MICTSETA | Media, Information And Communication Technologies Sector Education And Training Authority

SHAPING SKILLS, PIONEERING INDUSTRIES, EMPOWERING FUTURES

Sector Skills Plan
2023/24

Final Submission

01 August 2022

Foreword

In this annual update of the MICT SETA Sector Skills Plan, we have conducted rigorous research to ensure that the documented occupational shortages and skills gaps are true reflections of demand and supply in the labour market. Data on labour shortages is often a subject of debate. To this effect, a number of different stakeholders were consulted to construct a comprehensive picture of the Sector and its direction.

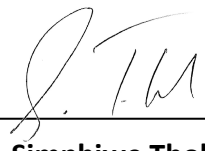
This year, we did a comprehensive analysis of 4IR technologies and their role in the MICT Sector to acquire deeper insights into the real skills shortages and support industry in closing those skills gaps. The more confidence we have in the Sectoral Priority Occupations, the more assured we are of the Strategic Plan. The combined efforts from all stakeholders to produce this document are gratefully acknowledged. The following deserve special mention:

- The MICTSETA Accounting Authority members;
- MICTSETA Industry and professional bodies ;
- Academic and research institutions at large;
- Organised Labour; and
- All the stakeholders who kindly participated in our interviews, surveys and focus groups.

Our thanks go to all the stakeholders whose collective wisdom has been incorporated into this document. Sharing of knowledge is a catalyst for achieving South Africa's skills development potential and economic growth.

Mr. Matome Madibana

Chief Executive Officer (CEO): MICT SETA



Mr. Simphiwe Thobela

Chairperson: MICT SETA Board

Acronyms

4IR	Fourth Industrial Revolution	**MCSE**	Microsoft Certified Solutions Expert
5G	Fifth-Generation Wireless Technology	**MDDA**	Media Development and Diversity Agency
ACASA	Association for Communication and Advertising South Africa	**MICT**	Media, Information and Communication Technologies
AI	Artificial Intelligence	**MTSF**	Medium Term Strategic Framework
AR	Augmented Reality	**NAB**	National Association of Broadcasters
ATR	Annual Training Report	**NDP**	National Development Plan
B-BBEE	Broad-Based Black Economic Empowerment	**NGO**	Non-Governmental Organisation
BABOK	A Guide to the Business Analysis Body of Knowledge	**NGP**	New Growth Path
CAGR	Compound Annual Growth Rate	**NLPE**	Neuro-Linguistic Programming Executive
CBO	Community- Based Organisations	**NLRD**	National Learner Record Database
CECS	Centre of Excellence in Cyber Security	**NQF**	National Qualifications Framework
CEO	Chief Executive Officer	**NSI**	National System of Innovation
CISCO	Commercial & Industrial Security Corporation	**NSDP**	National Skills Development Plan
CISSP	Certified Information Systems Security Professional	**OFO**	Organising Framework for Occupations
COBOL	Common Business-Oriented Language	**OGS**	Online Grant System
CompTIA	Computing Technology Industry Association	**PC**	Personal Computer
Covid-19	Corona Virus Disease 2019	**PRINCE2**	Projects in Controlled Environments 2
DCDT	Department of Communications & Digital Technologies	**PICC**	Presidential Infrastructure Coordinating Commission
DHET	Department of Higher Education	**QCTO**	Quality Council for Trades and Occupations
DEF	Deaf Empowerment Firm	**QMR**	Quarterly Monitoring Report
DPSA	Department of Public Service and Administration	**SACIA**	Southern African Communications Industries Association
DTT	Digital Terrestrial Television	**SAP**	Systems Applications and Products
EE	Employment Equity	**SDF**	Skills Development Facilitator
ETQA	Education and Training Quality Assurance	**SDL**	Skills Development Levy
FOSS	Free Open Access Software	**SEDA**	Small Enterprise Development Agency
GDP	Gross Domestic Product	**SETA**	Sector Education and Training Authority
GITOC	Government Information Technology Officers Council	**SET**	Science, Engineering and Technology
HEI	Higher Education Institution	**SIC**	Standard Industrial Classification
HEMIS	Higher Education Management Information System	**SIP**	Strategic Integrated Projects
HRDSSA	Human Resource Development Strategy of South Africa	**SITA**	State Information Technology Agency
HTFV	Hard to Fill Vacancy	**SKA**	Square Kilometre Array
IBM	International Business Machines	**SLA**	Service-Level Agreement
IIBA	International Institute of Business Analysis	**SMME**	Small, Medium and Micro-enterprises
ICASA	Independent Communications Authority of South Africa	**SPO**	Sectoral Priority Occupations
ICT	Information and Communication Technology	**SSP**	Sector Skills Plan
IITPSA	Institute of Information Technology Professionals South Africa	**STB**	Set Top Box
IoT	Internet of Things	**TIA**	Technology Innovation Agency
IPAP	Industrial Policy Action Plan	**TVET**	Technical Vocational Education and Training
ISACA	Information Systems Audit and Control Association	**USAASA**	Universal Service and Access Agency of South Africa
IT	Information Technology	**VOD**	Video on Demand
ITA	Information Technology Association	**VOIP**	Voice Over Internet Protocol
M&E	Monitoring and Evaluation	**VR**	Virtual Reality
MANCO	Management Committee	**WIL**	Work Integrated Learning
MCSA	Microsoft Certified Solutions Associate	**WP-PSET**	White Paper on Post Schooling Education and Training
MCSD	Microsoft Certified Solutions Developer	**WSP**	Workplace Skills Plan

Executive Summary

The MICT Sector Skills Plan (SSP) has been developed over the period of NSDP to map out and plan for occupational skills needs in the Advertising, Film and Electronic Media, Electronics, Information Technology and Telecommunications industries. The SSP is updated each year to analyse the changes in the sector's labour market and does so against the backdrop of the economic performance of the sector and developmental agenda of the country. It sizes up the gap between the demand for and supply of skills and finally outlines strategies for dealing with the identified challenges.

Data collection tools and methods

The data collection tools used include: interview questionnaires specifically designed to capture the key trends across the five sectors that exist within the MICT SETA, an integration of existing research was a priority, and therefore, tracer study findings were also incorporated in the finalization of this research document, online surveys and focus group discussions were key in validating the research findings. Furthermore, there was a review of available literature, including national policy and strategy documents, industry plans and sector performance reports. An analysis of data, including SETA employer and employee data, economic and labour market trend data accessed through StatsSA and industry reports. SETA data on grant spending and learner enrolments and completions in recent years, however it remains difficult to access the most recent HEMIS data on TVET colleges. We were able to access Higher Education Information Management System (HEMIS) data up until 2018 for TVET completions. In addition, there was continuous consultation with stakeholders in each of the sub-sectors, the SETA research team and SETA management focusing specifically on the SSP content and the update of the information in it. In relation to the Hard to fill vacancies, Skills gaps and PIVOTAL lists efforts have been made to triangulate findings and confirm the findings with stakeholders.

Sector Profile

In the 2021/22 fourth quarter, the transport, storage and communication industry increased by 2, 2%, contributing 0, 2 of a percentage point to Gross Domestic Product (GDP). Increased economic activity was reported for land transport and transport support services. The figure is a depiction of how the MICT sector (transport, storage and communication industry) is performing against the other sectors.

As of 2022, the MICT Sector is made up of 32 985 employers, which are spread across five Sub-sectors, this represents a 7% decrease from the 35 569 in the previous financial year. From the current employer base, only 8,896 employers are paying levies, this is a slight decline of 2% from 9 093 compared to the previous financial year. The MICT sector experienced an increase in the number of employees recording 228 990 in 2022. The largest proportion (54%) of employees are working in the Information and Technology sub-sector, followed by 28% working in the Tele-communications, 9% in the electronics subsector. The sub-sector with the lowest number of employees is advertising accounting 4%, Film, and Electronic Media accounting 5%.

