construction, maintenance and repair works. 2) Locate and repair cables faults to maintain existing cable network without causing signal failure interruptions. 3) Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems.

AREA	Wired Network Operation Centre (NOC) - Transmission (TX DWDM)	Wired Network Operation Centre (NOC) - Access (Active Access)	Wired Network Operation Centre (NOC) - Access (Passive Access)
	<p>4) Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines.</p> <p>5) Test and locate cable faults, and maintain and repair cables.</p> <p>6) Install communications equipment in offices, private homes, and buildings that are under construction.</p> <p>7) Set up, rearrange, or replace routing and dialling equipment.</p> <p>8) Inspect and service equipment, wiring, and phone jacks.</p> <p>9) Repair or replace faulty, damaged, or malfunctioning equipment.</p>	<p>join cables in transmission and distribution systems.</p> <p>4) Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines.</p> <p>5) Test and locate cable faults, and maintain and repair cables.</p> <p>6) Install communications equipment in offices, private homes, and buildings that are under construction.</p> <p>7) Set up, rearrange, or replace routing and dialling equipment.</p> <p>8) Inspect and service equipment, wiring, and phone jacks.</p> <p>9) Repair or replace faulty, damaged, or malfunctioning equipment.</p>	<p>4) Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines.</p> <p>5) Test and locate cable faults, and maintain and repair cables.</p> <p>6) Install communications equipment in offices, private homes, and buildings that are under construction.</p> <p>7) Set up, rearrange, or replace routing and dialling equipment.</p> <p>8) Inspect and service equipment, wiring, and phone jacks.</p> <p>9) Repair or replace faulty, damaged, or malfunctioning equipment.</p>
LEVEL 1	No Level	No Level	No Level

Table 4.32: List of Responsibilities for Group 561 Based on Table 4.11 (7 of 7)

AREA	Wired Network Field Maintenance (NFM) - Data Services	Wired Network Field Maintenance (NFM) - Cable	Wired Network Field Maintenance (NFM) – Installation
LEVEL 8	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.

AREA	Wired Network Field Maintenance (NFM) - Data Services	Wired Network Field Maintenance (NFM) - Cable	Wired Network Field Maintenance (NFM) – Installation
LEVEL 7	<p><u>General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, where required provide clear direction to Network Engineers. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. Tune networks for optimal system performance. 5) Track project and report status to appropriate management. 6) Mentor less experienced staff; and may instruct, direct and check their work. 	<p><u>General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, where required provide clear direction to Network Engineers. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. 5) Track project and report status to appropriate management. 6) Mentor less experienced staff; and may instruct, direct and check their work. 	<p><u>General Manager</u></p> <ol style="list-style-type: none"> 1) Make decision regarding design issues to create cost effective solutions. 2) Deploy solid network engineering and design for corporate networking solutions within the framework of network strategy, budgetary guidelines and operational process. In addition, where required provide clear direction to Network Engineers. 3) Perform all the responsibilities of the Senior Network Engineer in the development of Network designs recommendations/plans/schematics for regional network/communications infrastructure with input from Regional Architect and Sr. Network Engineers. 4) Monitor the operation of the networks and system to ensure proper utilisation of line, hardware and software. 5) Track project and report status to appropriate management. 6) Mentor less experienced staff; and may instruct, direct and check their work.

AREA	Wired Network Field Maintenance (NFM) - Data Services	Wired Network Field Maintenance (NFM) - Cable	Wired Network Field Maintenance (NFM) – Installation
LEVEL 6	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Develop process and procedures within the Network Field Maintenance (NFM) – Data Service and overall integration with other division. 2) Make recommendations for changes and improvements and communicate to senior management. 3) Ensure continual process improvement of the Network Field Maintenance (NFM) - Data Service to include automation of Network Field Maintenance (NFM) - Data Service activities, reporting, implementation of monitoring activities and administration, and establishing KPIs. 4) Manage operation staff team resources. 5) Oversee day to day Network Field Maintenance (NFM) - Data Service operations, escalations, ticketing and communications with all client and stakeholder. 	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Develop process and procedures within the Network Field Maintenance (NFM) - Cable and overall integration with other division 2) Make recommendations for changes and improvements and communicate to senior management 3) Ensure continual process improvement of the Network Field Maintenance (NFM) - Cable to include automation of Network Field Maintenance (NFM) - Cable activities, reporting, implementation of monitoring activities and administration, and establishing KPIs 4) Manage operation staff team resources 5) Oversee day to day Network Field Maintenance (NFM) – Cable operations, escalations, ticketing and communications with all client and stakeholder. 	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Develop process and procedures within the Network Field Maintenance (NFM) - Installation and overall integration with other division. 2) Make recommendations for changes and improvements and communicate to senior management. 3) Ensure continual process improvement of the Network Field Maintenance (NFM) - Installation to include automation of Network Field Maintenance (NFM) - Installation activities, reporting, implementation of monitoring activities and administration, and establishing KPIs. 4) Manage operation staff team resources. 5) Oversee day to day Network Field Maintenance (NFM) - Installation operations, escalations, ticketing and communications with all client and stakeholder.

AREA	Wired Network Field Maintenance (NFM) - Data Services	Wired Network Field Maintenance (NFM) - Cable	Wired Network Field Maintenance (NFM) – Installation
LEVEL 5	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Ensure maximum service availability and performance. 2) Perform incident management coordination among internal and external Network Field Maintenance (NFM) – Data Services team. 3) Oversee problem isolation, issue resolution, and escalation management according to pre-defined protocols. 4) Analyse and propose improvement of Access network performance. 5) Develop and establish operating policies, process and procedures for Network Field Maintenance (NFM) – Data Services. 6) Responsible for managing outages, SLA, uptime, service availability, root cause analysis. 7) Develop, mentor and train staff; seek to improve processes and procedures with the goal of improving service to customers. 8) Analyse Network Field Maintenance (NFM) – Data Services activity and make recommendations for changes in the Network Field Maintenance (NFM) 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Ensure maximum service availability and performance. 2) Perform incident management coordination among internal and external Network Field Maintenance (NFM) – Cable team. 3) Oversee problem isolation, issue resolution, and escalation management according to pre-defined protocols. 4) Analyse and propose improvement of Access network performance. 5) Develop and establish operating policies, process and procedures for Network Field Maintenance (NFM) – Cable. 6) Responsible for managing outages, SLA, uptime, service availability, root cause analysis. 7) Develop, mentor and train staff; seek to improve processes and procedures with the goal of improving service to customers. 8) Analyse Network Field Maintenance (NFM) - Assurance activity and make recommendations for changes in the Network Field Maintenance (NFM) - 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Ensure maximum service availability and performance. 2) Perform incident management coordination among internal and external Network Field Maintenance (NFM) - Installation team. 3) Oversee problem isolation, issue resolution, and escalation management according to pre-defined protocols. 4) Develop and establish operating policies, process and procedures for Network Field Maintenance (NFM) – Installation. 5) Develop, mentor and train staff; seek to improve processes and procedures with the goal of improving service to customers. 6) Analyse Network Field Maintenance (NFM) - Installation activity and make recommendations for changes in the Network Field Maintenance (NFM) - Installation procedures and systems to upper management. 7) Communicate with other related functional managers and executive management to ensure issues are resolved.

AREA	Wired Network Field Maintenance (NFM) - Data Services	Wired Network Field Maintenance (NFM) - Cable	Wired Network Field Maintenance (NFM) – Installation
	<p>– Data Services procedures, and systems to upper management</p> <p>9) Communicate with other related functional managers and executive management to ensure issues are resolved.</p>	<p>Assurance procedures and systems to upper management.</p> <p>9) Communicate with other related functional managers and executive management to ensure issues are resolved.</p>	
LEVEL 4	<p><u>Executive / Engineer</u></p> <ol style="list-style-type: none"> 1) Provide highest level of support and communication to internal or external clients. 2) Analyse Access Network performance. 3) Manage Access Network operation staff team performance. 4) Solve or assist Network Field Maintenance (NFM) – Data Services technicians in solving non-routine or complex software, hardware, and procedure problems. 5) Provide support to technical staff, vendors, and end users; identify, research and resolve technical issues. 6) Escalate issues to outside vendors and clients as necessary. 7) Monitor response times and efficiencies and resolve complex problems. 	<p><u>Executive / Engineer</u></p> <ol style="list-style-type: none"> 1) Provide highest level of support and communication to internal or external clients. 2) Analyse Access Network performance. 3) Manage Access Network operation staff team performance. 4) Solve or assist Network Field Maintenance (NFM) – Cable technicians in solving non-routine or complex software, hardware, and procedure problems. 5) Provide support to technical staff, vendors, and end users; identify, research and resolve technical issues. 6) Escalate issues to outside vendors and clients as necessary. 7) Monitor response times and efficiencies and resolve complex problems. 	<p><u>Executive / Engineer</u></p> <ol style="list-style-type: none"> 1) Provide highest level of support and communication to internal or external clients. 2) Manage access network operation staff team performance. 3) Solve or assist Network Field Maintenance (NFM) – Installation technicians in solving non-routine or complex software, hardware, and procedure problems. 4) Provide support to technical staff, vendors, and end users; identify, research and resolve technical issues. 5) Escalate issues to outside vendors and clients as necessary. 6) Monitor installation times and efficiencies and resolve complex problems.

AREA	Wired Network Field Maintenance (NFM) - Data Services	Wired Network Field Maintenance (NFM) - Cable	Wired Network Field Maintenance (NFM) – Installation
LEVEL 3	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine assurance and maintenance procedure according to Network Field Maintenance (NFM) – Data Service SOP. 2) Perform fault handling and escalation. 3) Troubleshoot and rectification of the simple problem. 4) Manage all on site repair, maintenance and test tasks. 	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine assurance and maintenance procedure according to Network Field Maintenance (NFM) – Cable SOP. 2) Perform fault handling and escalation. 3) Troubleshoot and rectification of the simple problem. 4) Manage all on site repair, maintenance and test tasks. 	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Provide quality support, follow and perform routine Fulfilment and maintenance procedure according to Network Field Maintenance (NFM) - Installation SOP. 2) Service activation handling and escalation. 3) Perform service installation and configuration. 4) Troubleshoot and rectification of the simple problem.
LEVEL 2	<p><u>Splicer</u></p> <ol style="list-style-type: none"> 1) Perform cable installation, construction, maintenance and repair works. 2) Locate and repair cables faults to maintain existing cable network without causing signal failure interruptions. 3) Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems. 4) Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines. 	<p><u>Splicer</u></p> <ol style="list-style-type: none"> 1) Perform cable installation, construction, maintenance and repair works. 2) Locate and repair cables faults to maintain existing cable network without causing signal failure interruptions. 3) Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems. 4) Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines. 	<p><u>Splicer</u></p> <ol style="list-style-type: none"> 1) Perform cable installation, construction, maintenance and repair works. 2) Locate and repair cables faults to maintain existing cable network without causing signal failure interruptions. 3) Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems. 4) Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines.

AREA	Wired Network Field Maintenance (NFM) - Data Services	Wired Network Field Maintenance (NFM) - Cable	Wired Network Field Maintenance (NFM) – Installation
	5) Test and locate cable faults, and maintain and repair cables. 6) Install communications equipment in offices, private homes, and buildings that are under construction. 7) Set up, rearrange, or replace routing and dialling equipment. 8) Inspect and service equipment, wiring, and phone jacks. 9) Repair or replace faulty, damaged, or malfunctioning equipment.	5) Test and locate cable faults, and maintain and repair cables. 6) Install communications equipment in offices, private homes, and buildings that are under construction. 7) Set up, rearrange, or replace routing and dialling equipment. 8) Inspect and service equipment, wiring, and phone jacks. 9) Repair or replace faulty, damaged, or malfunctioning equipment.	5) Test and locate cable faults, and maintain and repair cables. 6) Install communications equipment in offices, private homes, and buildings that are under construction. 7) Set up, rearrange, or replace routing and dialling equipment. 8) Inspect and service equipment, wiring, and phone jacks. 9) Repair or replace faulty, damaged, or malfunctioning equipment.
LEVEL 1	No Level	No Level	No Level

DIVISION: 61 - TELECOMMUNICATIONS

GROUP: 612 - WIRELESS TELECOMMUNICATIONS ACTIVITIES

Table 4.33: List of Responsibilities for Group 612 Based on Table 4.12 (1 of 7)

AREA	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)
LEVEL 8	<p><u>Chief Technical Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 	<p><u>Chief Technical Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage 3) Help departments use technology profitably 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 	<p><u>Chief Technical Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Developing the company’s strategy for using technological resources.

AREA	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)
	10) Evaluate and implement new systems and infrastructure.	10) Evaluate and implement new systems and infrastructure.	10) Evaluate and implement new systems and infrastructure.
LEVEL 7	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Translate the Company and Group Vision, Mission and Strategy into divisional work plan. 2) Responsible for leading, planning and operating end to end network operation, optimisation and planning. 3) Provide and clarify divisional objectives for the team. 4) Establish divisional KPI based on organisational scorecard and cascaded down the teams. 5) Manage division budget based on work-plan and control the utilisation/realisation of it to ensure group operates on budget and help contribute to organisational goals. 6) Perform the role of a strategic interface between different business units including IT, Networks and Digital groups to meet or exceed business requirements and support identification and incubation of new technologies. 7) Manage long-term and short-term planning of network architecture and 	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Translate the Company and Group Vision, Mission and Strategy into divisional work plan. 2) Responsible for leading, planning and operating end to end network operation, optimisation and planning. 3) Provide and clarify divisional objectives for the team 4) Establish divisional KPI based on organisational scorecard and cascaded down the teams. 5) Manage division budget based on work-plan and control the utilisation/realisation of it to ensure group operates on budget and help contribute to organisational goals. 6) Perform the role of a strategic interface between different business units including IT, Networks and Digital groups to meet or exceed business requirements and support identification and incubation of new technologies. 7) Manage long-term and short-term planning of network architecture and elements to 	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Translate the Company and Group Vision, Mission and Strategy into divisional work plan. 2) Responsible for leading, planning and operating end to end network operation, optimisation and planning. 3) Provide and clarify divisional objectives for the team. 4) Establish divisional KPI based on organisational scorecard and cascaded down the teams. 5) Manage division budget based on work-plan and control the utilisation/realisation of it to ensure group operates on budget and help contribute to organisational goals. 6) Perform the role of a strategic interface between different business units including IT, Networks and Digital groups to meet or exceed business requirements and support identification and incubation of new technologies. 7) Manage long-term and short-term planning of network architecture and

AREA	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)
	<p>elements to support business needs, conduct network optimization.</p> <p>8) Manage high-level and low-level network design.</p> <p>9) Develop and mentor team member(s) to achieve divisional objectives.</p> <p>10) Monitor and evaluate the performance of staff, make recommendations to supervisor and implement actions, such as promotions, etc.</p> <p>11) Provide feedback to upper management to work with HR team to create the succession plan for the function/ organization and attract, motivate and retain top talent to ensure alignment with the plan (to ensure talents are attracted, retained developed to meet organisational needs)</p> <p>12) Serve as a company representative for external related functions, to build good network in the industry and keep up to date with new trends.</p>	<p>support business needs, conduct network optimization.</p> <p>8) Manage high-level and low-level network design.</p> <p>9) Develop and mentor team member(s) to achieve divisional objectives.</p> <p>10) Monitor and evaluate the performance of staff, make recommendations to supervisor and implement actions, such as promotions, etc.</p> <p>11) Provide feedback to upper management to work with HR team to create the succession plan for the function/ organization and attract, motivate and retain top talent to ensure alignment with the plan (to ensure talents are attracted, retained developed to meet organisational needs)</p> <p>12) Serve as a company representative for external related functions, to build good network in the industry and keep up to date with new trends.</p>	<p>elements to support business needs, conduct network optimization.</p> <p>8) Manage high-level and low-level network design.</p> <p>9) Develop and mentor team member(s) to achieve divisional objectives.</p> <p>10) Monitor and evaluate the performance of staff, make recommendations to supervisor and implement actions, such as promotions, etc.</p> <p>11) Provide feedback to upper management to work with HR team to create the succession plan for the function/ organization and attract, motivate and retain top talent to ensure alignment with the plan (to ensure talents are attracted, retained developed to meet organisational needs)</p> <p>12) Serve as a company representative for external related functions, to build good network in the industry and keep up to date with new trends.</p>
LEVEL 6	<p><u>Manager</u></p> <p>1) Design and deliver network design and optimization models Responsible for project execution and coordinating tasks</p>	<p><u>Manager</u></p> <p>1) Develop, plan and enhance implementation of overall strategies to establish proper and efficient network.</p>	<p><u>Manager</u></p> <p>1) Create, maintain and manage deployment project plans, including sub-contractors, quality management</p>

AREA	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)
	<p>with other project team members in Operations.</p> <p>2) Quantify & communicate model results to a variety of stakeholders including project teams and PSO Senior Leadership.</p> <p>3) Manage the on-going maintenance and data flows for network design models & solutions.</p> <p>4) Responsible for delivering large- and small-scale projects associated design & optimization.</p>	<p>2) Perform regular assessment and recommend internal drawbacks of the organisations.</p> <p>3) Administer and optimize backbone of networking system and validate design.</p> <p>4) Ensure compliance to NTTE to Capacity Planning norms.</p> <p>5) Design business plans and budgetary programs for every fiscal year.</p> <p>6) Develop and prepare budget reports to fortify management board.</p> <p>7) Implement different networking systems to facilitate various growth-oriented programs within budget.</p> <p>8) Manage all communication with NTT and Liaison teams.</p> <p>9) Collaborate with NTT Com, establish rapport with team leaders and third parties to fulfil dream.</p> <p>10) Design plans to upgrade monitoring agency for all round development of networking systems.</p> <p>11) Assist and provide backup to improvement of PoP migration plans and methods to upgrade FE&P.</p> <p>12) Assist employees and provide support to Network Planning team.</p>	<p>plans to ensure ALU meet contractual scope of work, milestones and customer pre-requisites.</p> <p>2) Liaise with Project Manager and customer as needed for escalations on scope, processes and/or budget.</p> <p>3) Prepare and maintain resource plan and forecast including own resources, subcontractor needs and tools.</p> <p>4) Monitor, track and ensure deliveries of equipment and installation materials.</p> <p>5) Secure availability and accuracy of deployment work orders sent to field planning & dispatching and resolves any issues raised by field teams.</p> <p>6) Finalise the equipment installation acceptance with proper contractual documentation and generate Acceptance Documentation according to acceptance protocol or agreement.</p> <p>7) Ensure that job drawings are updated as per As-built documentation and/or As-installed specifications</p> <p>8) Perform regular meetings to monitor progress and solve potential issues.</p>

AREA	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)
		13) Analyse and upgrade all activities for instance new process and tools.	9) Monitor performance of project teams and subcontractors. 10) Communicate and take action towards subcontractors.
LEVEL 5	<p><u>Engineer</u></p> <ol style="list-style-type: none"> 1) Document, identify and perform analysis of all networking technologies. 2) Prepare research plans and documented projects for all WAN based methods. 3) Identify and resolve all technical issues in matter of formulation and creation of strategies. 4) Coordinate with customers for all data communication tools as per customer requirements. 5) Document and perform upgrade on all network designs. 6) Participate in the completion of project related processes and activities. 	<p><u>Asst. Specialist/Engineer</u></p> <ol style="list-style-type: none"> 1) Identify/evaluate appropriate technologies and solutions to meet the current and future requirements of the market. 2) Engage with customer technical staff to define their requirements and incorporate the same into the overall network design. 3) Coordinate with customer technical team and other local stakeholders on identification and acquisition of suitable sites for deployment of equipment aggregation sites. 4) Coordinate cross-functionally on all activities related to implementation including communications and engagement with equipment suppliers and contractors. 5) Provide support to cross functional teams for all network handover activities. 6) Manage and define tools for network planning and delivery. 	<p><u>Engineer</u></p> <ol style="list-style-type: none"> 1) Oversee installation and integration of our client equipment. 2) Keep track of RAN – Network Implementation projects. 3) Manage RAN – Network Implementation customer expectations. 4) Report RAN – Network Implementation project progress back to the customer.

AREA	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)
LEVEL 4	<p><u>Executive</u></p> <ol style="list-style-type: none"> 1) Responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation sin geographical areas. 2) Responsible for planning, organising and supervising the work of subordinates in the installation, modifications and testing of telecommunications systems. 3) Responsible for repairing and maintaining of associated equipment of the telecommunications system. 4) Analyse and troubleshooting communications systems to maintain DPS and other state agencies telecom systems as per requirement or orders. 5) Responsible for travelling to sites located across different cities in the country to install and maintain communication related equipment and attend user association or staff meetings at these locations. 6) Responsible for emergency call outs and to perform emergency evaluation and repair of the communication systems throughout the respective state and in collaboration with other state agencies. 	<p><u>Executive / Supervisor</u></p> <ol style="list-style-type: none"> 1) Responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation sin geographical areas. 2) Responsible for planning, organising and supervising the work of subordinates in the installation, modifications and testing of telecommunications systems. 3) Responsible for repairing and maintaining of associated equipment of the telecommunications system. 4) Require analysing and troubleshooting communications systems to maintain DPS and other state agencies telecom systems as per requirement or orders. 5) Responsible for travelling to sites located across different cities in the country to install and maintain communication related equipment and attend user association or staff meetings at these locations. 6) Responsible for emergency call outs and to perform emergency evaluation and repair of the communication systems throughout the respective state and in collaboration with other state agencies. 	<p><u>Executive / Supervisor</u></p> <ol style="list-style-type: none"> 1) Set out sites and organizing RAN – Network Implementation facilities. 2) Check RAN – Network Implementation technical designs and drawings to ensure that they are followed correctly. 3) Supervise RAN – Network Implementation contracted staff. 4) Ensure RAN – Network Implementation projects meet agreed specifications, budgets or timescales. 5) Liaise with clients, subcontractors and other professional staff, especially quantity surveyors and the overall project manager 6) Provide technical advice and solving RAN – Network Implementation problems on site. 7) Prepare RAN – Network Implementation site reports and filling in other paperwork. 8) Liaise with quantity surveyors about the order and negotiate the price of materials.