Key Skills Change Drivers

The key drivers of change influencing skills demand and supply across the MICT sector include artificial intelligence, cloud computing, big data analytics, 5G and internet of things.

Change drivers affect how businesses operate and survive into the future. Thus, new ways of doing things, including skills training, are required to exploit new opportunities in the market that emerge as a result of 4IR. Furthermore, the Covid-19 pandemic has spurred on the uptake of 4IR technologies and the relevant skills that are required to enable it. The above-mentioned change drivers call for the continued development of technologies and skills in the sector. However, this must be balanced with also catering for lower-end skills. Ensuring inclusive digital revolution means paying attention to those still becoming digitally literate.

Occupational Shortages and Skills Gaps

The following is a list of the top 10 sectoral priority occupations for the MICT sector: Software developer; Computer Network and Systems Engineer; ICT Systems Analyst; Management Consultant (Business Analyst); ICT Security Specialist; Multimedia Specialist; Programmer Analyst; Developer Programmer; ICT Project Manager; and ICT Sales Representative. The predominant skills gaps in the sector include: Design and Critical thinking skills, Communication skills, Leadership skills, Technical skills, Project management skills, and certified skills (CompTIA A+, Network+, MCSA, MCSE, Azure, CISCO, etc.). The MICT sector priority occupations list makes 14% of the national priority skills published by DHET in February 2022, these are 14 occupations out of the 101 occupations in the national list.

SETA Partnerships

The MICT SETA has entered into partnerships with various institutions to advance sector development and growth. These partnerships are structured into the following typologies: Partnerships with TVET colleges; Partnerships with Universities; Partnerships for Special Projects; Partnerships with Industry Vendors; Partnerships with SMMEs; and Partnerships with Research.

There are a number of successful partnerships that were implemented by the SETA including the partnership with the South African Mobile Devices Distributors and Repairs Association (SAMDDRA) through this partnership young South Africans were afforded the opportunity to participate in a phone repairs Skills Programme which saw 61 learners successfully completing and graduating from the programme. There were also partnerships that were not working well including TVET College partnerships. TVET colleges in rural areas are lacking in skilled lecturers, infrastructure and alternative centres of excellence. Thus, TVET colleges may at times lack delivery capacity, which impacts negatively on the timeous implementation of programmes. There is a challenge with University partnerships as more often than not, there are administrative delays in reviewing of SLAs often creates delays in the implementation of programmes. However, the SETA is working continuously to improve on the challenges identified and leverage on successful partnerships.

SETA Monitoring and Evaluation

The MICT SETA considers itself as a reflective organisation, applying the results-based approach to M&E, which is intended to aid decision-making through credible, reliable, and useful information generated from monitoring reports. From the MICT SETA perspective, the achievement of the result-based approach may not be possible without integration of Planning, Monitoring and Evaluation. Planning helps to focus on results that matter, while M&E facilitates learning from past successes and challenges including those encountered during implementation. Therefore, the MICT SETA has dedicated efforts to establish a meaningful M&E Division in an incremental fashion which will see the staff complement steadily increasing overtime. In the main, the Division oversees the overall performance of the SETA on implementation of its programmes and initiatives as well as reporting thereof. The Division's core functions include designing and implementing the M&E system, gathering and interpreting monitoring data for decision making and improvement in implementation. Institutionalising M&E is the epicentre to managing programme performance information at the MICT SETA.

Strategic Skills Priority Actions

The following set out the proposed broad skills development objectives for the sector:

1. Improve the trustworthiness of the data used for skills planning through data triangulation. Such systematic and in-depth research will be achieved through collaboration with industry bodies, universities, and acclaimed research institutions.
2. Better position the MICT sector to enable the 4IR through increasing access to and uptake of relevant skills development interventions, and by developing required qualifications and learning interventions. This will be achieved further through support by the SETA for the development of the skills required to research, develop and commercialise 4IR technologies and products. The impact of Covid-19 in relation to the enablement of 4IR cannot be ignored therefore, in implementing 4IR priority programmes, companies that have been and will be impacted by Covid-19 are also accounted for in the SETA's strategies.
3. Set realistic targets in collaboration with industry, ensure implementation through the allocation of discretionary grants and monitor delivery of Service Level Agreement deliverables as a way of addressing sectoral occupational shortages and skills gaps. This will prioritise the development of skills that enable 4IR occupations and specialisations. The Covid-19 phenomenon has been taken into consideration with regard to the SETA's strategic planning and has been acknowledged as a catalyst for the necessary 4IR related skills development.
4. Identify TVETs with the potential for meaningful collaboration and enter into partnerships with them. These partnerships will recognise some of the TVETs as Centres of Specialisation, linking them with industry and ensuring that programmes offered are aligned to identified skills gaps for ease of learner placement on programmes such as WIL.
5. Scope skills development needs and priorities in rural areas, provide career and vocational guidance, support government in addressing e-governance issues and assist aspirant training providers to attain accreditation and deliver MICT SETA programmes. The SETA will support initiatives which apply technology in a manner

that enables transformation of the sector, with regards to female learners, learners with disabilities and rural learners.

6. Improve provision of skills development to SMMEs, entrepreneurs and community-based organisations, particularly with regard to 4IR. This will enable the development and commercialisation of technologies and products that improve localisation and increase exports. The SETA will develop cross-sectoral partnerships and projects in the delivery of learning interventions.

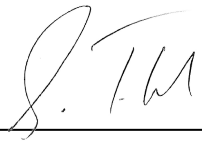
7. Identify and develop occupational qualifications through the QCTO for occupations in high demand in consultation with the sector. Furthermore, the SETA will put in place mechanisms to prioritise all its qualifications and ensure increased number of accredited skills development providers offering occupational qualifications in high demand on an annual basis.

Mr. Matome Madibana

Chief Executive Officer (CEO): MICT SETA

Mr. Simphiwe Thobela

Chairperson: MICT SETA Board



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SSP Research Process and Methods

Introduction

In working towards the 2023/24 Sector Skills Plan (SSP) the MICT SETA was guided by the Department of Higher Education and Training's 2022 SSP guidelines and requirements framework. Sections with new requirements were identified to be only in chapter 5, with the new requirement being to report on interventions that were implemented in support of the ERRP Skills Strategy. Recognising that the research needs to be evidence informed, consultations with key industry role players were conducted to identify key trends within the subsectors, and at a strategic level the MICT SETA Accounting Authority (AA) was also consulted.

The SSP Research Process and Methods section in this document presents the research process that was followed to prepare this SSP. In summary, the research process started with a review of literature to look at the MICT sector broadly. Secondly, interviews were conducted with stakeholders and experts within each subsector including Trade Unions and Industry Associations. Questions asked in these interviews focused on the impact of the 4IR on the sector as well as the impact of the Covid-19 pandemic and what the SETA should be prioritising in the 2023/24 financial. The research process also involved employer surveys, which also focused on the 4IR and the pandemic, focus groups and a tracer study, which focused on the relevance and effectiveness of the learning programmes implemented by the SETA. Moreover, an analysis was conducted using StatsSA data and data found in industry research as well as WSP/ATR data supplied by the SETA and the Higher Education Management Information System (HEMIS) data sourced externally to provide information on the sector profile of the MICT sector and the supply of skills in the sector. Together, all of these sources were used to write a quality researched SSP.

Data collection tools and methods

The data collection tools used included: interview questionnaires specifically designed for the MICT SETA; employer surveys; and tracer studies.

The main methods of data collection for the study are: a review of available literature, including national policy and strategy documents, industry plans and sector performance reports; an analysis of data, including SETA employer and employee data, economic and labour market trend data accessed through StatsSA and industry reports, SETA data on grant spending and learner enrolments and completions in recent years, and HEMIS data on the supply of skills in the sector; interviews with industry stakeholders including employers; employer surveys; tracer studies; and focus groups.

In addition, there was continuous consultation with stakeholders in each of the sub-sectors, the SETA research team and SETA management focusing specifically on the SSP content and the update of the information in it. In relation to the Hard to fill vacancies, Skills gaps and PIVOTAL lists efforts have been made to triangulate findings and confirm the findings with stakeholders. The following data collection tools were used:

Review of Key Literature

As a first step, the current MTCT SETA SSP was reviewed. Next, the relevant policies and strategies of the country were reviewed. The aim is to ensure that the SSP is aligned with the country's key strategies, such as the Economic Reconstruction and Recovery Plan (ERRP), as well as the supporting Skills Strategy, National Skills Development Plan (NSDP), the National Development Plan (NDP) and associated Medium Term Strategic Framework (MTSF) plans, the New Growth Path (NGP), Industrial Policy Action Plan (IPAP), the White Paper on Post School Education and Training and the Human Resource Development Strategy of South Africa (HRDS-SA), and now the Covid-19 Economic Reconstruction and Recovery Skills Strategy, amongst others.

Workplace Skills Plan (WSP) and Annual Training Report (ATR)

For the period 2022/23, the final submission for WSP and ATR data from employers was 30 April 2022 as legislated, in this regard, the 2021 OFO code framework was used for the submissions. This data is important to assist in understanding what the training needs and trends are as well as the qualifications and skills needed in the different sub-sectors.

HEMIS

HEMIS data is sourced from the Department of Higher Education and Training (DHET). It provides information on all of the public Higher Education Institutions (HEI) in the country on enrolments and graduation rates.

Online Employer Survey

An online employer survey was disseminated. Data from this survey was used to supplement the WSP/ATR data since not all of the employers are captured in that dataset. The aim of the survey, together with getting additional data, is to strengthen the relationship the SETA has with the employers and other key role players such as professional bodies in the sector. Additionally, valuable industry information is obtained from all of the MICT sub-sectors. Questions were asked about hard to fill vacancies, skills gaps, the impact of the Covid-19 pandemic as well as the impact of the 4IR.

Tracer Study

In 2021, the SETA conducted a tracer study to assess the relevance and effectiveness of the learning programmes the SETA implements. The study aimed to determine the destinations of learners who have completed learnerships, internships, skills programmes, short learning programmes and bursary programmes. The purpose of the study was to understand the factors associated with employment/unemployment. To understand the intricacies of the articulation of qualifications into occupations, and to determine the nature of employment of learners who found employment.

In-Depth Interviews

Interviews were conducted with industry stakeholders in the sector. These were semi-structured interviews that allowed room for discussion on matters that are important to stakeholders. Interviews are important as the voices of key industry stakeholders are heard about important issues such as the COVID-19 pandemic, the 4IR and the economic performance of the sector.

Focus Groups

Focus groups are important for data validation as they offer in-depth understanding of the participants, in this case how key experts view the changes in the sector and how the MICT SETA should respond and what to prioritize in the next financial year. The SETA conducted online focus group sessions. Topics of discussion included the validating of the scarce and critical skills identified in the research. It also identified the necessary interventions needed to address skills needs and explored difficulties experienced in relation to supply of such skills. This process also highlighted challenges faced by stakeholders in working with the SETA in delivering relevant occupational programmes in each of the sub-sectors and was able to suggest ideas for strengthening skills development.

Table 1: Research undertaken by the SETA

Topic	Nature (Design) of the Study	Objectives of Study	Data Collection Tool	Sample Size and Scope	Data Sources and Data Sets	Time Frame
2022/23 Sector Skills Plan	Qualitative	The objectives of the study was to get an understanding of key developments in the sector, gather insights regarding hard to fill vacancies, skills gaps, future skills and change drivers in the MICT sector. In addition, the focus was on the impact of the Fourth Industrial Revolution (4IR) and Covid-19 as well as how the SETA can better align its priorities to the NSDP and the ERRP. This study covered the views of various stakeholders across all the five sub-sectors of the MICT sector.	• Interview questionnaire • Online Surveys • Focus groups • Literature reviews	• The scope of the interviews employers, industry associations, research institutions and trade unions • 35 interviews were conducted • 411 electronic questionnaires were distributed.	• MICT SETA Levy Huge File • Key role players list	2021/22
2022/23 Sub-sector Mini Research studies	Quantitative and Qualitative	• The goal of these reports is to shed light greater details of the individual sub-sectors. The observation is that not all of the information generated as part of the research makes it into the SSP, which aggregates much of the subsector data into an overview of the MICT sector. These background reports therefore provide supplementary information on the subsectors in addition to details provided in the SSP.	• Interview questionnaire • Online Surveys • Focus groups • Literature reviews	• The scope of the study was to interview key employers, professional bodies, research institutions, training providers and trade unions. • 411 electronic questionnaires were distributed.	• MICT SETA Levy Huge File • MICT SETA Training Provider List • Key role players list	2021/22

Topic	Nature (Design) of the Study	Objectives of Study	Data Collection Tool	Sample Size and Scope	Data Sources and Data Sets	Time Frame
MICT SETA Covid-19 Pulse Survey	Quantitative and Qualitative	The objective of the survey was to ascertain the impact of the Covid-19 pandemic on the sector and employers' states of readiness to resume learning programmes and business operations given the lockdown imposed at that time.	• Survey	• The scope of the survey was employers and training providers • The sample size reached was 65	• MICT SETA Levy Huge File • MICT SETA Training Provider List	2021/22
MICT SETA Tracer Study	Quantitative and Qualitative	The study aimed to determine the destinations of learners who have completed learnerships, internships, skills programmes, short learning programmes and bursary programmes, amongst others.	• Survey • Telephone calls • Interviews • Focus groups	• The scope of the survey and telephone calls were learners who completed MICT SETA learning programmes in the 2019/20 financial year. • The sample size reached was 720.	• MICT SETA Commitment Register • MICT SETA Training Provider List	2021/22

Conclusion

A mixed method of data collection was followed including quantitative and qualitative data. Provided that each method on its own has its limitations, using them all together certainly provides for a robust analysis of the MICT sector. There were two data challenges that emerged during the 2023/24 research process. These included:

i. StatsSA does not break down data according to the sub-sectors relevant to the MICT sector. Looking at what is contained in each StatsSA sector allowed us to determine which sectors are relevant to the MICT sector.
ii. HEMIS data for enrolments and graduation in the higher education system reflects up to 2020 enrolments. Data for 2021 onwards is not yet available, this limits the SETA in reporting the most accurate information.

Chapter 1: Sector Profile

1.1 Introduction

This chapter discusses the sector profile of the Media, Information and Communication Technologies (MICT) sector, looking at the size, scope of coverage, key role players, economic performance, employer and labour market profile. Moreover, it will also provide a detailed economic outlook of the sector, detailing how in the 2023/24 financial year the sector will unfold, the status quo since the Covid-19 pandemic and concludes with implications for skills development. In profiling the five sub-sectors of the MICT sector, research data from multiple sources, including publicly available literature and data as well as MICT SETA databases, were analysed. Specific data sources include SETA employer and employee data from the WSP/ATR datasets, economic and labour market trend data accessed through Statistics South Africa (StatsSA) and industry reports, employer survey data, industry interviews as well as focus groups.

1.2 Scope of Coverage

The MICT sector is made up of five sub-sectors that are interrelated but also quite distinct and identifiable, these are advertising, film and electronic media, electronics, information technology and telecommunications.

The Standard Industry Classification (SIC) codes that demarcate the MICT sector, shown in the table below, fall under four different sub-industries, namely: (1) manufacturing; (2) transport, storage and communication; (3) finance, insurance, real estate and business services; and (4) community, social and personal services.