AREA	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)
LEVEL 3	No Level	<p><u>Technical Team Leader</u></p> <ol style="list-style-type: none"> 1) Liaise with architects and engineers to gather product and structural requirements and designs. 2) Calculate dimensions, weight limitations and requirements in materials. 3) Describe production methods step-by-step (including equipment and software types to be used). 	<p><u>Technical Team Leader</u></p> <ol style="list-style-type: none"> 1) Responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation in geographical areas. 2) Responsible for planning, organising and supervising the work of subordinates in the installation, modifications and testing of telecommunications systems. 3) Responsible for repairing and maintaining of associated equipment of the telecommunications system. 4) Require analysing and troubleshooting communications systems to maintain DPS and other state agencies telecom systems as per requirement or orders. 5) Responsible for travelling to sites located across different cities in the country to install and maintain communication related equipment and attend user association or staff meetings at these locations. 6) Responsible for emergency call outs and to perform emergency evaluation and repair of the communication

AREA	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)
			systems throughout the respective state and in collaboration with other state agencies.
LEVEL 2	No Level	<p><u>Technician</u></p> <p>1) Install, move, repair, and modify telecommunications and related equipment according to job order specifications, standards, and procedures by repairing voice and data equipment, determining cable, wire and equipment needed to accomplish the service requested, installing circuits, cross-connects, equipment, etc, interconnecting circuits to ECS or at the vendor demarcation location, testing and verifying proper operation of the installed circuits and/or equipment, verifying that the circuits and/or the equipment provides the service requested by the customer, completing the work order showing the work is completed, ensuring the network documentation is updated, and interfacing with off-campus telecommunications vendors.</p> <p>2) Responsible for the cable plant by determining and assigning the appropriate inside cable pairs, working in concert with other telecommunications technicians for</p>	<p><u>Technician</u></p> <p>1) Installs, move, repair, and modify telecommunications and related equipment according to job order specifications, standards, and procedures by repairing voice and data equipment, determining cable, wire and equipment needed to accomplish the service requested, installing circuits, cross-connects, equipment, etc, interconnecting circuits to ECS or at the vendor demarcation location, testing and verifying proper operation of the installed circuits and/or equipment, verifying that the circuits and/or the equipment provides the service requested by the customer, completing the work order showing the work is completed, ensuring the network documentation is updated, and interfacing with off-campus telecommunications vendors.</p> <p>2) Responsible for the cable plant by determining and assigning the</p>

AREA	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)
		<p>required changes in cable pair assignments, coordinating with cable maintenance and installation crews on locating cable, cable tray, conduits, access panels, and manholes for the construction, adding and/or maintaining the cable plant, reviewing and verifying all completed work orders for accuracy of cable assignments, and recording all changes to both outside and inside cable plant.</p> <p>3) Maintain inventory and stock, recommend purchase of both technical and nontechnical supplies, and take responsibility for tools and test equipment.</p> <p>4) Support Networking and Telecommunications by providing consultation on special telephone/data communications services and projects and assist in ensuring the proper allocation and retention of adequate spare and reserve capacity of network resources.</p> <p>5) Develop and maintain effective working relationships with internal and external customers.</p> <p>6) Contribute to a work environment that encourages knowledge of, respect for, and development of skills to engage with those of other cultures or backgrounds.</p>	<p>appropriate inside cable pairs, working in concert with other telecommunications technicians for required changes in cable pair assignments, coordinating with cable maintenance and installation crews on locating cable, cable tray, conduits, access panels, and manholes for the construction, adding and/or maintaining the cable plant, reviewing and verifying all completed work orders for accuracy of cable assignments, and recording all changes to both outside and inside cable plant.</p> <p>3) Maintain inventory and stock, recommend purchase of both technical and nontechnical supplies, and take responsibility for tools and test equipment.</p> <p>4) Support Networking and Telecommunications by providing consultation on special telephone/data communications services and projects and assist in ensuring the proper allocation and retention of adequate spare and reserve capacity of network resources.</p>

AREA	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)
			5) Develop and maintain effective working relationships with internal and external customers. 6) Contribute to a work environment that encourages knowledge of, respect for, and development of skills to engage with those of other cultures or backgrounds.
LEVEL 1	No Level	<u>Installer</u> 1) Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills. 2) Assess installation requirements, plan and perform installations, test installed equipment and fault-finding. 3) Execute site audits including the documentation of equipment on towers and LOS surveys.	<u>Installer</u> 1) Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills. 2) Assess installation requirements, plan and perform installations, test installed equipment and fault-finding. 3) Execute site audits including the documentation of equipment on towers and LOS surveys.

Table 4.34: List of Responsibilities for Group 612 Based on Table 4.12 (2 of 7)

AREA	Wireless Network Development (ND) - Transmission (Network Design)	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	Wireless Network Development (ND) - Transmission (Network Implementation)
Level 8	<p><u>Chief Technical Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Technical Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Technical Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.

AREA	Wireless Network Development (ND) - Transmission (Network Design)	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	Wireless Network Development (ND) - Transmission (Network Implementation)
Level 7	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Translate the Company and Group Vision, Mission and Strategy into divisional work plan. 2) Responsible for leading, planning and operating end to end network operation, optimisation and planning. 3) Provide and clarify divisional objectives for the team. 4) Establish divisional KPI based on organisational scorecard and cascaded down the teams. 5) Manage division budget based on work-plan and control the utilisation/realisation of it to ensure group operates on budget and help contribute to organisational goals. 6) Perform the role of a strategic interface between different business units including IT, Networks and Digital groups to meet or exceed business requirements and support identification and incubation of new technologies. 7) Manage long-term and short-term planning of network architecture and elements to support business needs, conduct network optimization. 	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Translate the Company and Group Vision, Mission and Strategy into divisional work plan. 2) Responsible for leading, planning and operating end to end network operation, optimisation and planning. 3) Provide and clarify divisional objectives for the team. 4) Establish divisional KPI based on organisational scorecard and cascaded down the teams. 5) Manage division budget based on work-plan and control the utilisation/realisation of it to ensure group operates on budget and help contribute to organisational goals. 6) Perform the role of a strategic interface between different business units including IT, Networks and Digital groups to meet or exceed business requirements and support identification and incubation of new technologies. 7) Manage long-term and short-term planning of network architecture and elements to support business needs, conduct network optimization. 8) Manage high-level and low-level network design. 	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Translate the Company and Group Vision, Mission and Strategy into divisional work plan. 2) Responsible for leading, planning and operating end to end network operation, optimisation and planning. 3) Provide and clarify divisional objectives for the team. 4) Establish divisional KPI based on organisational scorecard and cascaded down the teams. 5) Manage division budget based on work-plan and control the utilisation/realisation of it to ensure group operates on budget and help contribute to organisational goals. 6) Perform the role of a strategic interface between different business units including IT, Networks and Digital groups to meet or exceed business requirements and support identification and incubation of new technologies. 7) Manage long-term and short-term planning of network architecture and elements to support business needs, conduct network optimization. 8) Manage high-level and low-level network design.

AREA	Wireless Network Development (ND) - Transmission (Network Design)	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	Wireless Network Development (ND) - Transmission (Network Implementation)
	<p>8) Manage high-level and low-level network design.</p> <p>9) Develop and mentor team member(s) to achieve divisional objectives.</p> <p>10) Monitor and evaluate the performance of staff, make recommendations to supervisor and implement actions, such as promotions, etc.</p> <p>11) Provide feedback to upper management to work with HR team to create the succession plan for the function/organisation and attract, motivate and retain top talent to ensure alignment with the plan (to ensure talents are attracted, retained developed to meet organisational needs).</p> <p>12) Serve as a company representative for external related functions, to build good network in the industry and keep up to date with new trends.</p>	<p>9) Develop and mentor team member(s) to achieve divisional objectives.</p> <p>10) Monitor and evaluate the performance of staff, make recommendations to supervisor and implement actions, such as promotions, etc.</p> <p>11) Provide feedback to upper management to work with HR team to create the succession plan for the function/organisation and attract, motivate and retain top talent to ensure alignment with the plan (to ensure talents are attracted, retained developed to meet organisational needs).</p> <p>12) Serve as a company representative for external related functions, to build good network in the industry and keep up to date with new trends.</p>	<p>9) Develop and mentor team member(s) to achieve divisional objectives.</p> <p>10) Monitor and evaluate the performance of staff, make recommendations to supervisor and implement actions, such as promotions, etc.</p> <p>11) Provide feedback to upper management to work with HR team to create the succession plan for the function/organisation and attract, motivate and retain top talent to ensure alignment with the plan (to ensure talents are attracted, retained developed to meet organisational needs).</p> <p>12) Serve as a company representative for external related functions, to build good network in the industry and keep up to date with new trends.</p>
Level 6	<p><u>Manager</u></p> <p>1) Design and deliver network design and optimization models Responsible for project execution and coordinating tasks with other project team members in Operations.</p>	<p><u>Manager</u></p> <p>1) Develop, plan and enhance implementation of overall strategies to establish proper and efficient network.</p> <p>2) Perform regular assessment and recommend internal drawbacks of the organisations.</p>	<p><u>Manager</u></p> <p>1) Create, maintain and manage deployment project plans, including sub-contractors, quality management plans to ensure ALU meet contractual scope of work, milestones and customer pre-requisites.</p>

AREA	Wireless Network Development (ND) - Transmission (Network Design)	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	Wireless Network Development (ND) - Transmission (Network Implementation)
	<ul style="list-style-type: none"> 2) Quantify & communicate model results to a variety of stakeholders including project teams and PSO Senior Leadership. 3) Manage the on-going maintenance and data flows for network design models & solutions. 4) Responsible for delivering large- and small-scale projects associated design & optimization. 	<ul style="list-style-type: none"> 3) Administer and optimize backbone of networking system and validate design. 4) Ensure compliance to NTTE to Capacity Planning norms. 5) Design business plans and budgetary programs for every fiscal year. 6) Develop and prepare budget reports to fortify management board. 7) Implement different networking systems to facilitate various growth-oriented programs within budget. 8) Manage all communication with NTT and Liaison teams. 9) Collaborate with NTT Com, establish rapport with team leaders and third parties to fulfil dream. 10) Design plans to upgrade monitoring agency for all round development of networking systems. 11) Assist and provide backup to improvement of PoP migration plans and methods to upgrade FE&P. 12) Assist employees and provide support to Network Planning team. 13) Analyse and upgrade all activities for instance new process and tools. 	<ul style="list-style-type: none"> 2) Liaise with Project Manager and customer as needed for escalations on scope, processes and/or budget. 3) Prepare and maintain resource plan and forecast including own resources, subcontractor needs and tools. 4) Monitor, track and ensure deliveries of equipment and installation materials. 5) Secure availability and accuracy of deployment work orders sent to field planning & dispatching and resolves any issues raised by field teams. 6) Finalise the equipment installation acceptance with proper contractual documentation and generate Acceptance Documentation according to acceptance protocol or agreement. 7) Ensure that job drawings are updated as per As-built documentation and/or As-installed specifications. 8) Perform regular meetings to monitor progress and solve potential issues. 9) Monitor performance of project teams and subcontractors.

AREA	Wireless Network Development (ND) - Transmission (Network Design)	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	Wireless Network Development (ND) - Transmission (Network Implementation)
			10) Communicate and take action towards subcontractors.
Level 5	<p><u>Engineer</u></p> <ol style="list-style-type: none"> 1) Document, identify and perform analysis of all networking technologies. 2) Prepare research plans and documented projects for all WAN based methods. 3) Identify and resolve all technical issues in matter of formulation and creation of strategies. 4) Coordinate with customers for all data communication tools as per customer requirements. 5) Document and perform upgrade on all network designs. 6) Participate in completion of project related processes and activities. 	<p><u>Asst. Specialist/Engineer</u></p> <ol style="list-style-type: none"> 1) Identify/evaluate appropriate technologies and solutions to meet the current and future requirements of the market. 2) Engage with customer technical staff to define their requirements and incorporate the same into the overall network design. 3) Coordinate with customer technical team and other local stakeholders on identification and acquisition of suitable sites for deployment of equipment aggregation sites. 4) Coordinate cross-functionally on all activities related to implementation including communications and engagement with equipment suppliers and contractors. 5) Provide support to cross functional teams for all network handover activities. 6) Manage and define tools for network planning and delivery. 	<p><u>Engineer</u></p> <ol style="list-style-type: none"> 1) Oversee installation and integration of client equipment. 2) Keep track of projects. 3) Manage customer expectations. 4) Report project progress back to the customer.

AREA	Wireless Network Development (ND) - Transmission (Network Design)	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	Wireless Network Development (ND) - Transmission (Network Implementation)
Level 4	<p><u>Executive</u></p> <ol style="list-style-type: none"> 1) Responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation sin geographical areas. 2) Responsible for planning, organising and supervising the work of subordinates in the installation, modifications and testing of telecommunications systems. 3) Responsible for repairing and maintaining of associated equipment of the telecommunications system. 4) Analyse and troubleshoot communications systems to maintain DPS and other state agencies telecom systems as per requirement or orders. 5) Responsible for travelling to sites located across different cities in the country to install and maintain communication related equipment and attend user association or staff meetings at these locations. 6) Responsible for emergency call outs and to perform emergency evaluation and repair of the communication systems throughout the respective state and in collaboration with other state agencies. 	<p><u>Executive / Supervisor</u></p> <ol style="list-style-type: none"> 1) Responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation sin geographical areas. 2) Responsible for planning, organising and supervising the work of subordinates in the installation, modifications and testing of telecommunications systems. 3) Responsible for repairing and maintaining of associated equipment of the telecommunications system. 4) Analyse and troubleshoot communications systems to maintain DPS and other state agencies telecom systems as per requirement or orders. 5) Responsible for travelling to sites located across different cities in the country to install and maintain communication related equipment and attend user association or staff meetings at these locations. 6) Responsible for emergency call outs and to perform emergency evaluation and repair of the communication systems throughout the respective state and in collaboration with other state agencies. 	<p><u>Executive / Supervisor</u></p> <ol style="list-style-type: none"> 1) Set out sites and organise facilities. 2) Check technical designs and drawings to ensure that they are followed correctly. 3) Supervise contracted staff. 4) Ensure projects meet agreed specifications, budgets or timescales. 5) Liaise with clients, subcontractors and other professional staff, especially quantity surveyors and the overall project manager 6) Provide technical advice and solve problems on site. 7) Prepare site reports and fill in other paperwork. 8) Liaise with quantity surveyors about the order and negotiate the price of materials. 9) Ensure that health and safety as well as sustainability policies and legislation are adhered to. 10) Site engineers work out on a construction site in all weathers and tend to work on one project at a time. Depending on the location of the project, they might need to relocate or complete a lengthy commute.

AREA	Wireless Network Development (ND) - Transmission (Network Design)	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	Wireless Network Development (ND) - Transmission (Network Implementation)
Level 3	No Level	<p><u>Technical Team Leader</u></p> <ol style="list-style-type: none"> 1) Liaise with architects and engineers to gather product and structural requirements and designs. 2) Calculate dimensions, weight limitations and requirements in materials. 3) Describe production methods step-by-step (including equipment and software types to be used). 	<p><u>Technical Team Leader</u></p> <ol style="list-style-type: none"> 1) Responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation sin geographical areas. 2) Responsible for planning, organising and supervising the work of subordinates in the installation, modifications and testing of telecommunications systems. 3) Responsible for repairing and maintaining of associated equipment of the telecommunications system. 4) Analyse and troubleshoot communications systems to maintain DPS and other state agencies telecom systems as per requirement or orders. 5) Responsible for travelling to sites located across different cities in the country to install and maintain communication related equipment and attend user association or staff meetings at these locations. 6) Responsible for emergency call outs and to perform emergency evaluation and repair of the communication systems throughout the respective state and in collaboration with other state agencies.

AREA	Wireless Network Development (ND) - Transmission (Network Design)	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	Wireless Network Development (ND) - Transmission (Network Implementation)
Level 2	No Level	<p><u>Technician</u></p> <p>1) Install, move, repair, and modify telecommunications and related equipment according to job order specifications, standards, and procedures by repairing voice and data equipment, determining cable, wire and equipment needed to accomplish the service requested, installing circuits, cross-connects, equipment, etc, interconnecting circuits to ECS or at the vendor demarcation location, testing and verifying proper operation of the installed circuits and/or equipment, verifying that the circuits and/or the equipment provides the service requested by the customer, completing the work order showing the work is completed, ensuring the network documentation is updated, and interfacing with off-campus telecommunications vendors.</p> <p>2) Responsible for the cable plant by determining and assigning the appropriate inside cable pairs, working in concert with other telecommunications technicians for required changes in cable pair assignments, coordinating with cable maintenance and installation crews on</p>	<p><u>Technician</u></p> <p>1) Install, move, repair, and modify telecommunications and related equipment according to job order specifications, standards, and procedures by repairing voice and data equipment, determining cable, wire and equipment needed to accomplish the service requested, installing circuits, cross-connects, equipment, etc, interconnecting circuits to ECS or at the vendor demarcation location, testing and verifying proper operation of the installed circuits and/or equipment, verifying that the circuits and/or the equipment provides the service requested by the customer, completing the work order showing the work is completed, ensuring the network documentation is updated, and interfacing with off-campus telecommunications vendors.</p> <p>2) Responsible for the cable plant by determining and assigning the appropriate inside cable pairs, working in concert with other telecommunications technicians for required changes in cable pair assignments, coordinating with cable maintenance and installation crews on</p>

AREA	Wireless Network Development (ND) - Transmission (Network Design)	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	Wireless Network Development (ND) - Transmission (Network Implementation)
		<p>locating cable, cable tray, conduits, access panels, and manholes for the construction, adding and/or maintaining the cable plant, reviewing and verifying all completed work orders for accuracy of cable assignments, and recording all changes to both outside and inside cable plant.</p> <p>3) Maintain inventory and stock, recommend purchase of both technical and nontechnical supplies, and take responsibility for tools and test equipment.</p> <p>4) Support Networking and Telecommunications by providing consultation on special telephone/data communications services and projects and assist in ensuring the proper allocation and retention of adequate spare and reserve capacity of network resources.</p> <p>5) Develop and maintain effective working relationships with internal and external customers.</p> <p>6) Contribute to a work environment that encourages knowledge of, respect for, and development of skills to engage with those of other cultures or backgrounds.</p>	<p>locating cable, cable tray, conduits, access panels, and manholes for the construction, adding and/or maintaining the cable plant, reviewing and verifying all completed work orders for accuracy of cable assignments, and recording all changes to both outside and inside cable plant.</p> <p>3) Maintain inventory and stock, recommend purchase of both technical and nontechnical supplies, and take responsibility for tools and test equipment.</p> <p>4) Support Networking and Telecommunications by providing consultation on special telephone/data communications services and projects and assist in ensuring the proper allocation and retention of adequate spare and reserve capacity of network resources.</p> <p>5) Develop and maintain effective working relationships with internal and external customers.</p> <p>6) Contribute to a work environment that encourages knowledge of, respect for, and development of skills to engage with those of other cultures or backgrounds.</p>

AREA	Wireless Network Development (ND) - Transmission (Network Design)	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	Wireless Network Development (ND) - Transmission (Network Implementation)
Level 1	No Level	<p><u>Installer</u></p> <ol style="list-style-type: none"> 1) Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills. 2) Assess installation requirements, planning and performing installations, testing installed equipment and fault-finding. 3) Execute site audits including the documentation of equipment on towers and LOS surveys. 	<p><u>Installer</u></p> <ol style="list-style-type: none"> 1) Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills. 2) Assess installation requirements, planning and performing installations, testing installed equipment and fault-finding. 3) Execute site audits including the documentation of equipment on towers and LOS surveys.

Table 4.35: List of Responsibilities for Group 612 Based on Table 4.13 (3 of 7)

AREA	Wireless Network Development (ND) - IP Core / IP RAN (Network Design)	Wireless Network Development (ND) - IP Core / IP RAN (Network Planning and Optimisation)	Wireless Network Development (ND) - IP Core / IP RAN (Network Implementation)
LEVEL 8	<p><u>Chief Technical Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Technical Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Technical Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.

AREA	Wireless Network Development (ND) - IP Core / IP RAN (Network Design)	Wireless Network Development (ND) - IP Core / IP RAN (Network Planning and Optimisation)	Wireless Network Development (ND) - IP Core / IP RAN (Network Implementation)
LEVEL 7	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Translate the Company and Group Vision, Mission and Strategy into divisional work plan. 2) Responsible for leading, planning and operating end to end network operation, optimization and planning. 3) Provide and clarify divisional objectives for the team. 4) Establish divisional KPI based on organisational scorecard and cascaded down the teams. 5) Manage division budget based on work-plan and control the utilisation/realisation of it to ensure group operates on budget and help contribute to organisational goals. 6) Perform the role of a strategic interface between different business units including IT, Networks and Digital groups to meet or exceed business requirements and support identification and incubation of new technologies. 7) Manage long-term and short-term planning of network architecture 	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Translate the Company and Group Vision, Mission and Strategy into divisional work plan. 2) Responsible for leading, planning and operating end to end network operation, optimization and planning. 3) Provide and clarify divisional objectives for the team. 4) Establish divisional KPI based on organisational scorecard and cascaded down the teams. 5) Manage division budget based on work-plan and control the utilisation/realisation of it to ensure group operates on budget and help contribute to organisational goals 6) Perform the role of a strategic interface between different business units including IT, Networks and Digital groups to meet or exceed business requirements and support identification and incubation of new technologies. 7) Manage long-term and short-term planning of network architecture and elements to support business needs, conduct network optimization. 	<p><u>Head of Department</u></p> <ol style="list-style-type: none"> 1) Translate the Company and Group Vision, Mission and Strategy into divisional work plan. 2) Responsible for leading, planning and operating end to end network operation, optimization and planning. 3) Provide and clarify divisional objectives for the team. 4) Establish divisional KPI based on organisational scorecard and cascaded down the teams. 5) Manage division budget based on work-plan and control the utilisation/realisation of it to ensure group operates on budget and help contribute to organisational goals 6) Perform the role of a strategic interface between different business units including IT, Networks and Digital groups to meet or exceed business requirements and support identification and incubation of new technologies. 7) Manage long-term and short-term planning of network architecture and elements to support business needs, conduct network optimization.

AREA	Wireless Network Development (ND) - IP Core / IP RAN (Network Design)	Wireless Network Development (ND) - IP Core / IP RAN (Network Planning and Optimisation)	Wireless Network Development (ND) - IP Core / IP RAN (Network Implementation)
	<p>and elements to support business needs, conduct network optimization.</p> <p>8) Manage high-level and low-level network design.</p> <p>9) Develop and mentor team member(s) to achieve divisional objectives.</p> <p>10) Monitor and evaluate the performance of staff, make recommendations to supervisor and implement actions, such as promotions, etc.</p> <p>11) Provide feedback to upper management to work with HR team to create the succession plan for the function/ organisation and attract, motivate and retain top talent to ensure alignment with the plan (to ensure talents are attracted, retained developed to meet organisational needs).</p> <p>12) Serve as a company representative for external related functions, to build good network in the industry and keep up to date with new trends.</p>	<p>8) Manage high-level and low-level network design.</p> <p>9) Develop and mentor team member(s) to achieve divisional objectives.</p> <p>10) Monitor and evaluate the performance of staff, make recommendations to supervisor and implement actions, such as promotions, etc.</p> <p>11) Provide feedback to upper management to work with HR team to create the succession plan for the function/ organisation and attract, motivate and retain top talent to ensure alignment with the plan (to ensure talents are attracted, retained developed to meet organisational needs).</p> <p>12) Serve as a company representative for external related functions, to build good network in the industry and keep up to date with new trends.</p>	<p>8) Manage high-level and low-level network design.</p> <p>9) Develop and mentor team member(s) to achieve divisional objectives.</p> <p>10) Monitor and evaluate the performance of staff, make recommendations to supervisor and implement actions, such as promotions, etc.</p> <p>11) Provide feedback to upper management to work with HR team to create the succession plan for the function/ organisation and attract, motivate and retain top talent to ensure alignment with the plan (to ensure talents are attracted, retained developed to meet organisational needs).</p> <p>12) Serve as a company representative for external related functions, to build good network in the industry and keep up to date with new trends.</p>

AREA	Wireless Network Development (ND) - IP Core / IP RAN (Network Design)	Wireless Network Development (ND) - IP Core / IP RAN (Network Planning and Optimisation)	Wireless Network Development (ND) - IP Core / IP RAN (Network Implementation)
LEVEL 6	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Design and deliver network design and optimization models Responsible for project execution and coordinating tasks with other project team members in Operations. 2) Quantify & communicate model results to a variety of stakeholders including project teams and PSO Senior Leadership. 3) Manage the on-going maintenance and data flows for network design models & solutions. 4) Responsible for delivering large- and small-scale projects associated design & optimization. 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Develop, plan and enhance implementation of overall strategies to establish proper and efficient network. 2) Perform regular assessment and recommend internal drawbacks of the organisations. 3) Administer and optimize backbone of networking system and validate design. 4) Ensure compliance to NTTE to Capacity Planning norms. 5) Design business plans and budgetary programs for every fiscal year. 6) Develop and prepare budget reports to fortify management board. 7) Implement different networking systems to facilitate various growth-oriented programs within budget. 8) Manage all communication with NTT and Liaison teams. 9) Collaborate with NTT Com, establish rapport with team leaders and third parties to fulfil dream. 10) Design plans to upgrade monitoring agency for all round development of networking systems. 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Create, maintain and manage deployment project plans, including sub-contractors, quality management plans to ensure ALU meet contractual scope of work, milestones and customer pre-requisites. 2) Liaise with Project Manager and customer as needed for escalations on scope, processes and/or budget. 3) Prepare and maintain resource plan and forecast including own resources, subcontractor needs and tools. 4) Monitor, track and ensure deliveries of equipment and installation materials. 5) Secure availability and accuracy of deployment work orders sent to field planning & dispatching and resolves any issues raised by field teams. 6) Finalise the equipment installation acceptance with proper contractual documentation and generate Acceptance Documentation according to acceptance protocol or agreement. 7) Ensure that job drawings are updated as per As-built documentation and/or As-installed specifications.