Table 2: The MICT SETA SIC Code List

Sub-Sector	SIC Code	Main Activity Description
Advertising	88310	Advertising
	88311	Activities of Advertising Agents
	88313	Commercial Design
Film and Electronic Media	96110	Motion Picture and Video Production and Distribution
	96112	Related Activities - Film and Tape Renting to Other Industries, Booking, Delivery and Storage
	96113	Film and Video Reproduction
	96132	Production and Broadcast of Radio and Television Broadcast Content
	96200	News Agency Activities
	88940	Photographic Activities
Electronics	35791	Manufacture of Alarm Systems
	75216	Security Systems Services Except Locksmiths
	75217	Office Automation, Office Machinery and Equipment Rental Leasing Including Installation and Maintenance

Sub-Sector	SIC Code	Main Activity Description
	86004	Electronic and Precision Equipment/ Computer Repairs and Maintenance
	86010	Consumer Electronics Repair and Maintenance
	86013	Other Electronic and Precision Equipment Repair and Maintenance
	86014	Repair and Maintenance of Electronic Marine Equipment
	87142	Research and Development of Electronic Equipment and Systems
	87143	Information Technology Import and Product Integration of Pre-Manufactured Electronics IT and Telecommunications Equipment
	87146	Research and Development in The Physical and Engineering Sciences
	87147	Electronics Importation and Product Integration of Pre-Manufactured Electronics IT and Telecommunications Equipment
	96133	Installation, Maintenance and Repair of Tracking Devices for Cars
Information Technology	86001	Software Publishers
	86002	Computer Systems Design and Related Services
	86003	Computer Facilities Management Services
	86005	Computer Rental and Leasing
	86006	Computer Programming Services
	86007	Other Computer Related Activities
	86008	Call Centre and Customer Relationship Management Systems Development and Installations Activities
	86009	Computer System Design Services and Integrated Solutions
	86011	Computer and Office Machine Repair, Maintenance and Support Services
Tele-communications	75200	Telecommunication
	75201	Wired Telecommunications Carriers
	75202	Television and Radio Signal Distribution
	75203	Cable Networks and Programme Distribution
	75204	Telephone
	75205	Wireless Telecommunications Carriers except Satellite Radio Telephone
	75209	Television Broadcasting
	75211	Telecommunications and Wired Telecommunication Carriers
	75212	Paging
	75213	Cellular and Other Wireless Telecommunications
	75214	Satellite Telecommunications
	75215	Other Telecommunications
	86012	Communication Equipment Repair and Maintenance

Sub-Sector	SIC Code	Main Activity Description
	87148	Telecommunications Importation and Product Integration of Pre-Manufactured Electronics IT and Telecommunications Equipment
	96131	Providing Radio and Television Transmission Signals

Source: Government Notice, No. 42589, Government Gazette, 22 July 2019

1.3 Key Role Players

The MICT sector is characterised by various stakeholders that play a significant role in helping the SETA deliver on quality, innovative skills that contribute to the national economic growth. A brief description of key role players and their role in the MICT sector can be seen below:

Table 3: Key Role Players

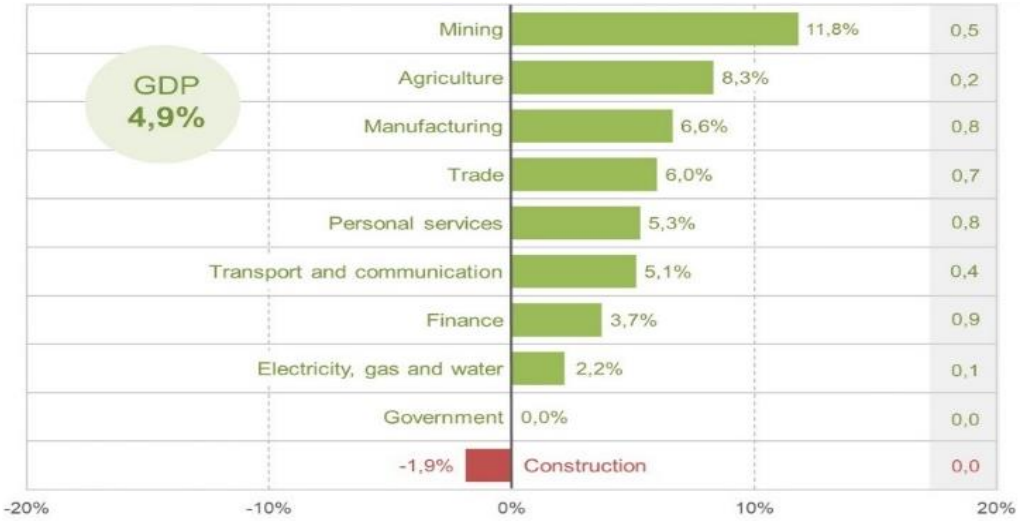
Stakeholder	Role
Oversight bodies	
Department of Higher Education and Training	The DHET plays an oversight role in the governance of the MICTSETA as legislated in the Skills Development Act. The Minister DHET oversees the performance of SETAs and the SETA accounting authority reports to the Minister as the Executive Authority.
Professional Bodies	
Information Technology Association (ITA):	The ITA stands at the threshold of a new era for the local ICT Industry, with its Membership and industry partners, it positions itself to play a crucial role in the growth and development of the ICT sector, as well as serving as a credible, effective channel of communication between various stakeholders. One of the functions of the ITA is lobbying and negotiating at government level on behalf of its members. Members have the opportunity of influencing the South African legislative mechanism through verbal and written submissions by the ITA. This has far-reaching effects, which go beyond its members and positively impact the ICT industry of South Africa as a whole. ITA responds to NSDP outcome 4.2 and also aligns to intervention 3 of the ERRP Skills Strategy which is about expanding the provisioning of WBL programmes that respond to the occupational shortages and skills gaps. The ITA is in partnership with the DCDT, DPSA, GITOC and SITA, these partnerships are about building an ongoing digital government skills programme, which covers foundational digital skills (such as computer user skills) and advanced skills (such as data analytics skills).
Information and Communication Technologies SMME Chamber (ICT SMME Chamber):	The ICT SMME Chamber is recognised for its importance and centrality in South Africa's development framework. It plays a critical role in engaging with government and other ICT stakeholders, and in lobbying government on behalf of the ICT SMMEs on all matters of ICT SMME development and ICT sector transformation. It responds to NSD outcome 4.6 on entrepreneurship and cooperative development, ERRP intervention 7, as well as the ERRP skills strategy intervention 7 on Strengthening entrepreneurship development programmes.
Universal Service and Access Agency of South Africa (USAASA):	USAASA is a State-Owned Entity of government established through the Electronic Communications Act, No 36 of 2005, to ensure that "every man, woman and child whether living in the remote areas of the Kalahari or urban areas of Gauteng can be able to connect, speak, explore and study using ICT." In providing crucial infrastructure to rural communities and educational institutions, USAASA contributes to realising NSDP outcomes 4.2 and 4.5. The role also aligns to the ERRP intervention 3 and its Skills Strategy interventions 10 which highlights the need for strengthening the PSET system to meet the medium- and long-term demands of the economy.
The Independent Communications Authority of South Africa ("ICASA"):	ICASA Plays a role of sponsoring and supporting on several educational programs to encourage students and professionals to explore the field of complex additive systems analysis. Currently, it offers several programmes such as

Stakeholder	Role
	internships; this is in response to Through its activities it responds to NSDP outcome 4.2 and both the ERRP and its Skills Strategy intervention 3. Through these programmes it offers, ICASA is committed to improving critical thinking and analytical skills in the intelligence community by design through the development of high-quality, cutting-edge training. Programmers that undergo the training after finishing are able to develop state-of-the-art products of innovation.
	Institute of Information Technology Professionals South Africa (IITPSA): IITPSA actively engages with commerce, industry, and government in order to influence policy formulation on behalf of both its own members and other stakeholders. The Society also encourages the growth of professionalism and the responsible and professional use of Information and Communications Technology throughout the South African economy. The IITPSA responds to the NSDP outcome 4.2 and both the ERRP and its Skills Strategy intervention 3 and 10 by working together with other interested stakeholders to accredit university programmes with computing content at South African Universities
Government Departments	
	Department of Communications & Digital Technologies (DCDT) The DCDT collaborates with universities and other partners such as IITPSA, ITA, ICASA and other relevant industry professional bodies to develop ICT policies and legislations that advance the South African economy. The department has special partnerships with, amongst others, civil society organisations, particularly those that have a major interest in skills building and achieving race, gender and disability equity. Through its activities, it responds to NSDP outcome 4.2 and both the ERRP and its Skills Strategy intervention 3 and 10.
Educational Institutions	
	Universities: Universities in partnership with the SETA play an important role in ensuring that learners from disadvantaged communities are afforded the same opportunities as their counterparts from affluent backgrounds. These partnerships improve the supply of skilled people in the sector and afford learners from previously disadvantaged backgrounds opportunities to acquire high-level skills critical to industry development and growth, thus creating employment for those graduates. These partnerships are in response to NSDP outcome 4.2., both the ERRP and its Skills Strategy intervention 3, 4 and 10. **TVET Colleges:** Technical and Vocational and Education and Training (TVET) play an important role in implementing and promoting sustainable development. They are major suppliers of workforce that is already dealing with sustainable issues. They are key role players in providing training that focuses on practical skills, they offer adaptable programmes. Their role and partnership with the SETA is in response to the NSDP outcome 7 on promoting the growth of the public college system. Moreover, the partnership role between the SETA and TVET colleges also aligns to intervention 10 of both the ERRP and its Skills Strategy.

1.4 Economic performance

As a key element of the Economic Reconstruction and Recovery Plan (ERRP), the MICT sector is crucial to the economic recovery of the country. With intensifying digitalisation and datafication of the economy, the MICT sector remains a core component of the digital economy. In the 2021/22 fourth quarter, the transport, storage and communication industry increased by 2, 2%, contributing 0, 2 of a percentage point to Gross Domestic Product (GDP). Increased economic activity was reported for land transport and transport support services. The figure is a depiction of how the MICT sector (transport, storage and communication industry) is performing against the other sectors.

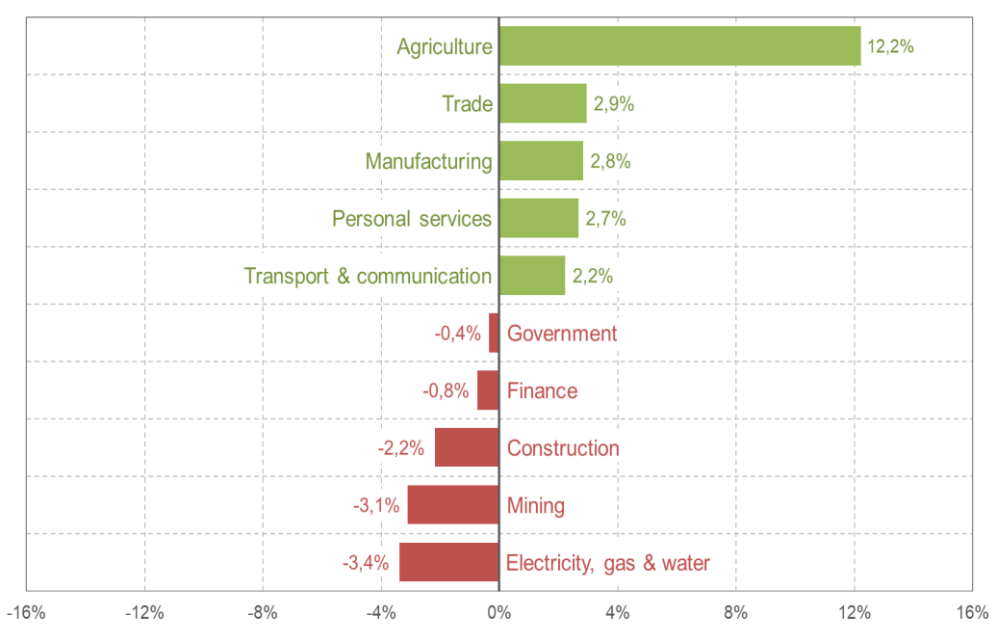
Figure 1: Sector Contribution to GDP



Source: Gross Domestic Product (GDP), 4th Quarter 2021 (Stats')

As mentioned previously, the MICT sector is classified in the Manufacturing sector asThis is per the SIC codes listed in table 1. Furthermore, the below shows the Transport, storage and communication sector being rated in the top 5 of economic sectors that recorded GDP growth. The South Africa's MICT sector is set to chart a strong recovery in 2022, but structural changes may affect growth in various sub-sectors.

Figure 2: Top five industries that recorded GDP growth rate



Source: Gross Domestic Product (GDP), 4th Quarter 2021 (Stats')

1.4.1 Advertising

In terms of the economic outlook of the advertising subsector, the South African internet advertising revenue is set to reach R9.4 billion by end of 2022, with search revenue making up 75% of said revenue (an increase from 66% projected in 2017). Moreover, online advertising will surpass traditional models by 2022; the South African television landscape will still have a solid conventional focus. However, since South African markets tend to follow

global patterns, online advertising will far outpace TV advertising in terms of growth. Consumers will go where the content is, media owners will look to invest in making sure that their platforms are as engaging as possible and offer a variety of strong content. Moreover, the Covid-19 pandemic has led to advertising cuts, smaller print-runs and distribution challenges. Online advertising goes mostly to tech giants such as Facebook, Google and YouTube. The future looks even tougher as internet advertising spent outside the duopoly Facebook/Google is predicted to fall by 7.2% (Rumney et al., 2020).

1.4.2 Film and Electronic Media

Research shows that South Africans have high demands, with consumers pushing for ethics and innovation. As screen time is at an all-time high, it has been observed that by the end of 2022 to 2023, there will be more South African-focused content on our screens. With regards to the box office, a recovery in attendance and rising ticket prices, along with improved offerings, will result in modest growth at a 3.5% CAGR through 2022. There is no doubt that the South African audiences are willing to pay more to watch big-budget movies. In addition to this, consumer income in South Africa is expected to grow at a robust CAGR of 7.6% through 2022, to R135.7-billion in 202. Digital revenue alone will add approximately R41.3-billion. Moreover, assessing the Covid-19 impact, the film industry financing has become more expensive and riskier, due to increased health security and insurance costs. Small operators are increasingly finding it harder to raise capital for their productions. The unintended consequences include reduced diversity of film content, especially in South Africa where indigenous content has often struggled to attract funding for production (NFVF, 2021).

1.4.3 Information Technology

The pandemic has given an enormous boost to digital transformation, and the IT industry. Supply chain issues, chip shortages, an upsurge in cybercrime, all had a major impact on South African companies and the way they work. Ratings of South Africa's IT industry compared to top global performers on network readiness to optimise the use of ICTs, ICT infrastructure investment, economic growth and digital competitiveness show that South Africa's rankings are low compared to global economies. However, they are rated highest on the African continent. It is predicted that there are more than 20 000 companies in the ICT sector that contributes about 8% to South Africa’s GDP. South Africa’s IT sector is generally robust, has access to the latest technologies and methodologies and underpins the operations of most other sectors of the economy. However, there is a significant shortage of specialised skills in the sector (Business wire, 2022).

1.4.4 Electronics

Furthermore, South Africa has a diverse electronics sector that ranges from electrical machinery, household appliances, and telecommunications equipment to consumer electronics. According to StatsSA, the country manufactures more than R90bn worth of electro technical equipment per year. South Africa has both world-class capabilities in the industrial electronics industry as well as in consumer electronics. Overall, electronics manufacturing contributes 4% to South Africa’s total manufacturing output. In dollars, the South African Electronics revenue is projected to reach US$2.61bn in 2022, showing an annual growth rate (CAGR 2022-2025) of 22.33%, resulting in a projected market volume of US$4.77bn by 2025 (MarketLine, 2022).