AREA	Wireless Network Development (ND) - IP Core / IP RAN (Network Design)	Wireless Network Development (ND) - IP Core / IP RAN (Network Planning and Optimisation)	Wireless Network Development (ND) - IP Core / IP RAN (Network Implementation)
		11) Assist and provide backup to improvement of PoP migration plans and methods to upgrade FE&P. 12) Assist employees and provide support to Network Planning team. 13) Analyse and upgrade all activities for instance new process and tools.	8) Perform regular meetings to monitor progress and solve potential issues. 9) Monitor performance of project teams and subcontractors. 10) Communicate and take action towards subcontractors.
LEVEL 5	<u>Engineer</u> 1) Identify analysis of all networking technologies. 2) Perform analysis of all networking technologies. 3) Prepare research plans and documented projects for all WAN based methods. 4) Identify and resolve all technical issues in matter of formulation and creation of strategies. 5) Coordinate with customers for all data communication tools as per customer requirements. 6) Perform upgrade on all network designs. 7) Participate in completion of project related processes and activities.	<u>Asst. Specialist/Engineer</u> 1) Identify or evaluate appropriate technologies and solutions to meet the current and future requirements of the market. 2) Engage with customer technical staff to define their requirements and incorporate the same into the overall network design. 3) Coordinate with customer technical team and other local stakeholders on identification and acquisition of suitable sites for deployment of equipment aggregation sites. 4) Coordinate cross-functionally on all activities related to implementation including communications and engagement with equipment suppliers and contractors. 5) Provide support to cross functional teams for all network handover activities.	<u>Engineer</u> 1) Oversee installation and integration of our client equipment. 2) Keep track of projects. 3) Manage customer expectations. 4) Report project progress back to the customer.

AREA	Wireless Network Development (ND) - IP Core / IP RAN (Network Design)	Wireless Network Development (ND) - IP Core / IP RAN (Network Planning and Optimisation)	Wireless Network Development (ND) - IP Core / IP RAN (Network Implementation)
		6) Manage and define tools for network planning and delivery.	
LEVEL 4	<p><u>Executive</u></p> <ol style="list-style-type: none"> 1) Responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation sin geographical areas. 2) Responsible for planning, organising and supervising the work of subordinates in the installation, modifications and testing of telecommunications systems. 3) Responsible for repairing and maintaining of associated equipment of the telecommunications system. 4) Analyse communications systems to maintain DPS and other state agencies telecom systems as per requirement or orders. 5) Responsible for travelling to sites located across different cities in the country to install and maintain communication related equipment 	<p><u>Executive / Supervisor</u></p> <ol style="list-style-type: none"> 1) Responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation sin geographical areas. 2) Responsible for planning, organising and supervising the work of subordinates in the installation, modifications and testing of telecommunications systems. 3) Responsible for repairing and maintaining of associated equipment of the telecommunications system. 4) Analyse communications systems to maintain DPS and other state agencies telecom systems as per requirement or orders. 5) Responsible for travelling to sites located across different cities in the country to install and maintain communication related equipment and attend user association or staff meetings at these locations. 6) Responsible for emergency call outs and to perform emergency evaluation and repair of the communication systems throughout the 	<p><u>Executive / Supervisor</u></p> <ol style="list-style-type: none"> 1) Set out sites and organise facilities. 2) Check technical designs and drawings to ensure that they are followed correctly. 3) Supervise contracted staff. 4) Ensure projects meet agreed specifications, budgets or timescales. 5) Liaise with clients, subcontractors and other professional staff, especially quantity surveyors and the overall project manager. 6) Provide technical advice and solving problems on site. 7) Prepare site reports and filling in other paperwork. 8) Liaise with quantity surveyors about the order and negotiate the price of materials. 9) Ensure that health and safety as well as sustainability policies and legislation are adhered to. 10) Site engineers work out on a construction site in all weathers and tend to work on one project at a time. Depending on the location of the project, they might need to relocate or complete a lengthy commute.

AREA	Wireless Network Development (ND) - IP Core / IP RAN (Network Design)	Wireless Network Development (ND) - IP Core / IP RAN (Network Planning and Optimisation)	Wireless Network Development (ND) - IP Core / IP RAN (Network Implementation)
	<p>and attend user association or staff meetings at these locations.</p> <p>6) Responsible for emergency call outs and to perform emergency evaluation and repair of the communication systems throughout the respective state and in collaboration with other state agencies.</p>	<p>respective state and in collaboration with other state agencies.</p>	
LEVEL 3	No Level	No Level	No Level
LEVEL 2	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level

Table 4.36: List of Responsibilities for Group 561 Based on Table 4.13 (4 of 7)

AREA	Wireless Network Field Maintenance (NFM) - Switch & Core	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	Wireless Network Field Maintenance (NFM) -Transmission
LEVEL 8	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.

AREA	Wireless Network Field Maintenance (NFM) - Switch & Core	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	Wireless Network Field Maintenance (NFM) -Transmission
LEVEL 7	<p><u>Senior Delivery Manager</u></p> <ol style="list-style-type: none"> 1) Create and maintain strong operational relationships with the company's customers, internal business owners, managed service providers and other key stakeholders. 2) Maintain a proactive approach to operational and service issues, ensuring KPIs and SLAs are met. 3) Manage operational issues by understanding impact, identifying solution options, liaising with technical architects, key suppliers, managed service partners and business owners. 4) Develop initiatives to provide continual service improvement, process adherence and enhancement, plus driving efficiency of service. 5) Produce reports and communications to provide insight on the key highlights, low-lights, issues and risks. 	<p><u>Senior Delivery Manager</u></p> <ol style="list-style-type: none"> 1) Create and maintain strong operational relationships with the company's customers, internal business owners, managed service providers and other key stakeholders. 2) Maintain a proactive approach to operational and service issues, ensuring KPIs and SLAs are met. 3) Manage operational issues by understanding impact, identifying solution options, liaising with technical architects, key suppliers, managed service partners and business owners. 4) Develop initiatives to provide continual service improvement, process adherence and enhancement, plus driving efficiency of service. 5) Produce reports and communications to provide insight on the key highlights, low-lights, issues and risks. 	<p><u>Senior Delivery Manager</u></p> <ol style="list-style-type: none"> 1) Create and maintain strong operational relationships with the company's customers, internal business owners, managed service providers and other key stakeholders. 2) Maintain a proactive approach to operational and service issues, ensuring KPIs and SLAs are met. 3) Manage operational issues by understanding impact, identifying solution options, liaising with technical architects, key suppliers, managed service partners and business owners. 4) Develop initiatives to provide continual service improvement, process adherence and enhancement, plus driving efficiency of service. 5) Produce reports and communications to provide insight on the key highlights, low-lights, issues and risks.

AREA	Wireless Network Field Maintenance (NFM) - Switch & Core	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	Wireless Network Field Maintenance (NFM) -Transmission
LEVEL 6	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Design and propose core network solutions. 2) Advise on the policies and standards to ensure that current policies remain relevant. 3) Provide technical advice regarding complex core network related problems and applications. 4) Recommend cost effective installation, maintenance and service of core network solutions. 5) Liaise with clients on core network solutions and act as information distributors, client representatives, construction supervisors, and maintenance liaisons. 6) Propose new technology and solution based on customer's existing network and infrastructure. 7) Study and analyse customer's requirements and existing environment. 8) Propose feasible timeline for implementation of core network solution. 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Design RAN technology solutions. 2) Recommend cost effective installation, maintenance and service of RAN technologies. 3) Liaise with clients on RAN technology solutions and act as information distributors, client representatives, construction supervisors, and maintenance liaisons. 4) Propose new technology and solution based on customer's existing network and infrastructure. 5) Study and analyse customer's requirements and existing environment. 6) Propose feasible timeline for implementation of RAN technology solution. 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Design transmission technology solutions. 2) Recommend cost effective installation, maintenance and service of transmission technologies. 3) Liaise with clients on transmission technology solutions and act as information distributors, client representatives, construction supervisors, and maintenance liaisons. 4) Propose new technology and solution based on customer's existing network and infrastructure. 5) Study and analyse customer's requirements and existing environment. 6) Propose feasible timeline for implementation of transmission technology solution.

AREA	Wireless Network Field Maintenance (NFM) - Switch & Core	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	Wireless Network Field Maintenance (NFM) -Transmission
LEVEL 5	<p><u>Engineer</u></p> <ol style="list-style-type: none"> 1) Manage and configure switch server. 2) Configure hardware, peripherals, services, settings, directories, storage, etc. in accordance with standards and project requirement 3) Develop and maintain installation & configuration procedures. 4) Contribute and maintain system standards. 5) Research and recommend innovative solutions and where possible automated approaches for switch tasks. 6) Assist project teams with technical issues in the initiation, planning and implementation phases in required projects. 	<p><u>Engineer</u></p> <ol style="list-style-type: none"> 1) Establish RF (Radio Frequency) communications systems by analysing demographics data. 2) Validate measurement data including location, antenna placement, and line of sight conditions. 3) Calibrate the signal propagation model. 4) Conduct Network Testing activities. 5) Conduct equipment upgrading activities. 	<p><u>Engineer</u></p> <ol style="list-style-type: none"> 1) Develop technical parameters required to direct and guide drafters plus designers. 2) Provide technical leadership as well as direct corporate or industry level in respective field of expertise. 3) Provide technical and engineering expertise along with guide to identify, analyse and resolve problems. 4) Plan, organise, estimate, schedule and monitor effectively all work activities. 5) Prepare thorough as well as precise technical reports, documentation, correspondence, calculations plus sketches. 6) Improve continuously job-related, technical, engineering and professional knowledge, performance and skills. 7) Update and maintain accurately all records as well as files.
LEVEL 4	<p><u>Executive / Supervisor</u></p> <ol style="list-style-type: none"> 1) Ensure switch system hardware, operating systems software systems and databases are functioning. 	<p><u>Executive / Supervisor</u></p> <ol style="list-style-type: none"> 1) Coordinate maintenance activities. 2) Coordinate equipment dismantling activities. 3) Coordinate equipment installation. 	<p><u>Executive / Supervisor</u></p> <ol style="list-style-type: none"> 1) Design technical drawing. 2) Plan wireless transmission infrastructure installation activities.

AREA	Wireless Network Field Maintenance (NFM) - Switch & Core	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	Wireless Network Field Maintenance (NFM) -Transmission
	2) Install and configure switch system as required. 3) Perform routine maintenance within department. 4) Diagnose and repair equipment and system faults. 5) Coordinate installation of equipment.	4) Coordinate network testing activities. 5) Coordinate equipment upgrading activities. 6) Perform troubleshooting activities. 7) Establish RF (radio frequency) communications systems. 8) Collect and study demographics data.	3) Plan wireless transmission infrastructure maintenance activities. 4) Coordinate network testing activities. 5) Plan wireless transmission infrastructure equipment upgrading activities.
LEVEL 3	No Level	<u>Technical Team Leader</u> 1) Check Network RAN preventive and corrective maintenance requirement. 2) Plan Network preventive and corrective maintenance materials, tools and facilities. 3) Verify Network site condition report. 4) Inspect Network site work. 5) Produce Network preventive and corrective maintenance report. 6) Verify Network preventive and corrective maintenance materials, tools and facilities. 7) Determine solution for equipment module / component corrective maintenance. 8) Plan replenishment of materials / equipment spare parts. 9) Organise supply-chain activities of materials and equipment / spare parts inventory. 10) Take end to end accountability and ownership of the assigned task(s) related.	<u>Technical Team Leader</u> 1) Check Network Transmission preventive and corrective maintenance requirement. 2) Plan Network preventive and corrective maintenance materials, tools and facilities. 3) Verify Network site condition report. 4) Inspect Network site work. 5) Produce Network preventive and corrective maintenance report. 6) Verify Network preventive and corrective maintenance materials, tools and facilities. 7) Determine solution for equipment module / component corrective maintenance. 8) Plan replenishment of materials / equipment spare parts. 9) Organise supply-chain activities of materials and equipment / spare parts inventory. 10) Take end to end accountability and ownership of the assigned task(s) related.

AREA	Wireless Network Field Maintenance (NFM) - Switch & Core	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	Wireless Network Field Maintenance (NFM) -Transmission
		11) Ensure the SLA's are met; during field preventive and corrective maintenance task. 12) Observe and adhere to established procedures & processes while carrying out preventive and corrective maintenance task. 13) Cross check the warranty database before performing SLA tasks. 14) Ensure faulty equipment(s) are returned timely to the designated location after troubleshooting. 15) Comply established travel processes and procedures. 16) Maintain good relationship with customer/counterparts. 17) Provide periodical report on site activities as per management's requirement. 18) Maintain daily updates and weekly reports on the incidents and resolutions.	11) Ensure the SLA's are met; during field preventive and corrective maintenance task. 12) Observe and adhere to established procedures & processes while carrying out preventive and corrective maintenance task. 13) Cross check the warranty database before performing SLA tasks. 14) Ensure faulty equipment(s) are returned timely to the designated location after troubleshooting. 15) Comply established travel processes and procedures. 16) Maintain good relationship with customer/counterparts. 17) Provide periodical report on site activities as per management's requirement. 18) Maintain daily updates and weekly reports on the incidents and resolutions.
LEVEL 2	No Level	<u>Technician</u> 1) Perform Network RAN preventive and corrective maintenance requirement. 2) Prepare Network site condition report. 3) Execute Network preventive and corrective maintenance materials, tools and facilities. 4) Execute replenishment of materials / equipment spare parts.	<u>Technician</u> 1) Perform Network Transmission preventive and corrective maintenance requirement. 2) Prepare Network site condition report. 3) Execute Network preventive and corrective maintenance materials, tools and facilities.

AREA	Wireless Network Field Maintenance (NFM) - Switch & Core	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	Wireless Network Field Maintenance (NFM) -Transmission
		5) Organise supply-chain activities of materials and equipment / spare parts inventory. 6) Ensure the SLA's are met; during field preventive and corrective maintenance task 7) Observe and adhere to established procedures & processes while carrying out preventive and corrective maintenance task 8) Cross check the warranty database before performing SLA tasks. 9) Maintain daily updates and weekly reports on the incidents and resolutions.	4) Execute replenishment of materials / equipment spare parts. 5) Organise supply-chain activities of materials and equipment / spare parts inventory. 6) Ensure the SLA's are met; during field preventive and corrective maintenance task. 7) Observe and adhere to established procedures & processes while carrying out preventive and corrective maintenance task. 8) Cross check the warranty database before performing SLA tasks. 9) Maintain daily updates and weekly reports on the incidents and resolutions.
LEVEL 1	No Level	<u>Installer</u> 1) Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills. 2) Assess installation requirements, planning and performing installations, testing installed equipment and fault-finding. 3) Execute site audits including the documentation of equipment on towers and LOS surveys.	<u>Installer</u> 1) Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills. 2) Assess installation requirements, planning and performing installations, testing installed equipment and fault-finding. 3) Execute site audits including the documentation of equipment on towers and LOS surveys.

Table 4.37: List of Responsibilities for Group 612 Based on Table 4.14 (5 of 7)

AREA	Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	Wireless Network Operation Centre (NOC)
LEVEL 8	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.
LEVEL 7	<p><u>Senior Delivery Manager</u></p> <ol style="list-style-type: none"> 1) Create and maintain strong operational relationships with the company's customers, internal business owners, managed service providers and other key stakeholders. 	<p><u>Senior Delivery Manager</u></p> <ol style="list-style-type: none"> 1) Create and maintain strong operational relationships with the company's customers, internal business owners, managed service providers and other key stakeholders.

AREA	Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	Wireless Network Operation Centre (NOC)
	<ul style="list-style-type: none"> 2) Maintain a proactive approach to operational and service issues, ensuring KPIs and SLAs are met. 3) Manage operational issues by understanding impact, identifying solution options, liaising with technical architects, key suppliers, managed service partners and business owners. 4) Develop initiatives to provide continual service improvement, process adherence and enhancement, plus driving efficiency of service. 5) Produce reports and communications to provide insight on the key highlights, low-lights, issues and risks. 	<ul style="list-style-type: none"> 2) Maintain a proactive approach to operational and service issues, ensuring KPIs and SLAs are met. 3) Manage operational issues by understanding impact, identifying solution options, liaising with technical architects, key suppliers, managed service partners and business owners. 4) Develop initiatives to provide continual service improvement, process adherence and enhancement, plus driving efficiency of service. 5) Produce reports and communications to provide insight on the key highlights, low-lights, issues and risks.
LEVEL 6	<p><u>Manager</u></p> <ul style="list-style-type: none"> 1) Responsible for the management and monitoring of CME Department and all assigned projects on planning, control and execution are performed according to the required standard and within time-cost budget. 2) Oversee the projects operations and construction processes meet the company objectives/goals. 3) Be accountable for the smooth planning, organising and implementation of the overall project from design inception to completion. 4) Lead the project teams for effective implementation and successful completion of construction projects which include overseeing the coordination, budgeting, project costing, quality control and progress of the projects. 	<p><u>Manager</u></p> <ul style="list-style-type: none"> 1) Utilise multiple monitoring applications to insure availability, integrity and confidentiality. 2) Manage budgets for training, hardware/software and employee compensations. 3) Implement intensive internal training and developed processes and procedures to insure employee satisfaction, efficient customer support and company savings. 4) Work with all support and managerial teams to integrate new customers and maintain current contracts. 5) Create disaster recovery plans and reported significant events to customers and support staff with resolutions and proactive procedures to avoid future outages.

AREA	Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	Wireless Network Operation Centre (NOC)
	5) Define key KPIs to be tracked by project managers within projects and ensure proper close-out of all projects and prioritization for strategic projects. 6) Responsible for providing technical and supervisory direction to the team in an assigned region, from design inception to completion.	
LEVEL 5	<u>Engineer</u> 1) Coordinate with the Client for the type-approval of proposed materials, equipment and construction methodologies. 2) Attend to Client's queries with regards to the construction methodologies being accepted in the industry and other concerns related to structural/civil/electrical/mechanical works. 3) Coordinate works with the Service Provider and other discipline that has inter-phase with the civil, mechanical and electrical works. 4) Prepare CME scope of works and design for Telecom Sites/Infrastructures. 5) Assess, approve and control CME changes to the agreed Site Design.	<u>Senior NOC Engineer</u> 1) Monitor and support company system and the applications within to meet company SLAs. 2) Perform support based on policies, procedures with much communication via email and phone. 3) Work within the escalation procedures to support restoration and mitigation of production service issues. 4) Work with the management of the teams to insure that run books are updated as the systems mature from release to release. 5) Provide guidance and teaching to other members of the team. 6) Record logs and keep documentation of duties performed in a central system.
LEVEL 4	<u>Executive / Supervisor</u> 1) Check CME preventive maintenance requirement. 2) Prepare CME preventive maintenance materials, tools and facilities.	<u>NOC Engineer</u> 1) Monitor the performance and capacity of computer systems using a variety of tool. 2) Work to triage or troubleshoot the problem.

AREA	Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	Wireless Network Operation Centre (NOC)
	3) Execute CME preventive maintenance. 4) Produce CME preventive maintenance report.	3) Track and document all issues and resolutions in detail. 4) Escalate the issue to management, other IT resources or 3rd party vendors for assistance in reaching a resolution. 5) Maintain ongoing communication within the team and externally, to keep all stakeholders aware of relevant, known issues and the steps being taken.
LEVEL 3	No Level	No Level
LEVEL 2	No Level	No Level
LEVEL 1	No Level	No Level

Table 4.38: List of Responsibilities for Group 612 Based on Table 4.14 (6 of 7)

AREA	Management Information System (MIS)	Wireless Back Office
LEVEL 8	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.
LEVEL 7	<p><u>Senior Delivery Manager</u></p> <ol style="list-style-type: none"> 1) Create and maintain strong operational relationships with the company's customers, internal business owners, managed service providers and other key stakeholders. 2) Maintain a proactive approach to operational and service issues, ensuring KPIs and SLAs are met. 	<p><u>Solution Manager</u></p> <ol style="list-style-type: none"> 1) Participate in and support wireless project tender process and opportunity development. 2) Create Solution description documents. 3) Participate in negotiations with customers. 4) Provide recurring customer business support.

AREA	Management Information System (MIS)	Wireless Back Office
	<ul style="list-style-type: none"> 3) Manage operational issues by understanding impact, identifying solution options, liaising with technical architects, key suppliers, managed service partners and business owners. 4) Develop initiatives to provide continual service improvement, process adherence and enhancement, plus driving efficiency of service. 5) Produce reports and communications to provide insight on the key highlights, low-lights, issues and risks. 	<ul style="list-style-type: none"> 5) Verify RAN network dimensioning. 6) Create and present customer offer presentations on proposed solutions.
LEVEL 6	<p><u>Manager</u></p> <ul style="list-style-type: none"> 1) Manage system vendors & other service providers in the implementation of various business critical application programs. 2) Support the operational effectiveness of the organisation by providing timely and relevant business information for management decisions. 3) Review and make recommendations to update and upgrade IT, computers and related systems within the organisation. 4) Develop a disaster recovery plan for contingency purposes to ensure that the business of the Association is operational within the shortest possible down time. 5) Conduct periodic reviews on operational processes and workflows and make recommendations to streamline and/or implement systems for better business efficiency and effectiveness. 	<p><u>Solution Engineer</u></p> <ul style="list-style-type: none"> 1) Manage and perform various operations. 2) Assist other department's engineers in implementing new projects and solutions. 3) Execute and aid network operations and activities along with the other engineers in different departments. 4) Provide technical documentations and designs for new topologies and network changes. 5) Attend technical meetings with the customer and vendors to discuss any issues or new change requests. 6) Capable of different Wireless Nodes troubleshooting & maintenance and perform SOP, health check. 7) Provide technical and analytical support for new technology/architecture and equipment end of life replacement initiatives.