1.4.5 Telecommunications

The South Africa's ICT sector continues to demonstrate signs of growth, recording R243.6 billion in revenue in 2021, up from R243 billion in 2020. This represents an overall increase of 0.3% in total sector revenue, according to the 2022 State of the ICT Sector in SA report. The broadcasting services revenue increased by 2.8%, from R35 billion in 2020 to R36 billion in 2021. Postal services revenue increased by 11.1%, from R5.9 billion in 2020 to R6.6 billion in 2021. Moreover, the telecoms services, which is often dominated, experienced a slight decline, the revenue decreased by 0.5%, from R201 billion in 2020 to R200 billion in 2021. However, the telecoms sector still generated more revenue than the broadcasting and postal services sectors combined. The revenue for the three sectors increased by 4.3% for a period of seven years.

1.4.6 How COVID-19 has ushered in the Fourth Industrial Revolution in South Africa

The COVID-19 pandemic resulted in changes in South Africa's private sector as well as 4IR technologies are being implemented to varying degrees depending on the firms' capabilities. Those that could not deploy these technologies have either shut down or had to close temporarily. Although digitization and automation already began developing during the Third Industrial Revolution, the sector is now witnessing an increasing integration of such technologies in how people should work and live.

Overall, the South African government, industry and universities have weathered the storm unleashed by COVID-19 quite well. The responses to the pandemic's disruptions are just the beginning of South Africa's experience with 4IR. Yet the interventions developed by universities in collaboration with the government and industry might not be sustainable when looking at South Africa's current innovation and industrial policies. The country's research intensity (gross expenditure on R&D as a percentage of its gross domestic product (GDP)) hovers at around 0.7 per cent. This figure is much lower compared to countries that are already successfully deploying 4IR technologies, e.g. the UAE (1.3%), Brazil (1.26%), China (2.19%), Japan (3.36%), the Republic of Korea (4.81%) and Israel (4.95%) (UNTAD, 2021).

1.5 Employer profile

As of 2022, the MICT Sector is made up of 32 985 employers, which are spread across five Sub-sectors, this represents a 7% decrease from the 35 569 in the previous financial year. From the current employer base, only 8 896 employers are paying levies, this is a slight decline from 9 093 compared to the previous financial year.

1.5.1 Sub-sector distribution

Furthermore, in terms of the data analysed the Information Technology Sub-Sector is the largest sub-sector, accounting for 57% of employers. This is followed by the Telecommunications sub-sector with 15%, closely followed by the Electronics sub-sector accounting for 13%. The advertising sub-sector has slightly declined compared to the previous financial year, it has fallen from 12% to 8%, the same applies to the Film and Electronic Media declining from 11% to 7% in the new financial year. The details of these trends will be detailed later in the research, below is a graphical illustration of this trend.

Figure 3: Employers (Levy & Non-Levy Paying)

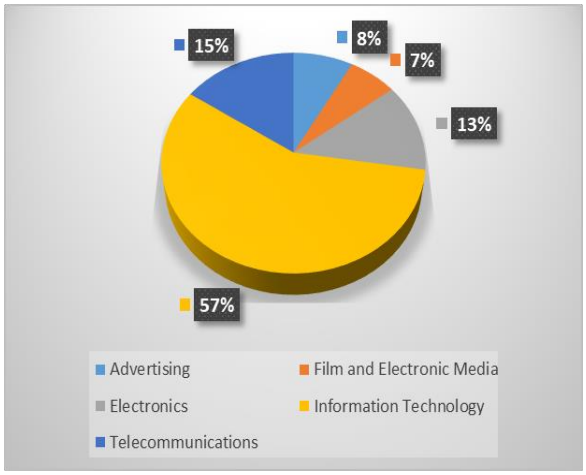
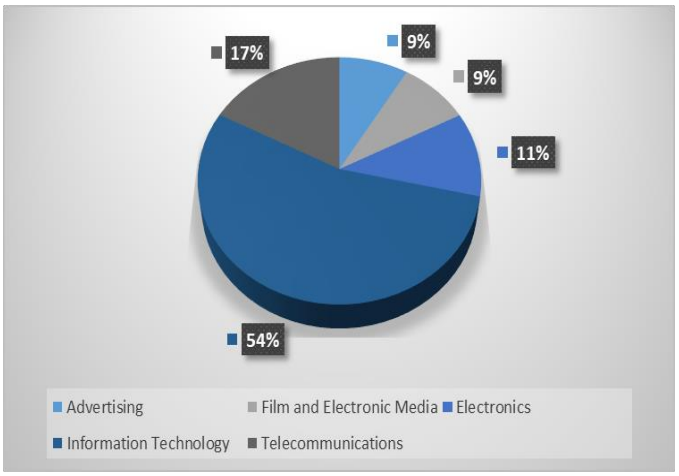


Figure 4: Employers (Levy Paying)



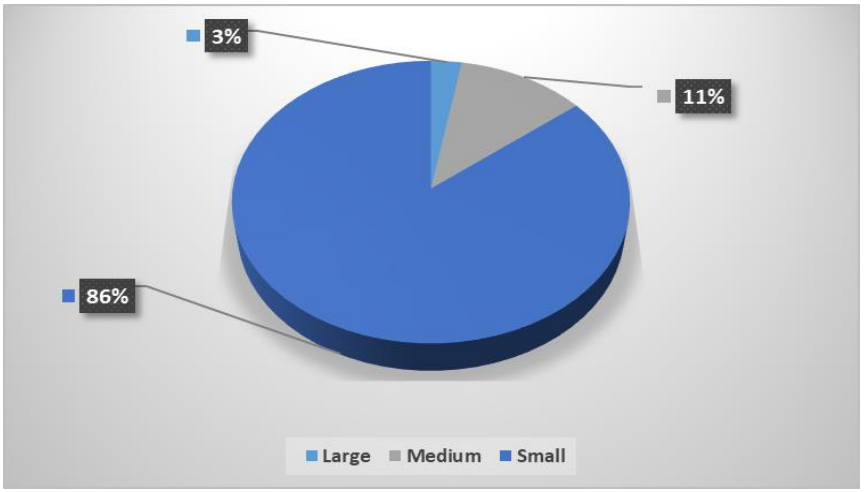
Source: MICT SETA Levy Huge File, 2022

As per the illustration above, a significant number of levy payers are located within the Information Technology (67%) sub-sector, 17% in Tele-communications, 7% Electronics, 5% advertising. Lastly, the Film and Electronic Media contributes the least with only 4%.

1.5.2 Distribution by size

The vast majority (86%) of employers in the sector are small businesses employing below 50 employees, 11% medium and 3% are large businesses employing above 50 employees.

Figure 5: Distribution by size

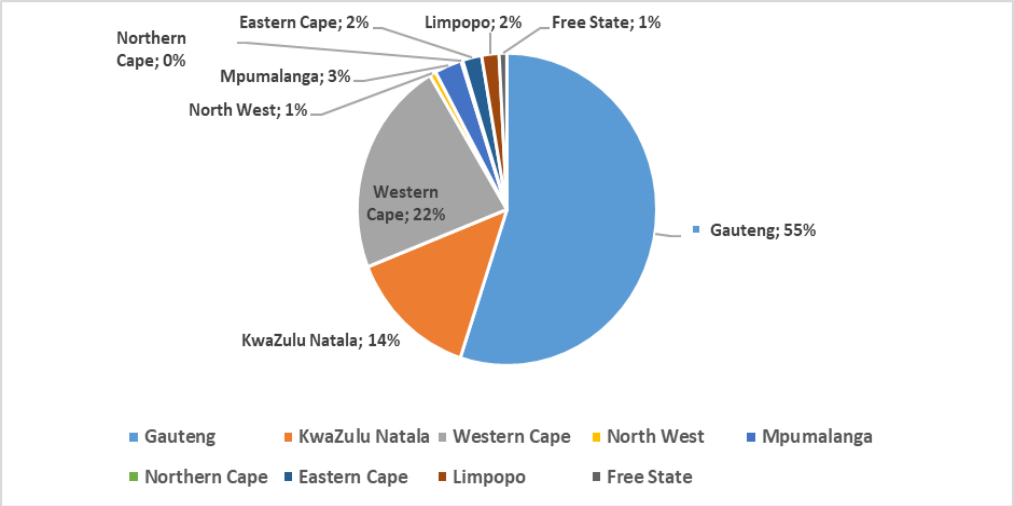


Source: MICT SETA Levy Huge File, 2022

1.5.3 Distribution by province

It is important to assess the distribution by province, figure 11 below reflects the number of employers per province. Gauteng hosts the largest proportion of employers across the five sub-sectors followed by the Western Cape with 22%. About 14% of employers are based in Kwa Zulu Natal while 3% are in Mpumalanga. Moreover, the Eastern Cape and Limpopo each account 2%, while Free State and the North-west account 1% each; with Northern Cape have a 0% presence.