AREA	Management Information System (MIS)	Wireless Back Office
	<p>6) Manage a monitoring system relating to recording, processing and retrieving of controlled information.</p> <p>7) Supervise MIS staff on their daily operational tasks including the administration of the LAN and user and user support as well as system security.</p>	
LEVEL 5	<p><u>Regional MIS Engineer</u></p> <p>1) Responsible for company IT systems' daily operations to achieve operational efficiency and effective systems & effective control.</p> <p>2) Resolve/ provide support on issues & routine maintenance activities.</p> <p>3) Supervise, evaluate, and appraise junior employee(s).</p> <p>4) Document IT assets' inventory.</p> <p>5) Handle related matters (e.g.: registration/ renewal of IT-related licenses/ services).</p> <p>6) Provide recommendation/ consultative advices for necessary improvements/ industry updates (e.g.: infra & workflow, new technologies/ regulations, etc.).</p> <p>7) Liaise with internal and external stakeholders (e.g.: vendors, suppliers, IT maintenance companies).</p>	<p><u>Test Engineer (Return & Repair)</u></p> <p>1) Study and appraise current test results daily, ensuring products comply with the most current company and industry standards, codes and specifications.</p> <p>2) Adjust, use and choose all necessary testing equipment for use in the mechanical, electronic, optical and electromechanical work areas as needed.</p> <p>3) Examine structures, materials, parts and all other necessary products for such flaws as cracks, chips, corrosion and weakened metal.</p> <p>4) Perform alignment checks and calibration, making all necessary adjustments and replacements according to results and current company and industry standards.</p> <p>5) Develop new testing methods as the technology and information become available.</p>

AREA	Management Information System (MIS)	Wireless Back Office
LEVEL 4	No Level	<p><u>Technical Executive</u></p> <ol style="list-style-type: none"> 1) Maintain desktop and server operating systems and applications. 2) Set-up new equipment and software. 3) Install and commission new computers\laptops. 4) IT asset management. 5) Report software, hardware and network problems. 6) Support communication with local and remote users. 7) Configure, maintain and provide support for all network components. 8) Compile help desk reports. 9) Assign help desk calls to the relevant people. 10) Report issues for Service desk for escalation. 11) Monitor service desk for tickets assigned to the queue.

AREA	Management Information System (MIS)	Wireless Back Office
LEVEL 3	No Level	<p><u>Technician</u></p> <ol style="list-style-type: none"> 1) Perform Network RAN preventive and corrective maintenance requirement. 2) Prepare Network site condition report. 3) Execute Network preventive and corrective maintenance materials, tools and facilities. 4) Execute replenishment of materials / equipment spare parts. 5) Organise supply-chain activities of materials and equipment / spare parts inventory. 6) Ensure the SLA's are met; during field preventive and corrective maintenance task. 7) Observe and adhere to established procedures & processes while carrying out preventive and corrective maintenance task. 8) Cross check the warranty database before performing SLA tasks. 9) Maintain daily updates and weekly reports on the incidents and resolutions.
LEVEL 2	No Level	No Level
LEVEL 1	No Level	No Level

Table 4.39: List of Responsibilities for Group 612 Based on Table 4.15 (7 of 7)

AREA	Supply Chain, Warehouse, Return & Repair(R&R)	Wireless Network Planning and Optimization	Site Access & Permit
LEVEL 8	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.

AREA	Supply Chain, Warehouse, Return & Repair(R&R)	Wireless Network Planning and Optimization	Site Access & Permit
LEVEL 7	<p><u>Senior Delivery Manager</u></p> <ol style="list-style-type: none"> 1) Create and maintain strong operational relationships with the company's customers, internal business owners, managed service providers and other key stakeholders. 2) Maintain a proactive approach to operational and service issues, ensuring KPIs and SLAs are met. 3) Manage operational issues by understanding impact, identifying solution options, liaising with technical architects, key suppliers, managed service partners and business owners. 4) Develop initiatives to provide continual service improvement, process adherence and enhancement, plus driving efficiency of service. 5) Produce reports and communications to provide insight on the key highlights, low-lights, issues and risks. 	<p><u>Network Development Manager</u></p> <ol style="list-style-type: none"> 1) Create and maintain strong operational relationships with the company's customers, internal business owners, managed service providers and other key stakeholders. 2) Maintain a proactive approach to operational and service issues, ensuring KPIs and SLAs are met. 3) Manage operational issues by understanding impact, identifying solution options, liaising with technical architects, key suppliers, managed service partners and business owners. 4) Develop initiatives to provide continual service improvement, process adherence and enhancement, plus driving efficiency of service. 5) Produce reports and communications to provide insight on the key highlights, low-lights, issues and risks. 	<p><u>Senior Site Acquisition & Access Manager</u></p> <ol style="list-style-type: none"> 1) Create and maintain strong operational relationships with the company's customers, internal business owners, managed service providers and other key stakeholders. 2) Maintain a proactive approach to operational and service issues, ensuring KPIs and SLAs are met. 3) Manage operational issues by understanding impact, identifying solution options, liaising with technical architects, key suppliers, managed service partners and business owners. 4) Develop initiatives to provide continual service improvement, process adherence and enhancement, plus driving efficiency of service. 5) Produce reports and communications to provide insight on the key highlights, low-lights, issues and risks.

AREA	Supply Chain, Warehouse, Return & Repair(R&R)	Wireless Network Planning and Optimization	Site Access & Permit
LEVEL 6	<p><u>Warehouse Manager</u></p> <ol style="list-style-type: none"> 1) Maintain receiving, warehousing, and distribution operations by initiating, coordinating, and enforcing program, operational, and personnel policies and procedures. 2) Comply with federal, state, and local warehousing, material handling, and shipping requirements by studying existing and new legislation; enforcing adherence to requirements; advising management on needed actions. 3) Safeguard warehouse operations and contents by establishing and monitoring security procedures and protocols. 4) Control inventory levels by conducting physical counts; reconciling with data storage system. 5) Maintain physical condition of warehouse by planning and implementing new design layouts; inspecting equipment; issuing work 	<p><u>Radio Frequency Manager</u></p> <ol style="list-style-type: none"> 1) Responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation in geographical areas. 2) Plan, organise and supervise the work of subordinates in the installation, modifications and testing of telecommunications systems. 3) Modify and test of telecommunications systems. 4) Monitor the performance of B-Mobile radio network by conducting drive test. 5) Analyse various reports generated from OSS. 6) Coordinate with the field engineers of Radio Network and Switching Sections for rectifying radio network problems 7) Improve the network performance and quality. 8) Conduct new site surveys for Radio and Transmission network for expansions and new project works. 9) Prepare of Cell Design Data for the new BTS sites, monitor of 3G network 	<p><u>Site Access Manager</u></p> <ol style="list-style-type: none"> 1) Identify, prioritize, and select opportunities / projects for optimal portfolio value and strategic alignment. 2) Collaborate with senior management to define the scope of the project. 3) Create a detailed work plan which specifies and sequences the activities needed to successfully complete the project. 4) Develop a schedule for project completion that allocates resources to activities 5) Review the project schedule with all relevant stakeholders and the management team.

AREA	Supply Chain, Warehouse, Return & Repair(R&R)	Wireless Network Planning and Optimization	Site Access & Permit
	<p>orders for repair and requisitions for replacement.</p> <p>6) Achieve financial objectives by preparing an annual budget; scheduling expenditures; analysing variances; initiating corrective actions.</p> <p>7) Maintain warehouse staff by recruiting, selecting, orienting, and training employees.</p> <p>8) Maintain warehouse staff job results by coaching, counseling, and disciplining employees; planning, monitoring, and appraising job results.</p>	<p>performance by carrying out the drive test and analysis of drive test log.</p> <p>10) Propose for network expansion based on the traffic report analysis.</p>	
LEVEL 5	<p><u>Assistant Warehouse Manager</u></p> <p>1) Responsible for daily activities of the warehouse, including shipping, receiving, maintenance, inventory, and employee scheduling.</p> <p>2) Complete accurate warehouse productivity reports for upper management.</p>	<p><u>Radio Frequency Engineer</u></p> <p>1) Interact with quality, engineering, ID and product management groups in executing product development program plans.</p> <p>2) Assist in firmware development efforts through system test and verification.</p> <p>3) Evaluate, compile and manage test results in relation to design, specifications and test objectives.</p>	<p><u>Site Access Executive</u></p> <p>1) Responsible for site acquisition activities from initial site search until release through permit issuance.</p> <p>2) Perform preliminary candidate search and report on viable locations for sites.</p> <p>3) Provide candidates specific recommendations for leasing and land use viability.</p>

AREA	Supply Chain, Warehouse, Return & Repair(R&R)	Wireless Network Planning and Optimization	Site Access & Permit
	<ul style="list-style-type: none"> 3) Coordinate training of new employees and ensure that current employees are receiving ongoing training. 4) Ensure warehouse compliance with all company safety regulations as well as local and federal laws that govern workplace safety. 	<ul style="list-style-type: none"> 4) Provide technical support in installation, operation, maintenance and repair of radio frequency systems. 5) Ensure radio frequency systems are installed and functioned according to specifications. 6) Assist various electromagnetic tests in lab environment. 7) Prepare analysis and simulation reports, develop presentations, write test plans and perform evaluation. 	<ul style="list-style-type: none"> 4) Negotiate leases with prospective property owners. 5) Communicate activities with team members and other departments as required.
LEVEL 4	<p><u>Storekeeper</u></p> <ul style="list-style-type: none"> 1) Coordinate general warehouse operations and activities including shipping and receiving deliveries 2) Conduct stock checks, and 3) Record warehouse transactions and storage of inventory. 4) Responsible for the safe and efficient operation of the material handling equipment. 5) Perform stock control of warehouse cargo. 6) Coordinate the arrangement of cargo. 	<p><u>Radio Frequency Drive Tester</u></p> <ul style="list-style-type: none"> 1) Assess implementation and installation. 2) Responsible to complete the annual coverage and performance drive test analysis. 3) Measure capacity, coverage, and quality of service. 4) Design new evaluation techniques and processes. 5) Collect data in a variety of ways, such as walk testing and vehicle movement, collating this data into a usable format and analysing it accordingly. 	No Level

AREA	Supply Chain, Warehouse, Return & Repair(R&R)	Wireless Network Planning and Optimization	Site Access & Permit
		6) Assess the performance of the network as a whole and identifying critical areas which may require additional work.	
LEVEL 3	<p><u>Material Handler</u></p> <ol style="list-style-type: none"> 1) Maintain inventory by identifying, labeling, and placing materials and supplies in stock; recording location of inventory. 2) Locate materials and supplies by pulling and verifying materials and supplies listed on production orders. 3) Maintain in-process inventory at work centers by delivering and opening materials and supplies. 4) Document materials and supplies disposition by recording units delivered and location of units. 5) Receive credit-return material and supplies from production by verifying materials and supplies code and lot number and quantity; placing materials in stock. 6) Prepare finished stock for shipment by identifying, pulling, packing, 	<p><u>Assistant Radio Frequency Drive Tester</u></p> <ol style="list-style-type: none"> 1) Assist Radio Frequency Drive Tester collect data in a variety of ways, such as walk testing and vehicle movement, collating this data into a usable format and analysing it accordingly. 2) Assist Radio Frequency Drive Tester to assess the performance of the network as a whole and identifying critical areas which may require additional work. 3) Help other engineers to upload and process the data achieved after bench marking 4) Provide trouble shooting for the teams in the field and co-coordinating with the client's requirement. 5) Responsible for creating voice and data setup for short call, long call, and packet call and making workspaces. 	No Level

AREA	Supply Chain, Warehouse, Return & Repair(R&R)	Wireless Network Planning and Optimization	Site Access & Permit
	crating, loading, and securing product. 7) Document product shipment by recording units shipped. 8) Maintain material-handling equipment by completing pre-use inspections; making operator repairs.	6) Assist Radio Frequency Drive Tester to develop drive routes using Microsoft streets and trips.	
LEVEL 2	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level

DIVISION: 61 - TELECOMMUNICATIONS

GROUP: 613 - SATELLITE TELECOMMUNICATIONS ACTIVITIES

Table 4.40: List of Responsibilities for Group 613 Based on Table 4.16 (1 of 2)

AREA	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	Satellite Network Field Maintenance (NFM) - Earth Station	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
LEVEL 8	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology.

AREA	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	Satellite Network Field Maintenance (NFM) - Earth Station	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
	8) Communicate technology strategy to partners and investors. 9) Develop the company's strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.	9) Develop the company's strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.	8) Communicate technology strategy to partners and investors. 9) Develop the company's strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.
LEVEL 7	<u>Senior Delivery Manager</u> 1) Create and maintain strong operational relationships with the company's customers, internal business owners, managed service providers and other key stakeholders. 2) Maintain a proactive approach to operational and service issues, ensuring KPIs and SLAs are met. 3) Manage operational issues by understanding impact, identifying solution options, liaising with technical architects, key suppliers, managed service partners and business owners. 4) Develop initiatives to provide continual service improvement,	<u>Senior Delivery Manager</u> 1) Create and maintain strong operational relationships with the company's customers, internal business owners, managed service providers and other key stakeholders. 2) Maintain a proactive approach to operational and service issues, ensuring KPIs and SLAs are met. 3) Manage operational issues by understanding impact, identifying solution options, liaising with technical architects, key suppliers, managed service partners and business owners. 4) Develop initiatives to provide continual service improvement, process adherence	<u>Senior Delivery Manager</u> 1) Create and maintain strong operational relationships with the company's customers, internal business owners, managed service providers and other key stakeholders. 2) Maintain a proactive approach to operational and service issues, ensuring KPIs and SLAs are met. 3) Manage operational issues by understanding impact, identifying solution options, liaising with technical architects, key suppliers, managed service partners and business owners. 4) Develop initiatives to provide continual service improvement, process adherence

AREA	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	Satellite Network Field Maintenance (NFM) - Earth Station	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
	<p>process adherence and enhancement, plus driving efficiency of service.</p> <p>5) Produce reports and communications to provide insight on the key highlights, low-lights, issues and risks.</p>	<p>and enhancement, plus driving efficiency of service.</p> <p>5) Produce reports and communications to provide insight on the key highlights, low-lights, issues and risks.</p>	<p>and enhancement, plus driving efficiency of service.</p> <p>5) Produce reports and communications to provide insight on the key highlights, low-lights, issues and risks.</p>
LEVEL 6	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Assure maximum service availability and performance. 2) Perform incident management coordination among internal and external Network Field Maintenance (NFM) – VSAT team. 3) Oversee problem isolation, issue resolution, and escalation management according to pre-defined protocols. 4) Analyse and propose improvement of Access network performance. 5) Develop and establish operating policies, process and procedures for Network Field Maintenance (NFM) – VSAT. 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Assure maximum service availability and performance. 2) Perform incident management coordination among internal and external Network Field Maintenance (NFM) – Earth Station team. 3) Oversee problem isolation, issue resolution, and escalation management according to pre-defined protocols. 4) Analyse and propose improvement of Access network performance. 5) Develop and establish operating policies, process and procedures for Network Field Maintenance (NFM) – Earth Station. 	<p><u>Manager</u></p> <ol style="list-style-type: none"> 1) Assure maximum service availability and performance. 2) Perform incident management coordination among internal and external Network Field Maintenance (NFM) – CME team. 3) Oversee problem isolation, issue resolution, and escalation management according to pre-defined protocols. 4) Analyse and propose improvement of Access network performance. 5) Develop and establish operating policies, process and procedures for Network Field Maintenance (NFM) – CME.

AREA	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	Satellite Network Field Maintenance (NFM) - Earth Station	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
LEVEL 5	<p><u>Engineer</u></p> <ol style="list-style-type: none"> 1) Develop technical parameters required to direct and guide drafters plus designers. 2) Provide technical leadership as well as direct corporate or industry level in respective field of expertise. 3) Provide technical and engineering expertise along with guide to identify, analyse and resolve problems. 4) Plan, organise, estimate, schedule and monitor effectively all work activities. 5) Prepare thoroughly as well as precisely technical reports, documentation, correspondence, calculations plus sketches. 6) Improve continuously job-related, technical, engineering and professional knowledge, performance and skills. 7) Update and maintain accurately all records as well as files. 	<p><u>Engineer</u></p> <ol style="list-style-type: none"> 1) Develop technical parameters required to direct and guide drafters plus designers. 2) Provide technical leadership as well as direct corporate or industry level in respective field of expertise. 3) Provide technical and engineering expertise along with guide to identify, analyse and resolve problems. 4) Plan, organise, estimate, schedule and monitor effectively all work activities. 5) Prepare thoroughly as well as precisely technical reports, documentation, correspondence, calculations plus sketches. 6) Improve continuously job-related, technical, engineering and professional knowledge, performance and skills. 7) Update and maintain accurately all records as well as files. 	<p><u>Engineer</u></p> <ol style="list-style-type: none"> 1) Develop technical parameters required to direct and guide drafters plus designers. 2) Provide technical leadership as well as direct corporate or industry level in respective field of expertise. 3) Provide technical and engineering expertise along with guide to identify, analyse and resolve problems. 4) Plan, organise, estimate, schedule and monitor effectively all work activities. 5) Prepare thoroughly as well as precisely technical reports, documentation, correspondence, calculations plus sketches. 6) Improve continuously job-related, technical, engineering and professional knowledge, performance and skills. 7) Update and maintain accurately all records as well as files.

AREA	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	Satellite Network Field Maintenance (NFM) - Earth Station	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
LEVEL 4	<p><u>Executive / Supervisor</u></p> <ol style="list-style-type: none"> 1) Design technical drawing. 2) Plan satellite infrastructure installation activities. 3) Plan satellite infrastructure maintenance activities. 4) Coordinate network testing activities. 5) Plan satellite infrastructure equipment upgrading activities. 	<p><u>Executive / Supervisor</u></p> <ol style="list-style-type: none"> 1) Design technical drawing. 2) Plan satellite infrastructure installation activities. 3) Plan satellite infrastructure maintenance activities. 4) Coordinate network testing activities. 5) Plan satellite infrastructure equipment upgrading activities. 	<p><u>Executive / Supervisor</u></p> <ol style="list-style-type: none"> 1) Design technical drawing. 2) Plan satellite infrastructure installation activities. 3) Plan satellite infrastructure maintenance activities. 4) Coordinate network testing activities. 5) Plan satellite infrastructure equipment upgrading activities.
LEVEL 3	<p><u>Technical Team Leader</u></p> <ol style="list-style-type: none"> 1) Check VSAT preventive and corrective maintenance requirement. 2) Plan Network preventive and corrective maintenance materials, tools and facilities. 3) Verify Network site condition report. 4) Inspect Network site work. 5) Produce Network preventive and corrective maintenance report. 6) Verify Network preventive and corrective maintenance materials, tools and facilities. 	<p><u>Technical Team Leader</u></p> <ol style="list-style-type: none"> 1) Check Earth Station preventive and corrective maintenance requirement. 2) Plan Network preventive and corrective maintenance materials, tools and facilities. 3) Verify Network site condition report. 4) Inspect Network site work. 5) Produce Network preventive and corrective maintenance report. 6) Verify Network preventive and corrective maintenance materials, tools and facilities 7) Determine solution for equipment module / component corrective maintenance. 	<p><u>Technical Team Leader</u></p> <ol style="list-style-type: none"> 1) Check CME preventive and corrective maintenance requirement. 2) Plan Network preventive and corrective maintenance materials, tools and facilities. 3) Verify Network site condition report. 4) Inspect Network site work. 5) Produce Network preventive and corrective maintenance report. 6) Verify Network preventive and corrective maintenance materials, tools and facilities.

AREA	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	Satellite Network Field Maintenance (NFM) - Earth Station	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
	<p>7) Determine solution for equipment module / component corrective maintenance.</p> <p>8) Plan replenishment of materials / equipment spare parts.</p> <p>9) Organise supply-chain activities of materials and equipment / spare parts inventory.</p> <p>10) Take end to end accountability and ownership of the assigned task(s) related.</p> <p>11) Ensure the SLA's are met; during field preventive and corrective maintenance task.</p> <p>12) Observe and adhere to established procedures & processes while carrying out preventive and corrective maintenance task.</p> <p>13) Cross check the warranty database before performing SLA tasks.</p> <p>14) Ensure faulty equipment(s) are returned timely to the designated location after troubleshooting.</p>	<p>8) Plan replenishment of materials / equipment spare parts.</p> <p>9) Organise supply-chain activities of materials and equipment / spare parts inventory.</p> <p>10) Take end to end accountability and ownership of the assigned task(s) related.</p> <p>11) Ensure the SLA's are met; during field preventive and corrective maintenance task.</p> <p>12) Observe and adhere to established procedures & processes while carrying out preventive and corrective maintenance task.</p> <p>13) Cross check the warranty database before performing SLA tasks.</p> <p>14) Ensure faulty equipment(s) are returned timely to the designated location after troubleshooting.</p> <p>15) Comply established travel processes and procedures.</p> <p>16) Maintain good relationship with customer/counterparts.</p>	<p>7) Determine solution for equipment module / component corrective maintenance.</p> <p>8) Plan replenishment of materials / equipment spare parts.</p> <p>9) Organise supply-chain activities of materials and equipment / spare parts inventory.</p> <p>10) Take end to end accountability and ownership of the assigned task(s) related.</p> <p>11) Ensure the SLA's are met; during field preventive and corrective maintenance task.</p> <p>12) Observe and adhere to established procedures & processes while carrying out preventive and corrective maintenance task.</p> <p>13) Cross check the warranty database before performing SLA tasks.</p> <p>14) Ensure faulty equipment(s) are returned timely to the designated location after troubleshooting.</p> <p>15) Comply established travel processes and procedures.</p>

AREA	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	Satellite Network Field Maintenance (NFM) - Earth Station	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
	15) Comply established travel processes and procedures. 16) Maintain good relationship with customer/counterparts. 17) Provide periodical report on site activities as per management's requirement. 18) Maintain daily updates and weekly reports on the incidents and resolutions.	17) Provide periodical report on site activities as per management's requirement. 18) Maintain daily updates and weekly reports on the incidents and resolutions.	16) Maintain good relationship with customer/counterparts. 17) Provide periodical report on site activities as per management's requirement. 18) Maintain daily updates and weekly reports on the incidents and resolutions.
LEVEL 2	<u>Technician</u> 1) Perform VSAT preventive and corrective maintenance requirement. 2) Prepare Network site condition report. 3) Execute Network preventive and corrective maintenance materials, tools and facilities. 4) Execute replenishment of materials / equipment spare parts. 5) Organise supply-chain activities of materials and equipment / spare parts inventory.	<u>Technician</u> 1) Perform Earth Station preventive and corrective maintenance requirement. 2) Prepare Network site condition report. 3) Execute Network preventive and corrective maintenance materials, tools and facilities. 4) Execute replenishment of materials / equipment spare parts. 5) Organise supply-chain activities of materials and equipment / spare parts inventory.	<u>Technician</u> 1) Perform CME preventive and corrective maintenance requirement. 2) Prepare Network site condition report. 3) Execute Network preventive and corrective maintenance materials, tools and facilities. 4) Execute replenishment of materials / equipment spare parts. 5) Organise supply-chain activities of materials and equipment / spare parts inventory.

AREA	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	Satellite Network Field Maintenance (NFM) - Earth Station	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
	<ul style="list-style-type: none"> 6) Ensure the SLA's are met; during field preventive and corrective maintenance task. 7) Observe and adhere to established procedures & processes while carrying out preventive and corrective maintenance task. 8) Cross check the warranty database before performing SLA tasks. 9) Maintain daily updates and weekly reports on the incidents and resolutions. 	<ul style="list-style-type: none"> 6) Ensure the SLA's are met; during field preventive and corrective maintenance task. 7) Observe and adhere to established procedures & processes while carrying out preventive and corrective maintenance task. 8) Cross check the warranty database before performing SLA tasks. 9) Maintain daily updates and weekly reports on the incidents and resolutions. 	<ul style="list-style-type: none"> 6) Ensure the SLA's are met; during field preventive and corrective maintenance task. 7) Observe and adhere to established procedures & processes while carrying out preventive and corrective maintenance task. 8) Cross check the warranty database before performing SLA tasks. 9) Maintain daily updates and weekly reports on the incidents and resolutions.
LEVEL 1	<p><u>Installer</u></p> <ul style="list-style-type: none"> 1) Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills. 2) Assess installation requirements, planning and performing installations, testing installed equipment and fault-finding. 3) Execute site audits including the documentation of equipment on towers and LOS surveys. 	<p><u>Installer</u></p> <ul style="list-style-type: none"> 1) Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills. 2) Assess installation requirements, planning and performing installations, testing installed equipment and fault-finding. 3) Execute site audits including the documentation of equipment on towers and LOS surveys. 	<p><u>Installer</u></p> <ul style="list-style-type: none"> 1) Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills. 2) Assess installation requirements, planning and performing installations, testing installed equipment and fault-finding. 3) Execute site audits including the documentation of equipment on towers and LOS surveys.

Table 4.41: List of Responsibilities for Group 613 Based on Table 4.16 (2 of 2)

AREA	Satellite Network Operation Centre (NOC)	Satellite Network Optimization
LEVEL 8	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure. 	<p><u>Chief Network Director / Officer</u></p> <ol style="list-style-type: none"> 1) Develop technical aspects of the company’s strategy to ensure alignment with its business goals. 2) Discover and implement new technologies that yield competitive advantage. 3) Help departments use technology profitably. 4) Supervise system infrastructure to ensure functionality and efficiency. 5) Build quality assurance and data protection processes. 6) Monitor KPIs and IT budgets to assess technological performance. 7) Use stakeholders’ feedback to inform necessary improvements and adjustments to technology. 8) Communicate technology strategy to partners and investors. 9) Develop the company’s strategy for using technological resources. 10) Evaluate and implement new systems and infrastructure.
LEVEL 7	<p><u>Senior Delivery Manager</u></p> <ol style="list-style-type: none"> 1) Create and maintain strong operational relationships with the company's customers, internal business owners, managed service providers and other key stakeholders. 2) Maintain a proactive approach to operational and service issues, ensuring KPIs and SLAs are met. 	<p><u>Optimization Manager</u></p> <ol style="list-style-type: none"> 1) Identify clients' problems specific to supply chain, identify and communicate opportunities. 2) Report on progress; communicate with internal and external stakeholders and presents findings to clients.

AREA	Satellite Network Operation Centre (NOC)	Satellite Network Optimization
	<ul style="list-style-type: none"> 3) Manage operational issues by understanding impact, identifying solution options, liaising with technical architects, key suppliers, managed service partners and business owners. 4) Develop initiatives to provide continual service improvement, process adherence and enhancement, plus driving efficiency of service. 5) Produce reports and communications to provide insight on the key highlights, low-lights, issues and risks. 	<ul style="list-style-type: none"> 3) Lead, develop and effectively communicate services vision, strategy, and roadmap to different levels of stake-holders from Analysts to senior level Executives. 4) Build, grow and manage relationships with external customers, technology vendors, business and other stakeholders. 5) Motivate and inspire direct reports and extended team to drive department vision, strategy and objectives.
LEVEL 6	<p><u>Senior Engineer</u></p> <ul style="list-style-type: none"> 1) Monitor and support company system and the applications within to meet company SLAs. 2) Perform support based on policies, procedures with much communication via email and phone. 3) Work within the escalation procedures to support restoration and mitigation of production service issues. 4) Work with the management of the teams to insure that run books are updated as the systems mature from release to release. 5) Provide guidance and teaching to other members of the team. 6) Record logs and keep documentation of duties performed in a central system. 	<p><u>Optimization Engineer</u></p> <ul style="list-style-type: none"> 1) Investigate and resolve customer complaints regarding service. 2) Configure systems and add new equipment to the networks; turn on, integrate and optimize new cells sites. 3) Interface with all levels of management and collaborate with other groups. 4) Perform design and performance activities in customer projects. 5) Perform Network Planning. 6) Perform Initial Tuning. 7) Perform Network and/or Node Reviews/Audits. 8) Analyse performance of networks elements and see if changes (software or hardware changes). 9) Implement recommendations for network optimization improvement. 10) Undertake networks performance improvement (KPIs) and optimization tasks.

AREA	Satellite Network Operation Centre (NOC)	Satellite Network Optimization
LEVEL 5	<p><u>Engineer</u></p> <ol style="list-style-type: none"> 1) Monitor the performance and capacity of computer systems using a variety of tool. 2) Work to triage or troubleshoot the problem. 3) Track and document all issues and resolutions in detail. 4) Escalate the issue to management, other IT resources or 3rd party vendors for assistance in reaching a resolution. 5) Maintain ongoing communication within the team and externally, to keep all stakeholders aware of relevant, known issues and the steps being taken. 	<p><u>Satellite Data Analyst</u></p> <ol style="list-style-type: none"> 1) Provide support to ongoing databasing and image processing activities in the field of environmental monitoring by satellites. 2) Operate custom software to manipulate a diverse range of environmental and imagery data. 3) Operate off-the-shelf and custom software to process satellite imagery to produce maps. 4) Develop an understanding of the meaning of data in order to critically review it. 5) Write technical reports and occasionally contribute to articles for publication.
LEVEL 4	No Level	No Level
LEVEL 3	No Level	No Level
LEVEL 2	No Level	No Level
LEVEL 1	No Level	No Level

DIVISION: 61 - TELECOMMUNICATIONS

GROUP: 619 - OTHER TELECOMMUNICATIONS ACTIVITIES

Table 4.42: List of Responsibilities for Group 619 Based on Table 4.17 (1 of 1)

AREA	Telecommunications Sales and Marketing	Telecommunications Business Development
LEVEL 8	<p><u>Marketing and Business Development Director</u></p> <ol style="list-style-type: none"> 1) Lead and build highly functioning team creating a performance driven organisation responsible for segment P&L figures. 2) Support company sales targets with programs and initiatives and works closely with the CRMG group. 3) Direct segment marketing team, provide input to voice and non-voice group and collaborate to create best customer experience. 4) Develop marketing solutions to grow customer base in numbers and in value. 5) Develop innovative ways of improving customer acquisition, retention and development. 6) Work closely with rest of CMO, Technical, Finance, HR and other functions to ensure that Marketing cross-functional needs are being addressed. 7) Responsible for Marketing’s interaction with other departments with regards to business requirements to support marketing plan. 8) Develop and grow local talent. 	<p><u>Marketing and Business Development Director</u></p> <ol style="list-style-type: none"> 1) Lead and build highly functioning team creating a performance driven organisation responsible for segment P&L figures. 2) Support company sales targets with programs and initiatives and works closely with the CRMG group. 3) Direct segment marketing team, provide input to voice and non-voice group and collaborate to create best customer experience. 4) Develop marketing solutions to grow customer base in numbers and in value. 5) Develop innovative ways of improving customer acquisition, retention and development. 6) Work closely with rest of CMO, Technical, Finance, HR and other functions to ensure that Marketing cross-functional needs are being addressed. 7) Responsible for Marketing’s interaction with other departments with regards to business requirements to support marketing plan. 8) Develop and grow local talent.

AREA	Telecommunications Sales and Marketing	Telecommunications Business Development
LEVEL 7	<p><u>Senior Sales and Marketing Manager</u></p> <ol style="list-style-type: none"> 1) Create goals that comply with the attainment of the business's overall objectives and strive to meet and exceed these goals. 2) Conduct reviews on the existent sales department strategies and weigh them against results in order to identify areas of improvement. 3) Conduct research and perform analyses on the performance of the sales department ensuring prompt delivery and accuracy of daily/weekly/monthly/quarterly reports to senior management. 4) Identify areas of improvement in the business's marketing strategies, identifying opportunities and understanding the market and competitive environment. 5) Assess the amount of resources required by the sales department in order to achieve optimal performance, leading to financial benefit for the business. 	<p><u>Senior Business Development Manager</u></p> <ol style="list-style-type: none"> 1) Develop and maintain long-lasting and meaningful relationships with public agency clients as well as industry teaming partners; collaborating to find solutions to challenging projects and organisational issues. 2) Support regional marketing, sales of large multi-million-dollar projects/programs, teaming partnerships and client engagement activities to implement business development initiatives. 3) Monitor market conditions, innovations and trends, and competitors' performance, pricing and sales strategies to maximise competitive stance. 4) Lead and/or support capture teams in pursuit planning; development of win themes; and preparation of compelling proposals, presentations, and marketing materials. 5) Conduct opportunity and client research. 6) Lead company capabilities presentations with customers; attend technical seminars and industry events. 7) Participation in industry and client organisations as a strategic part of client development. 8) Track goals and produce internal reports, as needed. 9) Develop client relationships through face to face meetings.
LEVEL 6	<p><u>Sales and Marketing Manager</u></p> <ol style="list-style-type: none"> 1) Identify, develop and evaluate marketing strategy based on knowledge of establishment objectives, market characteristics, and cost and mark-up factors. 	<p><u>Business Development Manager</u></p> <ol style="list-style-type: none"> 1) Contact potential clients to establish rapport and arrange meetings. 2) Plan and oversee new marketing initiatives.

AREA	Telecommunications Sales and Marketing	Telecommunications Business Development
	<ul style="list-style-type: none"> 2) Coordinate and participate in promotional activities and trade shows, working with developers, advertisers, and production managers, to market products and services. 3) Develop pricing strategies, balancing firm objectives and customer satisfaction. 4) Use sales forecasting and strategic planning to ensure the sale and profitability of products, lines, or services, analysing business developments and monitoring. 5) Confer with legal staff to resolve problems, such as copyright infringement and royalty sharing with outside producers and distributors. 6) Evaluate the financial aspects of product development, such as budgets, expenditures, research and development appropriations, and return-on-investment and profit-loss projections. 7) Initiate market research studies and analyse their findings as well as conduct economic and commercial surveys to identify potential markets for products and services. 	<ul style="list-style-type: none"> 3) Research organisations and individuals to find new opportunities. 4) Increase the value of current customers while attracting new ones. 5) Find and develop new markets and improve sales. 6) Attend conferences, meetings, and industry events. 7) Develop quotes and proposals for clients. 8) Develop goals for the development team and business growth and ensuring they are met. 9) Train personnel and helping team members develop their skills.
LEVEL 5	<p><u>Senior Sales Engineer</u></p> <ul style="list-style-type: none"> 1) Collaborate with sales teams to understand customer requirements, to promote the sale of company products, and to provide sales support. 2) Sell products requiring extensive technical expertise and support for installation and use, such as material handling 	<p><u>Senior Business Development Executive</u></p> <ul style="list-style-type: none"> 1) Collaborate with sales teams to understand customer requirements, to promote the sale of company products, and to provide sales support. 2) Sell products requiring extensive technical expertise and support for installation and use, such as material handling equipment, numerical-control machinery, or computer systems.

AREA	Telecommunications Sales and Marketing	Telecommunications Business Development
	<p>equipment, numerical-control machinery, or computer systems.</p> <p>3) Plan and modify product configurations to meet customer needs.</p> <p>4) Confer with customers and engineers to assess equipment needs and to determine system requirements.</p> <p>5) Prepare and deliver technical presentations that explain products or services to customers and prospective customers.</p>	<p>3) Plan and modify product configurations to meet customer needs.</p> <p>4) Confer with customers and engineers to assess equipment needs and to determine system requirements.</p> <p>5) Prepare and deliver technical presentations that explain products or services to customers and prospective customers.</p>
LEVEL 4	<p><u>Sales Engineer</u></p> <p>1) Identify and establish new business.</p> <p>2) Organise sales visits.</p> <p>3) Liaise with existing clients.</p> <p>4) Prepare tenders, proposals and quotations.</p> <p>5) Provide pre-sales and post-sales support.</p> <p>6) Negotiate contracts, terms and conditions.</p> <p>7) Review cost and sales performance.</p> <p>8) Write reports and sales literature.</p> <p>9) Provide product education and advice.</p> <p>10) Attend trade exhibitions, conferences and meetings.</p>	<p><u>Business Development Executive</u></p> <p>1) Research organisations and individuals online (especially on social media) to identify new leads and potential new markets.</p> <p>2) Research the needs of other companies and learning who makes decisions about purchasing.</p> <p>3) Contact potential clients via email or phone to establish rapport and set up meetings.</p> <p>4) Plan and oversee new marketing initiatives.</p> <p>5) Contact clients to inform them about new developments in the company's products.</p> <p>6) Develop quotes and proposals.</p> <p>7) Negotiate and renegotiate by phone, email, and in person.</p> <p>8) Develop sales goals for the team and ensure they are met.</p> <p>9) Train personnel and help team members develop their skills.</p>

AREA	Telecommunications Sales and Marketing	Telecommunications Business Development
LEVEL 3	<u>Sales Supervisor</u> 1) Manage sales staff. 2) Coordinate sales activities. 3) Compile sales reports. 4) Resolve customer complaints.	No Level
LEVEL 2	<u>Sales Promoter</u> 1) Identify interested and qualified customers in order to provide them with additional information. 2) Sell products being promoted and keep record of sales. 3) Suggest specific product purchases to meet customers' need. 4) Learn about competitor's products consumer' interest and concerns in order to answer questions and provide more complete information 5) Recommend product or service improvement to employers.	No Level
LEVEL 1	No Level	No Level

4.6 Mapping OS vs NOSS

This section provides a mapping of occupational structure and available NOSS. A total of 36 available NOSS are identified and mapping over with the occupational structure produce. The result of the mapping shows that only 23 NOSS identified are related to OS produced. This is due to the remaining NOSS are not relevant to 2 digits MSIC 2008 Division 61: Telecommunications. The results for NOSS mapping with OS are listed in the Table 4.44 to Table 4.48 and the list of remaining 13 NOSS are listed in Table 4.43.

Table 4.43: List of NOSS not included under the Division 61

(Source: NOSS Registry January 2019)

MSIC GROUP	CORRESPONDING NOSS/ LEVEL
J611 Wired telecommunications activities	1) D-030-1 Communication Operator (Electronic) (1997) 2) D-030-2 Communication Operator (Electronic) (1997) 3) D-030-3 Communication Personnel (Electronic) (1997) 4) EE-039-2:2012 Cellular Phone Repair 5) EE-039-3:2012 Advanced Cellular Phone Repair
J612 Wireless telecommunications activities	1) EE-032-2 Technician (3G Switching) (2009) 2) EE-032-3 Senior Technician (3G Switching) (2009) 3) EE-036-2 Radio Frequency Network Technician (2011)
J619 Other telecommunications activities	1) J619-001-3:2016 Telecommunications Facilities Maintenance 2) EE-200-3:2013 Radar Installation & Maintenance 3) EE-041-3:2013 Internet Protocol (IP) Network Elements Installation, Configuration & Maintenance 4) EE-041-4:2013 Internet Protocol (IP) Network Elements Testing & Troubleshooting 5) EE-041-5:2013 Internet Protocol (IP) Network Elements Planning & Advanced Troubleshooting

Table 4.44: Mapping OS vs Available NOSS

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(611) WIRED TELECOMMUNICATIONS ACTIVITIES		
AREA	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	Wired Network Development (ND) - Design and Planning Core Network (Metro E)
LEVEL 8	Chief Network Officer	Chief Network Officer	Chief Network Officer
LEVEL 7	IPCore ND General Manager	IPCore ND General Manager	IPCore ND General Manager
LEVEL 6	Head of Department Core Network	Head of Department Core Network	Head of Department Core Network
LEVEL 5	Manager	EE-037-5:2012	Manager
LEVEL 4	Executive / Engineer	EE-037-4:2012	Executive / Engineer
LEVEL 3	Technician	EE-037-3:2012	Technician
LEVEL 2	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level

Table 4.45: Mapping OS vs Available NOSS

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(611) WIRED TELECOMMUNICATIONS ACTIVITIES		
AREA	Wired Network Development (ND) – Network Implementation (BRAS)	Wired Network Development (ND) - Network Implementation (IP Core)	Wired Network Development (ND) - Network Implementation (Metro E)
LEVEL 8	Chief Network Officer	Chief Network Officer	Chief Network Officer
LEVEL 7	IPCore ND General Manager	IPCore ND General Manager	IPCore ND General Manager
LEVEL 6	Head of Department Core Network	Head of Department Core Network	Head of Department Core Network
LEVEL 5	Manager	EE-037-5:2012	Manager
LEVEL 4	Executive / Engineer	EE-037-4:2012	Executive / Engineer
LEVEL 3	Technician	EE-037-3:2012	Technician
LEVEL 2	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level

Table 4.46: Mapping OS vs Available NOSS

SECTION	(J) INFORMATION AND COMMUNICATIONS	
DIVISION	(61) TELECOMMUNICATIONS	
GROUP	(611) WIRED TELECOMMUNICATIONS ACTIVITIES	
AREA	Wired Network Operation Centre (NOC) - Transmission (TX Submarine)	Wired Network Operation Centre (NOC) - Transmission (TX DWDM)
LEVEL 8	Chief Network Officer	Chief Network Officer
LEVEL 7	Transmission NOC General Manager	Transmission NOC General Manager
LEVEL 6	Head of Department	Head of Department
LEVEL 5	EE-321-5:2012	Manager
LEVEL 4	EE-321-4:2012	Executive / Engineer
LEVEL 3	EE-321-3:2012	D-500-3 EE-038-3
LEVEL 2	Splicer	D-500-2 EE-038-2
LEVEL 1	No Level	No Level

Table 4.47: Mapping OS vs Available NOSS

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(612) WIRELESS TELECOMMUNICATIONS ACTIVITIES		
AREA	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)
LEVEL 8	Chief Technical Officer	Chief Technical Officer	Chief Technical Officer
LEVEL 7	Head of Department	Head of Department	Head of Department
LEVEL 6	Manager	Manager	Manager
LEVEL 5	EE-033-5	Asst. Specialist/Engineer	Engineer
LEVEL 4	EE-033-4	Executive / Supervisor	Executive / Supervisor
LEVEL 3	No Level	Technical Team Leader	Technical Team Leader
LEVEL 2	No Level	Technician	Technician
LEVEL 1	No Level	EE-034-1	EE-034-1

Based on table 4.47, there are 2 NOSS namely D-217-4 and D-217-5 mapped to OS produced are from 3 digits MSIC 2008 Group 619: Other telecommunications activities. This is due to the existing NOSS are match with job titles produced in 3 digits MSIC 2008 Group 612: Wireless telecommunications activities.

Table 4.48: Mapping OS vs Available NOSS

SECTION	(J) INFORMATION AND COMMUNICATIONS			
DIVISION	(61) TELECOMMUNICATIONS			
GROUP	(612) WIRELESS TELECOMMUNICATIONS ACTIVITIES			
AREA	Wireless Network Field Maintenance (NFM) - Switch & Core	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	Wireless Network Field Maintenance (NFM) - Transmission	Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
LEVEL 8	Chief Network Director / Officer	Chief Network Director / Officer	Chief Network Director / Officer	Chief Network Director / Officer
LEVEL 7	Senior Delivery Manager	Senior Delivery Manager	Senior Delivery Manager	Senior Delivery Manager
LEVEL 6	Manager	Manager	Manager	Manager
LEVEL 5	D-217-5	EE-033-5	Engineer	Engineer
LEVEL 4	D-217-4	EE-033-4	Executive / Supervisor	Executive / Supervisor
LEVEL 3	No Level	EE-033-3	EE-035-3	EE-040-3:2013
LEVEL 2	No Level	EE-033-2	EE-035-2	Technician
LEVEL 1	No Level	EE-034-1	EE-034-1	EE-034-1

Based on table 4.47, there are 2 NOSS namely OT-011-4 and OT-011-5 mapped to OS produced are from 3 digits MSIC 2008 Group 619: Other telecommunications activities. This is due to the existing NOSS are match with job titles produced in 3 digits MSIC 2008 Group 612: Wireless telecommunications activities.

Table 4.49: Mapping OS vs Available NOSS

SECTION	(J) INFORMATION AND COMMUNICATIONS		
DIVISION	(61) TELECOMMUNICATIONS		
GROUP	(612) WIRELESS TELECOMMUNICATIONS ACTIVITIES		
AREA	Supply Chain, Warehouse, Return & Repair(R&R)	Wireless Network Planning and Optimization	Site Access & Permit
LEVEL 8	Chief Network Director / Officer	Chief Network Director / Officer	Chief Network Director / Officer
LEVEL 7	Senior Delivery Manager	Network Development Manager	Senior Site Acquisition & Access Manager
LEVEL 6	Warehouse Manager	Radio Frequency Manager	Site Access Manager
LEVEL 5	OT-011-5	Radio Frequency Engineer	Site Access Executive
LEVEL 4	OT-011-4	Radio Frequency Drive Tester	No Level
LEVEL 3	Material Handler	EE-036-3	No Level
LEVEL 2	No Level	No Level	No Level
LEVEL 1	No Level	No Level	No Level

4.7 Occupational Descriptions (OD)

Occupational Descriptions is a broad, general, and written statement of a specific job, based on the findings of a job analysis. It generally includes duties, purpose, responsibilities, scope, and working conditions of a job along with the job's title, and the name or designation of the person to whom the employee reports. There are 56 OD provided in Annex 6 are the job titles that have been identified as critical or hard-to-fill job as suggested by industry representatives from focus group.

4.8 Conclusion

Based on the discussions with panel members during the development workshops and survey findings, the OS, occupational responsibility for the identified job titles of the industry is produced in this chapter. The OS would provide information of the competency or job areas applicable to the industry, and the skill level of the different job titles, according to the MOSQF Level Descriptors, and the available career paths. There are 46 job area with 291 job titles, 56 critical job titles and 18 job titles relevant to IR 4.0 identified from FGD.