Figure 6: Employer Distribution by Province

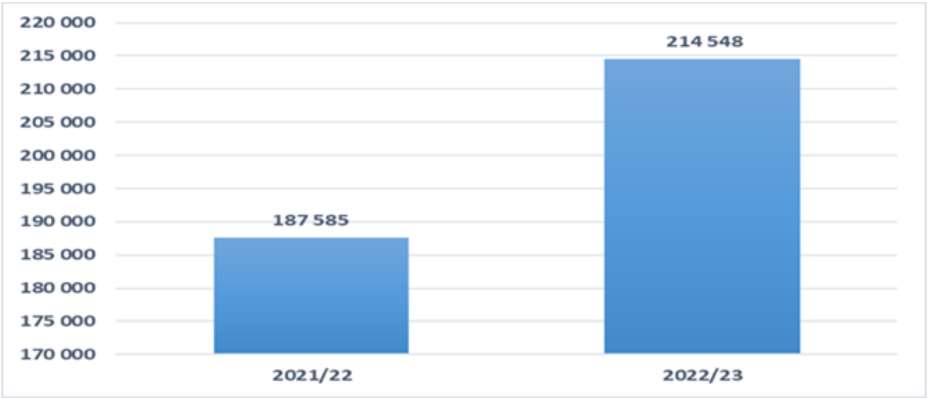


Source: MICT SETA Levy Huge File, 2022

1.6 Labour Market Profile

It is important to understand the dynamics around employment within the MICT sector; this section sheds light on the new developments in the labour market between 2020, 2021 and 2022. As shown the figure below, the MICT sector experienced an increase in the number of employees recording 228 990 in 2022.

Figure 7: Employment in the MICT sector



Source: MICT SETA Levy Huge File, 2022

1.6.1 Sub-sector distribution of employees

The largest proportion (54%) of employees are working in the Information and Technology sub-sector, followed by 28% working in the Tele-communications, 9% in the electronics subsector. The sub-sectors with the lowest number of employees is Film, and Electronic Media accounting for 5%, and Advertising with 4%.

Table 4: Sub-sector distribution of employees

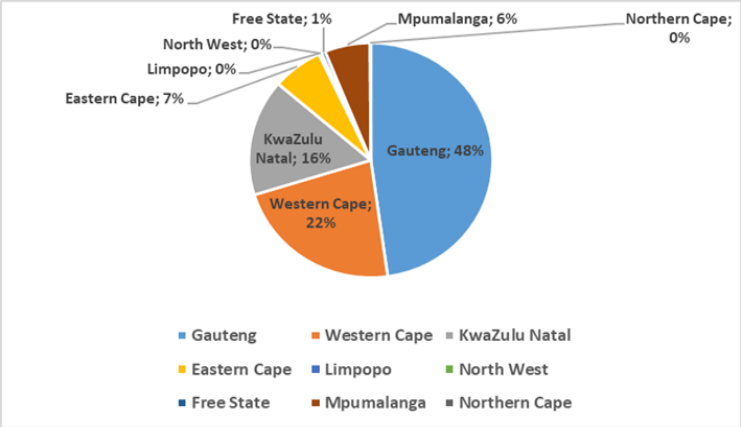
Sub-Sector	Number of employees	Number of employees in %
Advertising	8 964	4%
Film and Electronic Media	10 968	5%
Electronics	19 522	9%
Information Technology	115 003	54%
Telecommunications	60 091	28%

Source: MICT SETA Levy Huge File, 2022

1.6.2 Employee Geographic Distribution

The figure below shows the spread of all employees across the provinces. The province with the largest number of employees is Gauteng (48%), followed by the Western Cape (22%) and KwaZulu-Natal (16%). These three provinces account for the majority of employees in the sector. Moreover, Mpumalanga with (6%), the Free State accounting (1%). Provinces with least number of employees are Northern Cape, North West and Limpopo each having a (0%) representation.

Figure 8: Provincial Distribution

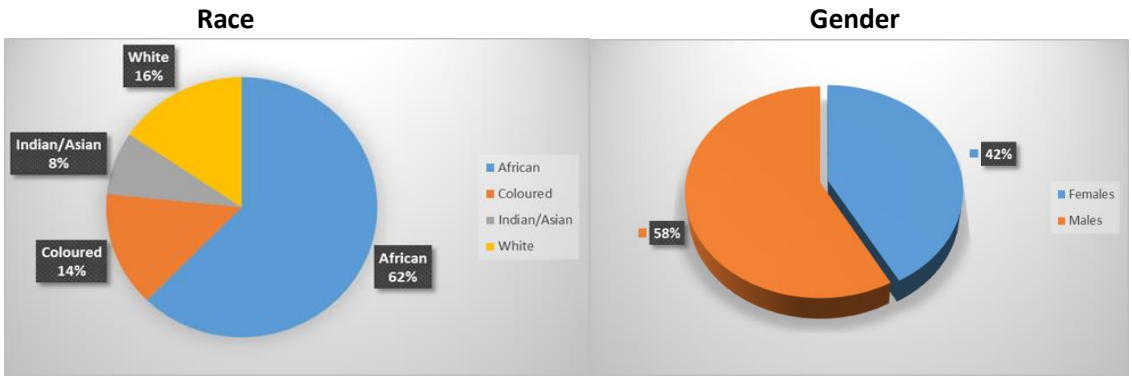


Source: MICT SETA Levy Huge File, 2022

1.6.3 Race and Gender Profiles

The highest proportion of people employed in the sector are African (62%), followed by White (16%). These two race categories make up just over three quarters (76%) of the total number of employees in the MICT sector. In addition, Coloured employees account for 14% and Indian/Asian employees account for 8% of employees in the sector.