More than that, the jobs and competencies in demand, emerging skills and related issues are another item identified in this chapter. The identified items are useful for industrial player for proposing next steps to cater the demand of the industry.

CHAPTER 5: DISCUSSION, RECOMMENDATION AND CONCLUSION

5.1 Discussion

The telecommunications industry can be considered as an established segment of the services sector. For survey conducted, there are 58 total respondents recorded while from the findings of the Occupational Analysis on the industry, a total of 46 job areas have been identified with 20 job areas belong to 3 digit MSIC 2008 Group 611: Wired telecommunication activities, 19 job areas belong to 3 digit MSIC 2008 Group 612: Wireless telecommunication activities, 5 job areas belong to 3 digit MSIC 2008 Group 613: Satellite telecommunication activities and 2 job areas identified for 3 digits MSIC 2008 Group 619: Other telecommunications activities. From these 46 job areas, a total of 291 job titles identified where 56 of it are classified as critical job and 18 job titles relevant to IR 4.0.

The job titles identified require a holistic view in development of standard, skills training and also certification for recognition. If the competency requirements are documented in the National Occupational Skill Standards (NOSS) format, the personnel in these areas will obtain a more structured skills training. This will also enable personnel who are experienced and skilled to be certified through the Recognition of Prior Achievement (RPA). The list of NOSS which are already developed under 2 digits MSIC 2008 Division 61: Telecommunications is presented in Table 2.8 in Chapter 2. This study provides a more comprehensive view of the industry needs in terms of skill development and thus is able to assist in strategizing the NOSS development for other critical job areas.

5.2 Recommendation

As recommendation from the focus group discussion, the main problem identified in this industry is that the company in the industry prefers to hire the foreign worker more rather than local skilled worker. Thus, the government needs to take action to counter the problem before it becomes worse. Several policies can be taken such as providing incentive to company that hires majority of local skilled worker as their workers and increasing the levy for foreign worker in this industry.

It is hoped that the result of this OF were used as reference to fulfil the future plans of developing skilled personnel and certifying Malaysians in this industry towards improving the quality of the local industry and thus spurring Malaysia's global competitiveness.

There are several options when addressing or mitigating workforce demand and supply. It may include establishing and maintaining partnerships with other agencies or departments or educational institutions to increase external talent pools and also through the training of existing staff in line with new skills requirements.

Based on the above comments, specific recommendations are listed below:

- i) Continue and streamline efforts in NOSS development for areas under the industry in line with the findings of this analysis. This includes the development of the NOSS for the sectors and sub-sectors that are in demand and have not been developed.
- ii) Encourage apprenticeship training (National Dual Training System –NDTS) for the related sub sector and job area.
- iii) Promote certification of existing and experienced personnel in the sector through Recognition of Prior Achievement (RPA) (Pentauliahahan Pencapaian Terdahulu – PPT).
- iv) Invest on employee training program to increase employee performance as well as competencies and skills in telecommunications. Training is the main issue that affects the employee performance in telecommunication sector. If organisations invest in the right type of employee training, it can enhance employee performance as well as competencies and skills. In addition, training is seen as a useful means of

coping with changes fostered by technological innovation; market competition, organisational structuring and most importantly it plays a key role to enhance employee performance.

5.3 Conclusion

The conclusion is based on the specified objectives of the Occupational Framework as elaborated below:

Objective 1: To construct telecommunications industry OS based on MSIC 2008

As a result of the Occupational Framework conducted together with expert panel members from various organisations, a total of 46 job areas, 291 job titles, 56 critical job titles and 18 jobs titles relevant to IR 4.0 have been identified.

By planning and conducting the training and certification of this sector personnel in the near future, it is hoped that there will be a steady flow of local skilled and certified workers.

Objective 2: To determine the competency in demand for telecommunications industry

Based on the survey findings, the survey respondents and FGD highlighted the top 5 competencies in demand are as follows:

- a) Technical skills
- b) Communication skills
- c) Diagnostic skills
- d) Safety and security
- e) Troubleshooting / problem solving skills

The description of competencies can be referred to Table 4.4 in Chapter 4.

Objective 3: To determine the critical job titles for the telecommunications industry

The Focus Group Discussion members have reviewed critical job titles listed from COL 2018/2019 and comprehensively concluded 56 critical job titles in Telecommunications industry as listed in Annex 4. There are 10 low skilled workers, 38 semi-skilled workers and 8 skilled workers identified from 56 critical job titles listed.

Objective 4: To identify the telecommunications industry relevant jobs title that is correlated with IR4.0

For identification job titles relevant to IR 4.0, the Focus Group Discussion members have reviewed the developed OS and comprehensively concluded with 18 job titles relevant to IR 4.0 in Telecommunications industry as listed in Annex 5. There are 2 semi-skilled workers and 16 skilled workers identified from 18 job titles relevant to IR 4.0.

Objective 5: To create telecommunications industry Occupational Description (OD) for each job title based on present industry OS

The Occupational Descriptions for all the different job titles were obtained from Focus Group Discussion and related reports. These Occupational Descriptions will also serve as reference of job scope and the required competencies for NOSS development. OD can be referred in Annex 6.

As a conclusion, government and stakeholder need to take serious attention towards industry requirement in order to cope with the fast development of telecommunication industry and also to ensure telecommunication industry in Malaysia are in line with developed countries. The results of this study can be one of the key references in order to ensure the development of telecommunication industry in Malaysia is in the right track and continuously develop to become one of the industries that enhances country development.

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ANNEX 1: MOSQF LEVEL DESCRIPTORS

**MALAYSIAN OCCUPATIONAL SKILLS QUALIFICATION FRAMEWORK
(MOSQF) LEVEL DESCRIPTOR**

(Source: Department of Skills Development)

LEVEL	LEVEL DESCRIPTOR
8	Achievement at this level reflects the ability to develop original understanding and extend a sub-area of knowledge or professional practice. It reflects the ability to address problematic situations that involve many complexes, interacting factors through initiating, designing and undertaking research, development or strategic activities. It involves the exercise of broad autonomy, judgement and leadership in sharing responsibility for the development of a field of work or knowledge, or for creating substantial professional or organisational change. It also reflects a critical understanding of relevant theoretical and methodological perspectives and how they affect the field of knowledge or work.
7	Achievement at this level reflects the ability to reformulate and use relevant understanding, methodologies and approaches to address problematic situations that involve many interacting factors. It includes taking responsibility for planning and developing courses of action that initiate or underpin substantial change or development, as well as exercising broad autonomy and judgment. It also reflects an understanding of theoretical and relevant methodological perspectives, and how they affect their sub-area of study or work.
6	Achievement at this level reflects the ability to refine and use relevant understanding, methods and skills to address complex problems that have limited definition. It includes taking responsibility for planning and developing courses of action that are able to underpin substantial change or development, as well as exercising broad autonomy and judgment. It also reflects an understanding of different perspectives, approaches of schools of thought and the theories that underpin them.
5	Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to address broadly-defined, complex

	problems. It includes taking responsibility for planning and developing courses of action as well as exercising autonomy and judgment within broad parameters. It also reflects understanding of different perspectives, approaches or schools of thought and the reasoning behind them.
4	Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to address problems that are well defined but complex and non-routine. It includes taking responsibility for overall courses of action as well as exercising autonomy and judgment within fairly broad parameters. It also reflects understanding of different perspective or approaches within a sub-area of study or work.
3	Achievement at this level reflects the ability to identify and use relevant understanding, methods and skills to complete task and address problems that are well defined with a measure of complexity. It includes taking responsibility for initiating and completing tasks and procedures as well as exercising autonomy and judgments within limited parameter. It also reflects awareness of different perspectives or approaches within a sub-area of study or work.
2	Achievement at this level reflects the ability to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problem. It includes taking responsibility for completing tasks and procedures, and exercising autonomy and judgment subject to overall direction or guidance.
1	Achievement at this level reflects the ability to use relevant knowledge, skills and procedures to complete routine and predictable tasks that include responsibility for completing tasks and procedures subject to direction or guidance.

ANNEX 2: LIST OF CONTRIBUTORS

LIST OF SECTOR PANEL MEMBERS FOR TELECOMMUNICATIONS FRAMEWORK DEVELOPMENT

NO	NAME	ORGANISATION
1	Azmi Bin Samsuri	Massa Khidmat
2	Mohd Rizal Bin Mohd Azmi	Telekom Malaysia Berhad
3	Fatimah Salwani Binti Ramli	Telekom Malaysia Berhad
4	Mohd Yusairi Bin Abu Hassan	Telekom Malaysia Berhad
5	Yussri Bin Talib	Nokia Network Malaysia
6	Suria Ramadhan Bin Rosman	All Star Engineering Sdn. Bhd.
7	Vijayakumar Krishnan Sammy	IPT Power Tech Lebanon
8	Nur Hurriyatul Huda Binti Abdullah Sani	Department of Statistics Malaysia
9	YM Tengku Noradilah Binti Tengku Jalal	Department of Statistics Malaysia
10	Akmalia Binti Hanifah	Department of Statistics Malaysia

LIST OF OCCUPATIONAL FRAMEWORK TECHNICAL EVALUATION COMMITTEE

NO.	NAME	ORGANISATION
1	Mohd Asyraf Bin Adzmin	Department of Statistics Malaysia
2	Norhamijah Binti Mohd Hanafiah	Telekom Malaysia
3	Abdul Karim Bin Abdul Razak	Malaysian Communication and Multimedia Commission

**LIST OF DEPARTMENTS OF SKILLS DEVELOPMENT (DSD) OFFICERS
INVOLVED IN OCCUPATIONAL FRAMEWORK DEVELOPMENT**

NO.	NAME	POSITION	ORGANISATION
1	Siti Fauziah Binti Jumadi	Principal Assistant Director	NOSS Division
2	Jefrizan Bin Abdul Rasid	Senior Assistant Director	NOSS Division
3	Syazwani Binti Azmi	Assistant Director	NOSS Division
4	Norazura Binti Adnan	Senior Assistant Director	NOSS Division
5	Zainal Bin Abdul Jalil	Senior Skills Development Officer	NOSS Division
6	Nazrul Hilmi Bin Mohammad	Assistant Director	NOSS Division
7	Azlin Binti Abd Aziz	Senior Assistant Director	Planning, Research and Development Division

**LIST OF WORKFORCE TEAM IN OCCUPATIONAL FRAMEWORK
DEVELOPMENT**

NO.	NAME	ORGANISATION	POSITION
1	Basharudin Bin Mohamed	Edusure Sdn Bhd	Project Director
2	Izzudin Fahmi Bin Basharuddin	Edusure Sdn Bhd	Project Manager
3	Cristnorish Lianu	Edusure Sdn Bhd	Curriculum Development Executive I
3	Ahmad Ramdan Bin M Yusof	Edusure Sdn Bhd	Curriculum Development Executive II
4	Ts. Mohd Razali Bin Md Yunos	Edusure Sdn Bhd	Facilitator
5	Khairul Alia Binti Mohd Kharudin	Edusure Sdn Bhd	Proofreader Team
6	Dr. Raemah Binti Abdullah Hashim	Edusure Sdn Bhd	Researcher Team
7	Dr. Azahari Bin Jamaludin	Edusure Sdn Bhd	Researcher Team
8	Akhsan Kamil Azizi Bin Lokman Hakim	Edusure Sdn Bhd	Researcher Team

ANNEX 3: QUESTIONNAIRE

Telecommunications Industry Occupational Framework Survey

The Department of Skills Development (DSD), Ministry of Human Resources is currently conducting an analysis on the Occupational Framework of the Industry. From this analysis, the industry framework, occupational structure, occupational job titles, and job description will be summarised for the use of the government, private sector, investors, employers, employees, educators or any personnel involved either directly or indirectly with the industry.

The main objective of this research is to enhance skills training starting from the entry level position for any job in this industry based on input from the industry. It will also provide a reference competency for skills required by workers to perform as required in the industry.

This survey will be used as field data in order to conduct a comprehensive analysis of the industry's Occupational Framework. The target group for this survey is the organisation's representative either from the Human Resource Department or personnel at Management level.

We would like to extend our heartfelt gratitude upon your cooperation in answering this survey. Please fill in where necessary in the forms provided. Do advise us if you wish to remain anonymous in your survey response. There will be further communication with survey respondents in order to verify our findings. The completed questionnaire can be emailed to:

Akhsan Kamil Azizi Bin Lokman Hakim: akhsan199@gmail.com

Survey Respondent Details

Name :

Position :

Organisation :

Date :

Please answer the questions below in the space provided, additional pages may be added if necessary. There are 4 SECTIONS in this survey.

SECTION 1: COMPETENCY IN DEMAND

1.1 Listed below are set of skills related to personnel involve in **Telecommunications Industry**.

Tick (√) where applicable.

No	Competency	High in Demand	Mid in Demand	Low in Demand
1	Technical skills			
2	Communication skills			
3	Diagnostic skills			
4	Troubleshooting / problem solving skills			
5	Administration skills			
6	Leadership			
7	Data collection and sorting skills			
8	Computer Literacy			
9	Planning and Forecasting abilities			
10	General attitude towards work (commitment, resourcefulness, teamwork, etc.)			
11	Product knowledge			
11	Strong technical aptitude / manual dexterity			
12	Competent in using electronic /mechanical devices and tools			
13	English language competency			
14	Accounting skills			
15	Entrepreneurial skills			
16	Resource Management			

17	Training and coaching			
18	Regulatory knowledge			
19	Safety and security			
20	Time Management			

SECTION 2: JOBS IN DEMAND

2.1 Listed below are job areas and description of category of skills. Based on your observation, which job area is experiencing **shortage of Telecommunications Industry?**

Tick (√) where applicable.

Category of Skills	Description
Skilled Workers	Managers, Executive, Specialist, and Professional
Semi-Skilled Workers	Support, Technician, Admin and Machine Operator
Low Skilled Workers	Elementary Workers

No.	Job Areas & Category of Skills	High Demand	Mid Demand	Low Demand
1	Wired telecommunications activities			
	a) Skilled Workers			
	b) Semi-Skilled Workers			
	c) Low Skilled Workers			
2	Wireless telecommunications activities			
	a) Skilled Workers			
	b) Semi-Skilled Workers			
	c) Low Skilled Workers			
3	Satellite telecommunications activities			

	a) Skilled Workers			
	b) Semi-Skilled Workers			
	c) Low Skilled Workers			
4	Other telecommunications activities			
	a) Skilled Workers			
	b) Semi-Skilled Workers			
	c) Low Skilled Workers			

SECTION 3: EMERGING SKILLS

(Note: Emerging Skills are skills that are predicted to be imperative to the industry in the near future based on recent development, trend or study)

3.1 Do you think Industry Revolution 4.0 (Digitalization) (IR4.0) would give an impact to the economic activities of Telecommunications Industry?

Yes

No

Not sure

3.2 Listed below are the eleven (11) technology drives/pillars of IR 4.0. Which job area is likely to be affected by these 11 technology drives/pillars of IR 4.0?

Tick (✓) where applicable, you may tick more than once.

No.	TECHNOLOGY DRIVES / PILLARS	JOB AREAS
		Telecommunications
1	Autonomous Robots (coordinated and automated actions of robots to complete tasks intelligently, with minimal human input)	
2	Big Data Analytics (the analysis of ever larger volumes of data. Circulation, collection, and analysis of information is a necessity because it supports productivity growth based on a real-time decision-making process)	
3	Cloud Computing (storing and accessing data and programs over the Internet instead of your computer's hard drive)	
4	Internet of Things (IoT) (all machines and systems connected to the production plant (as well as other systems) must be able to collect, exchange and save these massive volumes of information, in a completely autonomous way and without the need of human intervention)	
5	Additive Manufacturing (3D Printing) (use in prototyping, design iteration and small-scale production and often described as "rapid prototyping" - produce the desired components faster, more flexibly and more precisely than ever before)	
6	System Integration (the process of linking together different computing systems and software applications physically or functionally to act as a coordinated whole via Internet of Things-IoT)	
7	Cybersecurity (with the increased connectivity and use of standard communications protocols, the need to protect critical industrial systems and manufacturing lines from cybersecurity threats is increasing)	
8	Augmented Reality (Augmented-reality-based systems support a variety of services, such as selecting parts in a warehouse and sending repair instructions over mobile devices - provide workers with real-time information to improve decision making and work procedures)	
9	Simulation (simulations will leverage real-time data to mirror the physical world in a virtual model, which can include machines, products, and humans. This allows operators to test and optimize the machine settings for the next product in line in the virtual world before the physical changeover, thereby driving down machine setup times and increasing quality)	
10	Horizontal and Vertical Integration Horizontal: Integrate through network & value chain from Suppliers, the company itself, and the customers. Vertical: Integrate through network & value chain across functional department i.e., Sales, R&D, Procurement until customer services	

11	<p>New Business Models Business model is a combination of two functions: the process of value creation and the process of value capture. The process of value creation refers to the process of creating value for the target consumer. The process of value capture refers to converting market opportunities into performance outcomes for the firm, which then justifies value creation</p>	
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SECTION 4: RELATED ISSUES

4.1 What is/are the key issue/s related to Telecommunications Industry?

Please rate **ALL** the key issues by using the scale below.

1	2	3	4
Strongly Disagree	Disagree	Agree	Strongly Agree

No	KEY ISSUES	Telecommunications
1	Insufficient manpower	
2	Low skilled and low performance workforce	
3	High dependency on foreign labour	
4	Underpayment of wages lead to high turn over	
5	Labour costs (sub-contractors)	
6	Technological change	

End of Questionnaire

ANNEX 4: CRITICAL JOBS TITLE

List of Critical Jobs

No.	Critical Job Title	Area	Level	LS	SS	S
1	Technician	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	3	X	√	X
2	Technician	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	3	X	√	X
3	Technician	Wired Network Development (ND) - Design and Planning Core Network (Metro E)	3	X	√	X
4	Executive / Engineer	Wired Network Development (ND) - Design and Planning Core Network (Metro E)	4	X	X	√
5	Technician	Wired Network Development (ND) – Network Implementation (BRAS)	3	X	√	X
6	Technician	Wired Network Development (ND) - Network Implementation (IP Core)	3	X	√	X
7	Technician	Wired Network Development (ND) - Network Implementation (Metro E)	3	X	√	X
8	Executive / Engineer	Wired Network Development (ND) - Network Implementation (Metro E)	4	X	X	√
9	Technician	Wired Network Development (ND) - Transmission Network Design & Planning	3	X	√	X
10	Technician	Wired Network Development (ND) - Transmission Network Implementation	3	X	√	X
11	Technician	Wired Network Development (ND) - Access Network Implementation	3	X	√	X
12	Executive / Engineer	Wired Network Development (ND) - Access Network Implementation	4	X	X	√
13	Splicer	Wired Network Operation Centre (NOC) - IP Core (IP Core BB)	2	X	√	X
14	Splicer	Wired Network Operation Centre (NOC) - IP Core (IP Core ME)	2	X	√	X
15	Splicer	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	2	X	√	X
16	Executive / Engineer	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	4	X	X	√

No.	Critical Job Title	Area	Level	LS	SS	S
17	Manager	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	5	X	X	X
18	Splicer	Wired Network Operation Centre (NOC) - Transmission (TX Submarine)	2	X	√	X
19	Splicer	Wired Network Operation Centre (NOC) - Transmission (TX DWDM)	2	X	√	X
20	Splicer	Wired Network Operation Centre (NOC) - Access (Active Access)	2	X	√	X
21	Splicer	Wired Network Operation Centre (NOC) - Access (Passive Access)	2	X	√	X
22	Technician	Wired Network Operation Centre (NOC) - Access (Passive Access)	3	X	√	X
23	Executive / Engineer	Wired Network Operation Centre (NOC) - Access (Passive Access)	4	X	X	√
24	Splicer	Wired Network Field Maintenance (NFM) - Data Services	2	X	√	X
25	Splicer	Wired Network Field Maintenance (NFM) - Cable	2	X	√	X
26	Splicer	Wired Network Field Maintenance (NFM) - Installation	2	X	√	X
27	Installer	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	1	√	X	X
28	Technician	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	2	X	√	X
29	Technical Team Leader	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	3	X	√	X
30	Installer	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)	1	√	X	X
31	Technician	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)	2	X	√	X
32	Technical Team Leader	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)	3	X	√	X

No.	Critical Job Title	Area	Level	LS	SS	S
33	Installer	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	1	√	X	X
34	Technician	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	2	X	√	X
35	Technical Team Leader	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	3	X	√	X
36	Installer	Wireless Network Development (ND) - Transmission (Network Implementation)	1	√	X	X
37	Technician	Wireless Network Development (ND) - Transmission (Network Implementation)	2	X	√	X
38	Technical Team Leader	Wireless Network Development (ND) - Transmission (Network Implementation)	3	X	√	X
39	Installer	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	1	√	X	X
40	Technician	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	2	X	√	X
41	Technical Team Leader	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	3	X	√	X
42	Installer	Wireless Network Field Maintenance (NFM) -Transmission	1	√	X	X
43	Technician	Wireless Network Field Maintenance (NFM) -Transmission	2	X	√	X
44	Technical Team Leader	Wireless Network Field Maintenance (NFM) -Transmission	3	X	√	X
45	Installer	Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	1	√	X	X
46	Technician	Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	2	X	√	X
47	Technical Team Leader	Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	3	X	√	X

No.	Critical Job Title	Area	Level	LS	SS	S
48	Radio Frequency Engineer	Wireless Network Planning and Optimization	5	X	X	√
49	Installer	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	1	√	X	X
50	Technician	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	2	X	√	X
51	Installer	Satellite Network Field Maintenance (NFM) - Earth Station	1	√	X	X
52	Technician	Satellite Network Field Maintenance (NFM) - Earth Station	2	X	√	X
53	Installer	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	1	√	X	X
54	Technician	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	2	X	√	X
55	Satellite Data Analyst	Satellite Network Optimization	5	X	X	√
56	Sales Engineer	Sales and Marketing	3	X	√	X

LS- Low-Skilled Worker

SS- Semi-Skilled Worker

S-Skilled Worker

List OS vs e-MASCO vs COL

No.	Critical Job Title	Area	OS	e-Masco	COL
1	Technician	Wired Network Development (ND) – Design and Planning Core Network (BRAS)	√	√	√
2	Technician	Wired Network Development (ND) - Design and Planning Core Network (IP Core)	√	√	√
3	Technician	Wired Network Development (ND) - Design and Planning Core Network (Metro E)	√	√	√
4	Executive / Engineer	Wired Network Development (ND) - Design and Planning Core Network (Metro E)	√	√	X
5	Technician	Wired Network Development (ND) – Network Implementation (BRAS)	√	√	√
6	Technician	Wired Network Development (ND) - Network Implementation (IP Core)	√	√	√
7	Technician	Wired Network Development (ND) - Network Implementation (Metro E)	√	√	√
8	Executive / Engineer	Wired Network Development (ND) - Network Implementation (Metro E)	√	√	X
9	Technician	Wired Network Development (ND) - Transmission Network Design & Planning	√	√	√
10	Technician	Wired Network Development (ND) - Transmission Network Implementation	√	√	√
11	Technician	Wired Network Development (ND) - Access Network Implementation	√	√	√
12	Executive / Engineer	Wired Network Development (ND) - Access Network Implementation	√	√	X
13	Splicer	Wired Network Operation Centre (NOC) - IP Core (IP Core BB)	√	√	√
14	Splicer	Wired Network Operation Centre (NOC) - IP Core (IP Core ME)	√	√	√
15	Splicer	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	√	√	√

No.	Critical Job Title	Area	OS	e-Masco	COL
16	Executive / Engineer	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	√	√	X
17	Manager	Wired Network Operation Centre (NOC) - IP Core (IP Core IP)	√	√	X
18	Splicer	Wired Network Operation Centre (NOC) - Transmission (TX Submarine)	√	√	√
19	Splicer	Wired Network Operation Centre (NOC) - Transmission (TX DWDM)	√	√	√
20	Splicer	Wired Network Operation Centre (NOC) - Access (Active Access)	√	√	√
21	Splicer	Wired Network Operation Centre (NOC) - Access (Passive Access)	√	√	√
22	Technician	Wired Network Operation Centre (NOC) - Access (Passive Access)	√	√	√
23	Executive / Engineer	Wired Network Operation Centre (NOC) - Access (Passive Access)	√	√	X
24	Splicer	Wired Network Field Maintenance (NFM) - Data Services	√	√	√
25	Splicer	Wired Network Field Maintenance (NFM) - Cable	√	√	√
26	Splicer	Wired Network Field Maintenance (NFM) - Installation	√	√	√
27	Installer	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	√	√	X
28	Technician	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	√	√	√
29	Technical Team Leader	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	√	X	X
30	Installer	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)	√	√	X
31	Technician	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)	√	√	√

No.	Critical Job Title	Area	OS	e-Masco	COL
32	Technical Team Leader	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)	√	X	X
33	Installer	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	√	√	X
34	Technician	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	√	√	√
35	Technical Team Leader	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	√	X	X
36	Installer	Wireless Network Development (ND) - Transmission (Network Implementation)	√	√	X
37	Technician	Wireless Network Development (ND) - Transmission (Network Implementation)	√	√	√
38	Technical Team Leader	Wireless Network Development (ND) - Transmission (Network Implementation)	√	X	X
39	Installer	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	√	√	X
40	Technician	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	√	√	√
41	Technical Team Leader	Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)	√	X	X
42	Installer	Wireless Network Field Maintenance (NFM) - Transmission	√	√	X
43	Technician	Wireless Network Field Maintenance (NFM) - Transmission	√	√	√
44	Technical Team Leader	Wireless Network Field Maintenance (NFM) - Transmission	√	X	X
45	Installer	Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	√	√	X

No.	Critical Job Title	Area	OS	e-Masco	COL
46	Technician	Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	√	√	√
47	Technical Team Leader	Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	√	X	X
48	Radio Frequency Engineer	Wireless Network Planning and Optimization	√	X	X
49	Installer	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	√	√	X
50	Technician	Satellite Network Field Maintenance (NFM) - Very Small Aperture Terminal (VSAT)	√	√	√
51	Installer	Satellite Network Field Maintenance (NFM) - Earth Station	√	√	X
52	Technician	Satellite Network Field Maintenance (NFM) - Earth Station	√	√	√
53	Installer	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	√	√	X
54	Technician	Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)	√	√	√
55	Satellite Data Analyst	Satellite Network Optimization	√	X	X
56	Sales Engineer	Sales and Marketing	√	√	√

ANNEX 5: JOB TITLES RELEVANT TO IR 4.0

Job Titles relevant to IR 4.0

No.	Job Titles relevant to IR 4.0	Area	Level	LS	SS	S
1	Manager	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	6	X	X	√
2	Engineer	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	5	X	X	√
3	Executive	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Design)	4	X	X	√
4	Manager	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	6	X	X	√
5	Asst. Specialist/Engineer	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	5	X	X	√
6	Executive / Supervisor	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	4	X	X	√
7	Technical Team Leader	Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)	3	X	√	X
8	Manager	Wireless Network Development (ND) - Transmission (Network Design)	6	X	X	√
9	Engineer	Wireless Network Development (ND) - Transmission (Network Design)	5	X	X	√
10	Executive	Wireless Network Development (ND) - Transmission (Network Design)	4	X	X	√
11	Manager	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	6	X	X	√
12	Asst. Specialist/Engineer	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	5	X	X	√

13	Executive / Supervisor	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	4	X	X	√
14	Technical Team Leader	Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)	3	X	√	X
15	Engineer	Wireless Network Development (ND) - IP Core / IP RAN (Network Design)	5	X	X	√
16	Executive	Wireless Network Development (ND) - IP Core / IP RAN (Network Design)	4	X	X	√
17	Engineer	Wireless Network Development (ND) - IP Core / IP RAN (Network Planning and Optimisation)	5	X	X	√
18	Executive / Supervisor	Wireless Network Development (ND) - IP Core / IP RAN (Network Planning and Optimisation)	4	X	X	√

LS- Low-Skilled Worker

SS- Semi-Skilled worker

S-Skilled Worker

ANNEX 6: OCCUPATIONAL DESCRIPTIONS (OD)

SECTION: (J) INFORMATION AND COMMUNICATIONS

DIVISION: (61) TELECOMMUNICATIONS

GROUP: (611) WIRED TELECOMMUNICATIONS

MSIC GROUP : 611

AREA : Wired Network Development (ND) – Design and Planning Core Network (BRAS)

JOB TITLE : Technician

LEVEL : 3

RESPONSIBILITIES:

Technician is responsible to provide quality support, follow and perform routine procedure according to transmission ND Core Network (BRAS) SOP, perform Core Network (BRAS) fault handling and escalation, monitor Core Network (BRAS) transmission network alarm and performance and troubleshoot and rectification of the Core Network (BRAS) problem.

Knowledge:

- IP Core Planning
- Computing and Telecommunication Engineering

Skills:

- Provide quality support, follow and perform routine procedure according to Transmission ND SOP.
- Perform fault handling and escalation.
- Monitor Transmission Network alarm and performance.
- Troubleshoot and rectification of the simple problem.

Attributes (Attitude/Safety/Environmental)

- Meticulous
- Safety conscious
- Organise own work
- Practice 3R concept

MSIC GROUP : 611
AREA : Wired Network Development (ND) - Design and Planning Core Network (IP Core)
JOB TITLE : Technician
LEVEL : 3

RESPONSIBILITIES:

Technician is responsible to provide quality support, follow and perform routine procedure according to transmission ND Core Network (IP Core) SOP, perform Core Network (IP Core) fault handling and escalation, monitor Core Network (IP Core) transmission network alarm and performance and troubleshoot and rectification of the Core Network (IP Core) problem.

Knowledge:

- Transmission ND SOP.
- Fault handling and escalation procedure.
- Transmission Network alarm and performance monitoring procedure.
- Troubleshoot and rectification procedure of simple Transmission ND problem.
- Customer Relationships.

Skills:

- Provide quality support, follow and perform routine procedure according to Transmission ND SOP.
- Perform fault handling and escalation.
- Monitor Transmission Network alarm and performance.
- Troubleshoot and rectification of the simple problem.

Attributes (Attitude/Safety/Environmental)

- Meticulous
- Safety conscious
- Organise own work
- Practice 3R concept

MSIC GROUP : 611
AREA : Wired Network Development (ND) - Design and Planning Core Network (Metro E)
JOB TITLE : Technician
LEVEL : 3

RESPONSIBILITIES:

Technician is responsible to provide quality support, follow and perform routine procedure according to transmission ND Core Network (Metro E) SOP, perform Core Network (Metro E) fault handling and escalation, monitor Core Network (Metro E) transmission network alarm and performance and troubleshoot and rectification of the Core Network (Metro E) problem.

Knowledge:

- Transmission ND SOP.
- Fault handling and escalation procedure.
- Transmission Network alarm and performance monitoring procedure.
- Customer Relationships.

Skills:

- Provide quality support, follow and perform routine procedure according to Transmission ND SOP.
- Perform fault handling and escalation.
- Monitor Transmission Network alarm and performance.
- Troubleshoot and rectification of the simple problem.

Attributes (Attitude/Safety/Environmental)

- Meticulous
- Safety conscious
- Organise own work
- Practice 3R concept

MSIC GROUP : 611
AREA : Wired Network Development (ND) - Design and Planning Core Network (Metro E)
JOB TITLE : Executive / Engineer
LEVEL : 4

RESPONSIBILITIES:

Executive / Engineer is responsible to coordinate and ensure all Design and Planning Core Network (Metro E) installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand, execute and ensure the Design and Planning Core Network (Metro E) financial management aspects of capitol work programmed is adhered so as to improve the financial standing of the company, execute and control Design and Planning Core Network (Metro E) project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs, monitor and control Design and Planning Core Network (Metro E) project implementation in order to assure implementation works follow/comply with OSH requirement, establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing and manage human to facilitate high level of effectiveness.

Knowledge:

- Financial management aspects of capitol work programmes.
- Project coordination.
- Project implementation monitoring and control.
- Project brief preparation.
- Human and financial resources management.

Skills:

- Coordinate and ensure all installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand.
- Execute and ensure the financial management aspects of capitol work programmed is adhered so as to improve the financial standing of the company.
- Execute and control project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs.

- Monitor and control project implementation in order to assure implementation works follow/comply with OSH requirement.
- Manage human and financial resources to facilitate high level of effectiveness.

Attributes (Attitude/Safety/Environmental)

- Adhere to manager's instruction and company's rules & regulations.
- Work in a team.
- Adhere to safety and environmental requirements at work place.

MSIC GROUP : 611
AREA : Wired Network Development (ND) – Network Implementation (BRAS)
JOB TITLE : Technician
LEVEL : 3

RESPONSIBILITIES:

Technician is responsible to provide quality support, follow and perform routine procedure according to network implementation (BRAS) SOP, assist network implementation (BRAS) fault handling and escalation, monitor network implementation (BRAS) alarm and performance and troubleshoot and rectification of the network implementation (BRAS) problem.

Knowledge:

- Transmission ND SOP.
- Fault handling and escalation procedure.
- Transmission Network alarm and performance monitoring procedure.
- Troubleshoot and rectification procedure of simple Transmission ND problem.
- Customer Relationships.

Skills:

- Provide quality support, follow and perform routine procedure according to Transmission ND SOP.
- Perform fault handling and escalation.
- Monitor Transmission Network alarm and performance.
Troubleshoot and rectification of the simple problem.

Attributes (Attitude/Safety/Environmental)

- Meticulous when carry out jobs as instructed.
- Work in a team.
- Adhere to safety and environmental requirements at work place.

MSIC GROUP : 611
AREA : Wired Network Development (ND) – Network Implementation (IP Core)
JOB TITLE : Technician
LEVEL : 3

RESPONSIBILITIES:

Technician is responsible to provide quality support, follow and perform routine procedure according to network implementation (IP Core) SOP, assist network implementation (IP Core) fault handling and escalation, monitor network implementation (IP Core) alarm and performance and troubleshoot and rectification of the network implementation (IP Core) problem.

Knowledge:

- Transmission ND SOP.
- Fault handling and escalation procedure.
- Transmission Network alarm and performance monitoring procedure.
- Customer Relationships.

Skills:

- Provide quality support, follow and perform routine procedure according to Transmission ND SOP.
- Perform fault handling and escalation.
- Monitor Transmission Network alarm and performance.
- Troubleshoot and rectification of the simple problem.

Attributes (Attitude/Safety/Environmental)

- Meticulous when carry out jobs as instructed.
- Work in a team.
- Adhere to safety and environmental requirements at work place.

MSIC GROUP : 611
AREA : Wired Network Development (ND) - Network Implementation (Metro E)
JOB TITLE : Technician
LEVEL : 3

RESPONSIBILITIES:

Technician is responsible to provide quality support, follow and perform routine procedure according to network implementation (Metro E) SOP, assist network implementation (Metro E) fault handling and escalation, monitor network implementation (Metro E) alarm and performance and troubleshoot and rectification of the network implementation (Metro E) problem.

Knowledge:

- Transmission ND SOP.
- Fault handling and escalation procedure.
- Transmission Network alarm and performance monitoring procedure.
- Customer Relationships.

Skills:

- Provide quality support, follow and perform routine procedure according to Transmission ND SOP.
- Perform fault handling and escalation.
- Monitor Transmission Network alarm and performance.
Troubleshoot and rectification of the simple problem.

Attributes (Attitude/Safety/Environmental)

- Meticulous when carry out jobs as instructed.
- Work in a team.
- Adhere to safety and environmental requirements at work place.

MSIC GROUP : 611
AREA : Wired Network Development (ND) - Network Implementation (Metro E)
JOB TITLE : Executive / Engineer
LEVEL : 4

RESPONSIBILITIES:

Executive / Engineer is responsible to coordinate and ensure all network implementation (Metro E) installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand, execute and ensure the network implementation (Metro E) financial management aspects of capitol work programmed is adhered so as to improve the financial standing of the company, execute and control network implementation (Metro E) project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs, monitor and control network implementation (Metro E) project implementation in order to assure implementation works follow/comply with OSH requirement, establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing and manage network implementation (Metro E) human resources to facilitate high level of effectiveness

Knowledge:

- Financial management aspects of capitol work programmes.
- Project coordination.
- Project implementation monitoring and control.
- Project brief preparation.
- Human and financial resources management.

Skills:

- Coordinate and ensure all installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand.
- Execute and ensure the financial management aspects of capitol work programmed is adhered so as to improve the financial standing of the company.
- Execute and control project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs.

- Monitor and control project implementation in order to assure implementation works follow/comply with OSH requirement.
- Established cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing.
- Manage human and financial resources to facilitate high level of effectiveness.

Attributes (Attitude/Safety/Environmental)

- Adhere to manager's instruction and company's rules & regulations.
- Work in a team.
- Adhere to safety and environmental requirements at work place.

MSIC GROUP : 611
AREA : Wired Network Development (ND) - Transmission Network Design & Planning
JOB TITLE : Technician
LEVEL : 3

RESPONSIBILITIES:

Technician is responsible to provide quality support, follow and perform routine procedure according to Transmission ND SOP, perform fault handling and escalation, monitor Transmission Network alarm and performance and troubleshoot and rectification of the Transmission ND simple problem.

Knowledge:

- Software, hardware and procedure problems standard Transmission ND Menu Development and Management

Skills:

- Provide quality support, follow and perform routine procedure according to Transmission ND SOP.
- Perform fault handling and escalation.
- Monitor Transmission Network alarm and performance
- Troubleshoot and rectification of the simple problem.

Attributes (Attitude/Safety/Environmental)

- Adhere to manager's instruction and company's rules & regulations.
- Work in a team.
- Adhere to safety and environmental requirements at work place.

MSIC GROUP : 611
AREA : Wired Network Development (ND) - Access Network Implementation
JOB TITLE : Technician
LEVEL : 3

RESPONSIBILITIES:

Technician is responsible to provide quality support, follow and perform routine procedure according to Access Network implementation SOP, perform fault handling and escalation, monitor Access Network alarm and performance and troubleshoot and rectification of the simple problem.

Knowledge:

- Software, hardware and procedure problems standard Access Network Implementation Menu Development and Management

Skills:

- Provide quality support, follow and perform routine procedure according to Access Network implementation SOP.
- Perform fault handling and escalation.
- Monitor Access Network implementation alarm and performance
- Troubleshoot and rectification of the Access Network implementation simple problem.

Attributes (Attitude/Safety/Environmental)

- Adhere to manager's instruction and company's rules & regulations.
- Work in a team.
- Adhere to safety and environmental requirements at work place.

MSIC GROUP : 611
AREA : Wired Network Development (ND) - Access Network Implementation
JOB TITLE : Executive / Engineer
LEVEL : 4

RESPONSIBILITIES:

Technician is responsible to coordinate and ensure all installation and commissioning projects in the best quality telecommunication network in a timely manner to meet marketing demand, execute and ensure the Access Network Implementation financial management aspects of capitol work programmed is adhered so as to improve the financial standing of the company, execute and control Access Network Implementation project planning & implementation in order to assure agreed Ready for Service date (with LOBs) are met to fulfil the customer needs, monitor and control Access Network Implementation project implementation in order to assure implementation works follow/comply with OSH requirement, establish cooperation, relationship with internal customer (Marketing/Operation) and other relevant parties before preparing Project brief to ensure awareness with meeting or briefing and manage Access Network Implementation human resources to facilitate high level of effectiveness

Knowledge:

- Software, hardware and procedure problems standard Access Network Implementation Menu Development and Management

Skills:

- Coordinate and ensure all installation and commissioning projects in the best quality
- Execute and control Access Network Implementation project planning & implementation
- Monitor and control Access Network Implementation project implementation
- Manage Access Network Implementation human resources to facilitate high level of effectiveness

Attributes (Attitude/Safety/Environmental)

- Good communication
- Adhere to safety regulations and environmental regulation
- Good interpersonal skills

MSIC GROUP : 611

AREA : Wired Network Operation Centre (NOC) - IP Core (IP Core BB)

JOB TITLE : Splicer

LEVEL : 2

RESPONSIBILITIES:

Splicer is responsible to perform cable installation, construction, maintenance and repair works. Locate and repair cables faults to maintain existing cable network without causing signal failure interruptions. Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems.

Knowledge:

- Software, hardware and procedure problems standard Access NOC Menu Development and Management
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Perform cable installation, construction, maintenance and repair works.
- Maintain existing cable network
- Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines.
- Set up, rearrange, or replace routing and dialling equipment.

Attributes (Attitude/Safety/Environmental)

- Good communication
- Adhere to safety regulations and environmental regulation
- Good interpersonal skills

MSIC GROUP : 611
AREA : Wired Network Operation Centre (NOC) - IP Core (IP Core ME)
JOB TITLE : Splicer
LEVEL : 2

RESPONSIBILITIES:

Splicer is responsible to perform cable installation, construction, maintenance and repair works. Locate and repair cables faults to maintain existing cable network without causing signal failure interruptions. Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems.

Knowledge:

- Software, hardware and procedure problems standard Access NOC Menu Development and Management
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Perform cable installation, construction, maintenance and repair works.
- Maintain existing cable network
- Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines.
- Set up, rearrange, or replace routing and dialling equipment.

Attributes (Attitude/Safety/Environmental)

- Good communication
- Adhere to safety regulations and environmental regulation
- Good interpersonal skills

MSIC GROUP : 611

AREA : Wired Network Operation Centre (NOC) - IP Core (IP Core IP)

JOB TITLE : Splicer

LEVEL : 2

RESPONSIBILITIES:

Splicer is responsible to perform cable installation, construction, maintenance and repair works. Locate and repair cables faults to maintain existing cable network without causing signal failure interruptions. Pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems.

Knowledge:

- Software, hardware and procedure problems standard IP Core IP Menu Development and Management
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Perform cable installation, construction, maintenance and repair works.
- Maintain existing cable network
- Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines.
- Set up, rearrange, or replace routing and dialling equipment.

Attributes (Attitude/Safety/Environmental)

- Good communication
- Adhere to safety regulations and environmental regulation
- Good interpersonal skills

MSIC GROUP : 611
AREA : Wired Network Operation Centre (NOC) - IP Core (IP Core IP)
JOB TITLE : Executive/ Engineer
LEVEL : 4

RESPONSIBILITIES:

Executive/ Engineer is responsible to provide highest level of support and communication to internal or external clients, analyse of IP Core IP Network performance, manage IP Core IP Network operation staff team performance, solve or assist IP Core IP NOC technicians in solving non-routine or complex software, hardware, and procedure problems, provide support to technical staff, vendors, and end users, identify, research and resolve technical issues, escalate issues to outside vendors and clients as necessary and monitor response times and efficiencies and resolve complex problems.

Knowledge:

- Software, hardware and procedure problems standard IP Core IP Menu Development and Management

Skills:

- Provide highest level of support and communication to internal or external clients, analyse of IP Core IP Network performance
- Manage IP Core IP Network operation staff team performance
- Solve or assist IP Core IP NOC technicians in solving non-routine or complex software, hardware, and procedure problems
- Provide support to technical staff, vendors, and end users
- Identify, research and resolve technical issues

Attributes (Attitude/Safety/Environmental)

- Good communication
- Adhere to safety regulations and environmental regulation
- Good interpersonal skills

MSIC GROUP : 611
AREA : Wired Network Operation Centre (NOC) - IP Core (IP Core IP)
JOB TITLE : Manager
LEVEL : 5

RESPONSIBILITIES:

Manager is responsible to provide maximum service availability and performance, perform incident management coordination among internal and external Core - IP NOC team, oversee problem isolation, issue resolution, and escalation management according to pre-defined protocols, analyse and propose improvement of Core - IP network performance, develop and establish operating policies, process and procedures for Core - IP NOC, responsible for managing outages, SLA, uptime, service availability, root cause analysis, develop, mentor and train staff; seek to improve processes and procedures with the goal of improving service to customers, analyse Core - IP NOC activity and make recommendations for changes in the Core - IP NOC procedures and systems to upper management and communicate with other NOC functional managers and executive management to ensure issues are resolved.

Knowledge:

- Software, hardware and procedure problems standard IP Core IP Menu Development and Management

Skills:

- Provide maximum service availability and performance
- Perform incident management coordination among internal and external Core - IP NOC team
- Analyse and propose improvement of Core - IP network performance
- Responsible for managing outages, SLA, uptime, service availability, root cause analysis
- Analyse Core - IP NOC activity and make recommendations for changes in the Core - IP NOC procedures

Attributes (Attitude/Safety/Environmental)

- Good communication
- Adhere to safety regulations and environmental regulation
- Good interpersonal skills

MSIC GROUP : 611
AREA : Wired Network Operation Centre (NOC) - Transmission (TX Submarine)
JOB TITLE : Splicer
LEVEL : 2

RESPONSIBILITIES:

Splicer is responsible to perform cable installation, construction, maintenance and repair works, locate and repair cables faults to maintain existing cable network without causing signal failure interruptions, pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems.

Knowledge:

- Software, hardware and procedure problems standard Access NOC Menu Development and Management
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Perform cable installation, construction, maintenance and repair works.
- Maintain existing cable network
- Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines.
- Set up, rearrange, or replace routing and dialling equipment.

Attributes (Attitude/Safety/Environmental)

- Good communication
- Adhere to safety regulations and environmental regulation
- Good interpersonal skills

MSIC GROUP : 611
AREA : Wired Network Operation Centre (NOC) - Access (Passive Access)
JOB TITLE : Splicer
LEVEL : 2

RESPONSIBILITIES:

Splicer is responsible to perform cable installation, construction, maintenance and repair works, locate and repair cables faults to maintain existing cable network without causing signal failure interruptions, pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems.

Knowledge:

- Software, hardware and procedure problems standard Access NOC Menu Development and Management
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Perform cable installation, construction, maintenance and repair works.
- Maintain existing cable network
- Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines.
- Set up, rearrange, or replace routing and dialling equipment.

Attributes (Attitude/Safety/Environmental)

- Good communication
- Adhere to safety regulations and environmental regulation
- Good interpersonal skills

MSIC GROUP : 611
AREA : Wired Network Operation Centre (NOC) - Access (Passive Access)
JOB TITLE : Technician
LEVEL : 3

RESPONSIBILITIES:

Technician is responsible to provide quality support, follow and perform routine procedure according to Access NOC SOP, manage fault handling and escalation, monitor Access Network alarm and performance, troubleshoot and rectification of the simple problem and meeting the standard Access NOC client SOP and SLA.

Knowledge:

- Software, hardware and procedure problems standard Access NOC Menu Development and Management

Skills:

- Solve or assist Access NOC technicians
- Access network
- Manage fault handling and escalation
- Monitor Access Network alarm and performance

Attributes (Attitude/Safety/Environmental)

- Good communication
- Adhere to safety regulations and environmental regulation
- Good interpersonal skills

MSIC GROUP : 611
AREA : Wired Network Operation Centre (NOC) - Access (Passive Access)
JOB TITLE : Executive / Engineer
LEVEL : 4

RESPONSIBILITIES:

Executive / Engineer is responsible to provide highest level of support and communication to internal or external clients, analyse of Access Network performance, manage Access Network operation staff team performance, solve or assist Access NOC technicians in solving non-routine or complex software, hardware, and procedure problems

Knowledge:

- Software, hardware and procedure problems standard Access NOC Menu Development and Management

Skills:

- Solve or assist Access NOC technicians
- Analyse of Access network performance
- Manage Access Network operation staff team performance
- Solve or assist Access NOC technicians in solving non-routine or complex software, hardware, and procedure problems

Attributes (Attitude/Safety/Environmental)

- Good communication
- Adhere to safety regulations and environmental regulation
- Good interpersonal skills
- Ability to supervision skills
- Good problem-solving abilities

MSIC GROUP : 611
AREA : Wired Network Field Maintenance (NFM) - Data Services
JOB TITLE : Splicer
LEVEL : 2

RESPONSIBILITIES:

Splicer is responsible to perform cable installation, construction, maintenance and repair works, locate and repair cables faults to maintain existing cable network without causing signal failure interruptions, pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Perform cable installation, construction, maintenance and repair works.
- Maintain existing cable network
- Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines.
- Set up, rearrange, or replace routing and dialling equipment.

Attributes (Attitude/Safety/Environmental)

- Good communication
- Adhere to safety regulations and environmental regulation
- Good interpersonal skills

MSIC GROUP : 611
AREA : Wired Network Field Maintenance (NFM) - Cable
JOB TITLE : Splicer
LEVEL : 2

RESPONSIBILITIES:

Splicer is responsible to perform cable installation, construction, maintenance and repair works, locate and repair cables faults to maintain existing cable network without causing signal failure interruptions, pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Perform cable installation, construction, maintenance and repair works.
- Maintain existing cable network
- Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines.
- Set up, rearrange, or replace routing and dialling equipment.

Attributes (Attitude/Safety/Environmental)

- Good communication
- Adhere to safety regulations and environmental regulation
- Good interpersonal skills

MSIC GROUP : 611
AREA : Wired Network Field Maintenance (NFM) - Installation
JOB TITLE : Splicer
LEVEL : 2

RESPONSIBILITIES:

Splicer is responsible to perform cable installation, construction, maintenance and repair works, locate and repair cables faults to maintain existing cable network without causing signal failure interruptions, pull electrical cables through underground pipes or conduits and join cables in transmission and distribution systems.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Perform cable installation, construction, maintenance and repair works.
- Maintain existing cable network
- Prepare low and high-voltage cable joints and cable terminations while connecting and installing electrical equipment and overhead lines.
- Set up, rearrange, or replace routing and dialling equipment.

Attributes (Attitude/Safety/Environmental)

- Good communication
- Adhere to safety regulations and environmental regulation
- Good interpersonal skills

SECTION : (J) INFORMATION AND COMMUNICATIONS

DIVISION : (61) TELECOMMUNICATIONS

GROUP : (612) WIRELESS TELECOMMUNICATIONS

MSIC GROUP : 612
AREA : Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)
JOB TITLE : Installer
LEVEL : 1

RESPONSIBILITIES:

Installer is responsible to install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills, assess installation requirements, performing installations, assist testing installed equipment and fault-finding and execute site audits including the documentation of equipment on towers and site surveys.

Knowledge:

- RAN system
- Telecommunication equipment
- Technical installation
- Equipment installation
- Site Survey

Skills:

- Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills
- Assess installation requirements, plan and perform installations, test installed equipment and fault-finding
- Execute site audits including the documentation of equipment on towers and site surveys

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)

MSIC GROUP : 612
AREA : Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)
JOB TITLE : Technician
LEVEL : 2

RESPONSIBILITIES:

Technician is responsible to install, moves, repairs, and modifies telecommunications and related equipment according to job order specifications, standards, and procedures by repairing voice and data equipment, determining cable, wire and equipment needed to accomplish the service requested and install circuits, cross-connects, equipment, etc.

Knowledge:

- RAN system
- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)

MSIC GROUP : 612
AREA : Wireless Network Development (ND) - Radio Access Network (RAN) (Network Planning and Optimisation)
JOB TITLE : Technical Team Leader
LEVEL : 3

RESPONSIBILITIES:

Technical Team Leader is responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation in geographical areas. Responsible for planning, organising and supervising the work of subordinates in the installation, modifications and testing of telecommunications systems.

Knowledge:

- RAN system
- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)

MSIC GROUP : 612
AREA : **Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)**
JOB TITLE : **Installer**
LEVEL : **1**

RESPONSIBILITIES:

Installer is responsible to install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills, assess installation requirements, and perform installations, assist testing installed equipment and fault-finding and execute site audits including the documentation of equipment on towers and site surveys.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills
- Assess installation requirements, plan and perform installations, test installed equipment and fault-finding
- Execute site audits including the documentation of equipment on towers and site surveys

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)

MSIC GROUP : 612
AREA : **Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)**
JOB TITLE : **Technician**
LEVEL : 2

RESPONSIBILITIES:

Technician is responsible to install, move, repair, and modify telecommunications and related equipment according to job order specifications, standards, and procedures by repairing voice and data equipment, determining cable, wire and equipment needed to accomplish the service requested and install circuits, cross-connects, equipment, etc.

Knowledge:

- RAN system
- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation.
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)

MSIC GROUP : 612
AREA : Wireless Network Development (ND) - Radio Access Network (RAN) (Network Implementation)
JOB TITLE : Technical Team Leader
LEVEL : 3

RESPONSIBILITIES:

Technical Team Leader is responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation in geographical areas, responsible for planning, organising and supervising the work of subordinates in the installation, modifications and testing of telecommunications systems.

Knowledge:

- RAN system
- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)
- Supervision

MSIC GROUP : 612
AREA : Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)
JOB TITLE : Installer
LEVEL : 1

RESPONSIBILITIES:

Installer is responsible to install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills, assess installation requirements, plan and perform installations, testing installed equipment and fault-finding and execute site audits including the documentation of equipment on towers and LOS surveys.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation
- LOS Survey

Skills:

- Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills
- Assess installation requirements, plan and perform installations, test installed equipment and fault-finding
- Execute site audits including the documentation of equipment on towers and LOS surveys

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)

MSIC GROUP : 612
AREA : Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)
JOB TITLE : Technician
LEVEL : 2

RESPONSIBILITIES:

Technician is responsible to install, move, repair, and modify telecommunications and related equipment according to job order specifications, standards, and procedures by repairing voice and data equipment, determine cable, wire and equipment needed to accomplish the service requested and install circuits, cross-connects, equipment, etc.

Knowledge:

- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)

MSIC GROUP : 612
AREA : Wireless Network Development (ND) - Transmission (Network Planning and Optimisation)
JOB TITLE : Technical Team Leader
LEVEL : 3

RESPONSIBILITIES:

Technical Team Leader is responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation in geographical areas, responsible for planning, organise and supervise the work of subordinates in the installation, modifications and testing of telecommunications systems.

Knowledge:

- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)

MSIC GROUP : 612
AREA : Wireless Network Development (ND) – Transmission (Network Implementation)
JOB TITLE : Installer
LEVEL : 1

RESPONSIBILITIES:

Installer is responsible to install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills, assess installation requirements, planning and performing installations, testing installed equipment and fault-finding and execute site audits including the documentation of equipment on towers and LOS surveys.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills
- Assess installation requirements, plan and perform installations, test installed equipment and fault-finding
- Execute site audits including the documentation of equipment on towers and LOS surveys

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)

MSIC GROUP : 612
AREA : Wireless Network Development (ND) - Transmission (Network Implementation)
JOB TITLE : Technician
LEVEL : 2

RESPONSIBILITIES:

Technician is responsible to install, move, repair, and modify telecommunications and related equipment according to job order specifications, standards, and procedures by repairing voice and data equipment, determine cable, wire and equipment needed to accomplish the service requested and install circuits, cross-connects, equipment, etc.

Knowledge:

- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)

MSIC GROUP : 612
AREA : Wireless Network Development (ND) - Transmission (Network Implementation)
JOB TITLE : Technical Team Leader
LEVEL : 3

RESPONSIBILITIES:

Technical Team Leader is responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation in geographical areas, responsible for planning, organise and supervise the work of subordinates in the installation, modifications and testing of telecommunications systems.

Knowledge:

- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation.
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Leaderships
- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)
- Supervision

MSIC GROUP : 612
AREA : Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)
JOB TITLE : Installer
LEVEL : 1

RESPONSIBILITIES:

Installer is responsible to install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills, assess installation requirements, performing installations, assist testing installed equipment and fault-finding and execute site audits including the documentation of equipment on towers and site surveys.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills
- Assess installation requirements, plan and perform installations, test installed equipment and fault-finding
- Execute site audits including the documentation of equipment on towers and site surveys

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)

MSIC GROUP : 612
AREA : Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)
JOB TITLE : Technician
LEVEL : 2

RESPONSIBILITIES:

Technician is responsible to install, move, repair, and modify telecommunications and related equipment according to job order specifications, standards, and procedures by repairing voice and data equipment, determining cable, wire and equipment needed to accomplish the service requested and install circuits, cross-connects, equipment, etc.

Knowledge:

- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation.
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)
- Supervision

MSIC GROUP : 612
AREA : Wireless Network Field Maintenance (NFM) - Radio Access Network (RAN)
JOB TITLE : Technical Team Leader
LEVEL : 3

RESPONSIBILITIES:

Technical Team Leader is responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation in geographical areas, responsible for planning, organise and supervise the work of subordinates in the installation, modifications and testing of telecommunications systems.

Knowledge:

- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Leaderships
- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)
- Supervision

MSIC GROUP : 612
AREA : Wireless Network Field Maintenance (NFM) - Transmission
JOB TITLE : Installer
LEVEL : 1

RESPONSIBILITIES:

Installer is responsible to install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills, assess installation requirements, planning and performing installations, testing installed equipment and fault-finding and execute site audits including the documentation of equipment on towers and LOS surveys.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills
- Assess installation requirements, perform installations, assist testing installed equipment and fault-finding
- Execute site audits including the documentation of equipment on towers and LOS surveys

Attributes (Attitude/Safety/Environmental)

- Hardworking and follow the instruction
- Alert on safety and health (OSH)

MSIC GROUP : 612
AREA : Wireless Network Field Maintenance (NFM) - Transmission
JOB TITLE : Technician
LEVEL : 2

RESPONSIBILITIES:

Technician is responsible to install, move, repair, and modify telecommunications and related equipment according to job order specifications, standards, and procedures by repairing voice and data equipment, determining cable, wire and equipment needed to accomplish the service requested, and install circuits, cross-connects, equipment, etc.

Knowledge:

- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Fast learner
- Hardworking and follow the instruction
- Alert on safety and health (OSH)
- Supervision

MSIC GROUP : 612
AREA : Wireless Network Field Maintenance (NFM) - Transmission
JOB TITLE : Technical Team Leader
LEVEL : 3

RESPONSIBILITIES:

Technical Team Leader is responsible for overseeing the work done by the technicians and coordinators who are required to install, maintain operation in geographical areas, responsible for planning, organise and supervise the work of subordinates in the installation, modifications and testing of telecommunications systems.

Knowledge:

- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation.
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Good communication skills
- Hardworking and follow instruction
- Adhere to safety regulations and environmental regulations
- Proactive when supervising subordinate works

MSIC GROUP : 612

AREA : Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)

JOB TITLE : Installer

LEVEL : 1

RESPONSIBILITIES:

Installer is responsible to install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills, assess installation requirements, planning and performing installations, testing installed equipment and fault-finding, execute site audits including the documentation of equipment on towers.

Knowledge:

- Electrical equipment.
- Technical installation.
- Equipment installation.

Skills:

- Install, test and maintain electrical equipment mounted on high structures, including radio towers requiring rigging skills.
- Assess installation requirements, perform installations, assist testing installed equipment and fault-finding.
- Execute site audits including the documentation of equipment on towers and site surveys.

Attributes (Attitude/Safety/Environmental)

- Good communication skills.
- Hardworking and follow instruction.
- Adhere to safety regulations and environmental regulations.

MSIC GROUP : 612
AREA : Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
JOB TITLE : Technician
LEVEL : 2

RESPONSIBILITIES:

Technician is responsible to install, move, repair, and modify telecommunications and related equipment according to job order specifications, standards, and procedures by repairing voice and data equipment, determining cable, wire and equipment needed to accomplish the service requested and install circuits, cross-connects, equipment, etc.

Knowledge:

- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation.
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Good communication skills.
- Hardworking and follow instruction.
- Adhere to safety regulations and environmental regulations.

MSIC GROUP : 612
AREA : Wireless Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
JOB TITLE : Technical Team Leader
LEVEL : 3

RESPONSIBILITIES:

Technical Team Leader is responsible for oversee the work done by the technicians and coordinators who are required to install, maintain operation sin geographical areas, responsible for planning, organise and supervise the work of subordinates in the installation, modifications and testing of telecommunications systems.

Knowledge:

- Telecommunication system
- Mechanical and Electrical equipment
- Technical installation
- Equipment installation

Skills:

- Plan, organise and supervise the work of subordinates in the installation.
- Modify and test the telecommunications system.
- Repair and maintain the associated equipment of the telecommunications system.

Attributes (Attitude/Safety/Environmental)

- Good communication skills
- Hardworking and follow instruction
- Adhere to safety regulations and environmental regulations
- Proactive when supervising subordinate works

MSIC GROUP : 612
AREA : Wireless Network Planning and Optimization
JOB TITLE : Radio Frequency Engineer
LEVEL : 5

RESPONSIBILITIES:

Radio Frequency Engineer is responsible for oversee the work done by the technicians and coordinators who are required to install, maintain operation sin geographical areas, plan, organise and supervise the work of subordinates in the installation, modify and test of telecommunications systems, monitor the performance of B-Mobile radio network by conducting drive test, analysing various reports generated from OSS, coordinate with the field engineers of Radio Network and Switching Sections for rectifying radio network problems, improving the network performance and quality, conduct new site surveys for Radio and Transmission network for expansions and new project works, preparing Cell Design Data for the new BTS sites, monitor 3G network performance by carrying out the drive test and analysis of drive test log and propose network expansion based on the traffic report analysis.

Knowledge:

- Telecommunication system
- Telecommunication equipment
- Technical installation
- Equipment installation
- Hardware dimensioning (BTS).
- RF design circuitry skills
- Knowledge of cell site design and LTE networks
- Ability to understand and analyze wireless network KPIs

Skills:

- Maintain operation sin geographical areas
- Monitor the performance of B-Mobile radio network
- Analyse various reports generated from OSS
- Conduct new site surveys for Radio and Transmission network for expansions and new project works

- Prepare Cell Design Data for the new BTS sites
- Propose network expansion based on the traffic report analysis.

Attributes (Attitude/Safety/Environmental)

- Good communication skills
- Hardworking and follow instruction
- Adhere to safety regulations and environmental regulations
- Proactive when supervising subordinate works

SECTION: (J) INFORMATION AND COMMUNICATIONS

DIVISION: (61) TELECOMMUNICATIONS

GROUP: (613) SATELLITE TELECOMMUNICATIONS

MSIC GROUP : 613
AREA : Satellite Network Field Maintenance (NFM) – Very Small Aperture Terminal (VSAT)
JOB TITLE : Installer
LEVEL : 1

RESPONSIBILITIES:

Installer is responsible to install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills, assess installation requirements, performing installations, and fault-finding and execute site audits including the documentation of equipment on towers and site surveys.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation
- Site survey

Skills:

- Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills
- Assess installation requirements, perform installations, assist testing installed equipment and fault-finding
- Execute site audits including the documentation of equipment installed.

Attributes (Attitude/Safety/Environmental)

- Good communication skills
- Hardworking and follow instruction
- Adhere to safety regulations and environmental regulations

MSIC GROUP : 613
AREA : Satellite Network Field Maintenance (NFM) – Very Small Aperture Terminal (VSAT)
JOB TITLE : Technician
LEVEL : 2

RESPONSIBILITIES:

Technician is responsible to perform VSAT preventive and corrective maintenance requirement, prepare network site condition report, execute network preventive and corrective maintenance materials, tools and facilities, execute replenishment of materials / equipment spare parts, organise supply-chain activities of materials and equipment / spare parts inventory, ensure the SLA's are met; during field preventive and corrective maintenance task, observe and adhere to established procedures & processes while carrying out preventive and corrective maintenance task and cross check the warranty database before performing SLA tasks.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation
- Troubleshooting Skill
- Site survey

Skills:

- Perform CME preventive and corrective maintenance requirement
- Prepare network site condition report
- Execute network preventive and corrective maintenance

Attributes (Attitude/Safety/Environmental)

- Good communication skills
- Hardworking and follow instruction
- Adhere to safety regulations and environmental regulations

MSIC GROUP : 613
AREA : Satellite Network Field Maintenance (NFM) – Earth Station
JOB TITLE : Installer
LEVEL : 1

RESPONSIBILITIES:

Installer is responsible to install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills, assess installation requirements, performing installations, assist testing installed equipment and fault-finding and execute site audits including the documentation of equipment on towers and site surveys.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation
- Site Survey

Skills:

- Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills.
- Assess installation requirements, perform installations, assist testing installed equipment and fault-finding.
- Execute site audits including the documentation of equipment on towers and site surveys.

Attributes (Attitude/Safety/Environmental)

- Good communication skills
- Hardworking and follow instruction
- Adhere to safety regulations and environmental regulations

MSIC GROUP : 613
AREA : Satellite Network Field Maintenance (NFM) - Earth Station
JOB TITLE : Technician
LEVEL : 2

RESPONSIBILITIES:

Technician is responsible to perform Earth Station preventive and corrective maintenance requirement, prepare network site condition report, execute network preventive and corrective maintenance materials, tools and facilities, execute replenishment of materials / equipment spare parts, organise supply-chain activities of materials and equipment / spare parts inventory, ensure the SLA's are met; during field preventive and corrective maintenance task, observe and adhere to established procedures & processes while carrying out preventive and corrective maintenance task and cross check the warranty database before performing SLA tasks.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation
- Troubleshooting Skill
- Site Survey

Skills:

- Perform CME preventive and corrective maintenance requirement
- Prepare network site condition report
- Execute network preventive and corrective maintenance

Attributes (Attitude/Safety/Environmental)

- Good communication skills
- Hardworking and follow instruction
- Adhere to safety regulations and environmental regulations

MSIC GROUP : 613

AREA : Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)

JOB TITLE : Installer

LEVEL : 1

RESPONSIBILITIES:

Installer is responsible to install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills, assess installation requirements, performing installations, assist testing installed equipment and fault-finding and execute site audits including the documentation of equipment on towers and site surveys.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation

Skills:

- Install, test and maintain telecommunications equipment mounted on high structures, including radio towers requiring rigging skills
- Assess installation requirements, plan and perform installations, test installed equipment and fault-finding
- Execute site audits including the documentation of equipment on towers and site surveys

Attributes (Attitude/Safety/Environmental)

- Good communication skills
- Hardworking and follow instruction
- Adhere to safety regulations and environmental regulations

MSIC GROUP : 613
AREA : Satellite Network Field Maintenance (NFM) - Civil, Mechanical & Electrical (CME)
JOB TITLE : Technician
LEVEL : 2

RESPONSIBILITIES:

Technician is responsible to perform CME preventive and corrective maintenance requirement, prepare network site condition report, execute network preventive and corrective maintenance materials, tools and facilities, execute replenishment of materials / equipment spare parts, organise supply-chain activities of materials and equipment / spare parts inventory, ensure the SLA's are met; during field preventive and corrective maintenance task, observe and adhere to established procedures and processes while carrying out preventive and corrective maintenance task and cross check the warranty database before performing SLA tasks.

Knowledge:

- Telecommunication equipment
- Technical installation
- Equipment installation
- Site Survey

Skills:

- Perform CME preventive and corrective maintenance requirement
- Prepare network site condition report
- Execute network preventive and corrective maintenance

Attributes (Attitude/Safety/Environmental)

- Good communication skills
- Hardworking and follow instruction
- Adhere to safety regulations and environmental regulations

MSIC GROUP : 613
AREA : Satellite Network Optimization
JOB TITLE : Satellite Data Analyst
LEVEL : 5

RESPONSIBILITIES:

Satellite Data analysts provide support to ongoing databasing and image processing activities in the field of environmental monitoring by satellites, operate custom software to manipulate a diverse range of environmental and imagery data, operate off-the-shelf and custom software to process satellite imagery to produce maps, develop an understanding of the meaning of data in order to critically review it and write technical reports and occasionally contribute to articles for publication.

Knowledge:

- Information Management
- Computer Science
- Statistic knowledge
- Programming languages, such as SQL, Oracle and Python.

Skills:

- Collect, organise and interpret statistical information
- Provide support to ongoing databasing and image processing activities in the field
- Operate custom software to manipulate a diverse range of environmental and imagery data
- Operate off-the-shelf and custom software to process satellite imagery to produce maps.
- Develop an understanding of the meaning of data

Attributes (Attitude/Safety/Environmental)

- Good communication and problem-solving skills
- Good interpersonal skills
- Adhere to safety regulations and environmental regulations
- Proactive when supervising subordinate works

SECTION : (J) INFORMATION AND COMMUNICATIONS

DIVISION : (61) TELECOMMUNICATIONS

GROUP : (619) OTHER TELECOMMUNICATIONS ACTIVITIES

MSIC GROUP : 619
AREA : Sales and Marketing
JOB TITLE : Sales Engineer
LEVEL : 4

RESPONSIBILITIES:

Technical sales engineers are often the key point of contact for clients, answer queries, provide technical advice and introducing new products, identify and establishing new business, organise sales visits, liaise with existing clients, prepare tenders, proposals and quotations, provide pre-sales and post-sales support, negotiate contracts, terms and conditions, review cost and sales performance, write reports and sales literature, provide product education and advice and attend trade exhibitions, conferences and meetings and ensure that sales targets are met.

Knowledge:

- Strong Technical
- Advance knowledge of the product
- Problem solving skill

Skills:

- Provide technical advice and introducing new products
- Identify and establish new business
- Organise sales visits
- Prepare tenders, proposals and quotations
- Provide pre-sales and post-sales support
- Negotiate contracts, terms and conditions

Attributes (Attitude/Safety/Environmental)

- Understand relevant technology
- Understand the Customers' Business
- Work well with all types of people
- Can present and demo succinctly and effectively
- Can communicate on a technical and personal plan