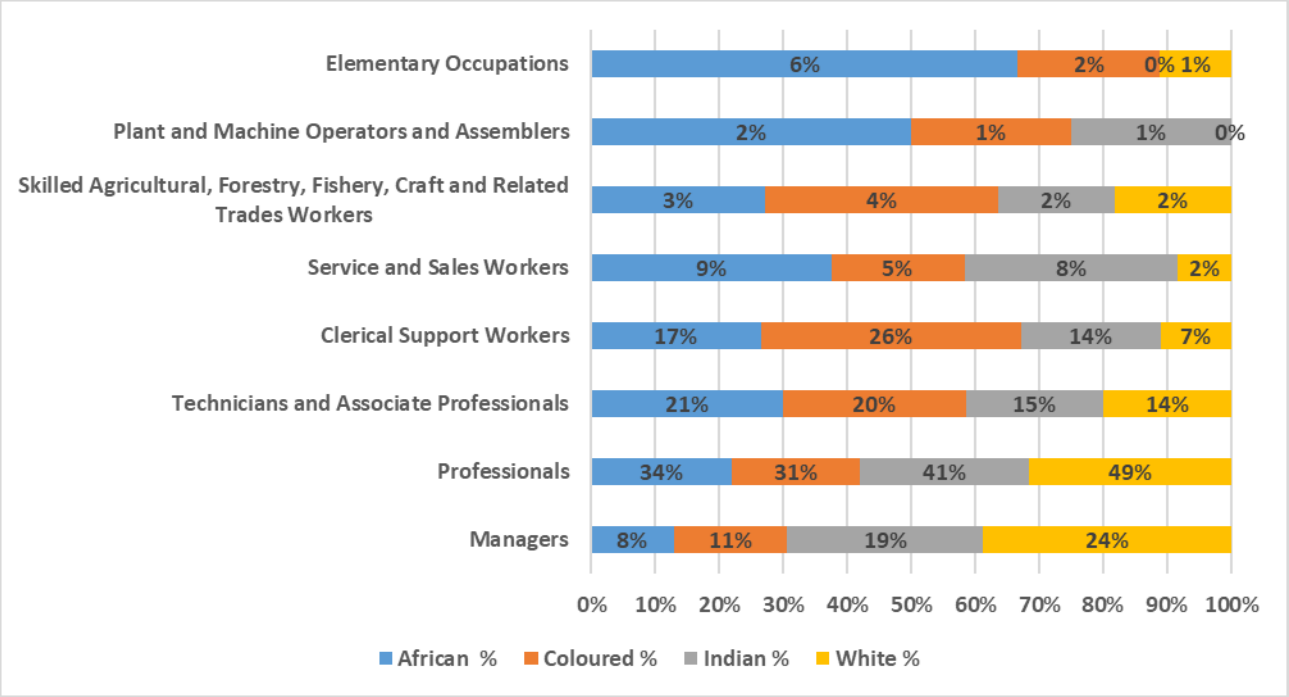
Figure 9: Race and Gender Profiles of Employees



Source: MICT SETA WSP/ATR, 2022

There are more male employees (58%) in the sector than females (42%). These results have remained similar over the past 3 years. Whilst Africans make up the largest employee group by race, they still occupy relatively lower positions compared to other race groups and enjoy less representation at senior level. The figure below demonstrates that only 8% of African employees occupy managerial positions (with a 1% increase from 2021) and 34% occupy professional positions (an increase of 1 % from last year).

Figure 10: Race Profile by OFO Major Group



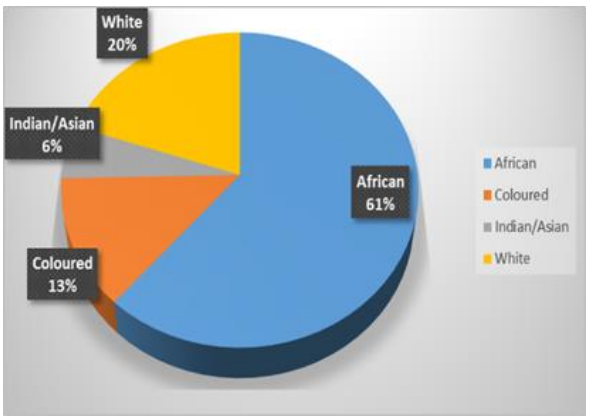
Source: MICT SETA WSP/ATR, 2022

1.6.4 Disability and Age Profiles

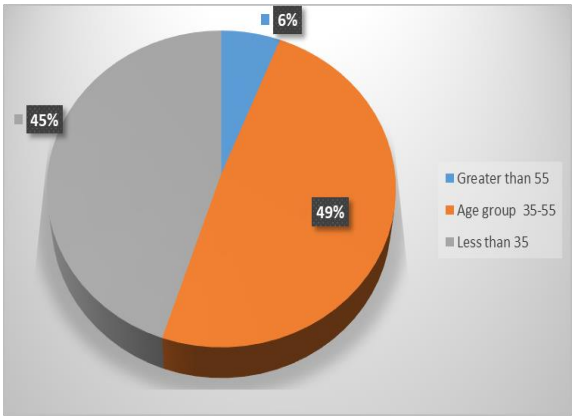
Figure 7 below shows that within the MICT sector; most of the employees with disabilities are African at 61%. This is followed by White employees (20%) and Coloured employees (13%). The Indian/Asian category only accounts for 6% of employees with disabilities within the MICT sector.

Figure 11: Disability and Age Profiles of Employees

Employees with disabilities



Employees by Age



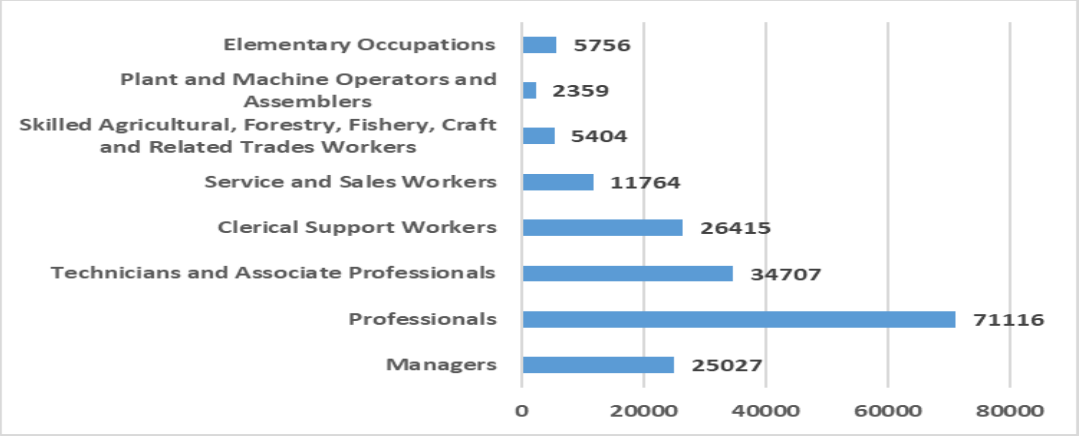
Source: MICT SETA WSP/ATR, 2022

In addition, younger employees dominate employment in the MICT sector; this has been the same since 2021 with only 6% of people employed in the MICT sector are older than 55 years of age. The remaining 94% of employees are classified as follows, 45% are younger than 35 years of age, and 49% are between the ages of 35 and 55. This is a very young and balanced workforce which will contribute positively to succession planning and employment of the youth.

1.6.5 Occupational Segmentation

Understanding the occupational divide of employees in a sector is important; specifically, to determine where skills development interventions are most required. The figure below shows that Professionals are the dominant occupational category in the MICT sector. Technicians and Associate Professionals, Clerical Support Workers, and Managers follow this. Employment within Managers, Professionals, and Associate Professionals' categories typically require a degree, diploma, or NQF level 6 qualifications as an entry. As compared to other economic sectors, which employ more people in elementary occupations, this sector, reflects the converse and could be attributed to the professional services orientation of offerings by employers in the sector, figure 8 below shows this breakdown:

Figure 12: Occupations by OFO major Groups



Source: MICT SETA WSP/ATR, 2022

1.7 Conclusion

In conclusion, this section was able to shed some light on the sector profile of the Media, Information and Communication Technologies (MICT) sector, looking at the size, scope of coverage, key role players, economic performance, employer and labour market profile. From the above, it is clear that there is a fluctuation in the sector, the MICT SETA employer base decreased by 7% when compared to 2021 numbers. As of 2022, the MICT Sector is made up of 32 985 employers, while in the previous financial year it was 35 569. The fluctuation is also noted with the number of employers that are paying levies to the MICT SETA, as of 2022, 8,896 employers are paying levies, this is a slight decline from 9 093 compared to the previous financial year. Furthermore, in the 2021/22 fourth quarter, the transport, storage and communication industry increased by 2,2%, contributing 0,2 of a percentage point to Gross Domestic Product (GDP). This is clear that even though there is a fluctuation of numbers in terms of employers participating in the levy system, the MICT sector is positively growing and it is currently featured in the top five performing industries as illustrated in figure 2 above.

Chapter 2: Key Skills Change Drivers

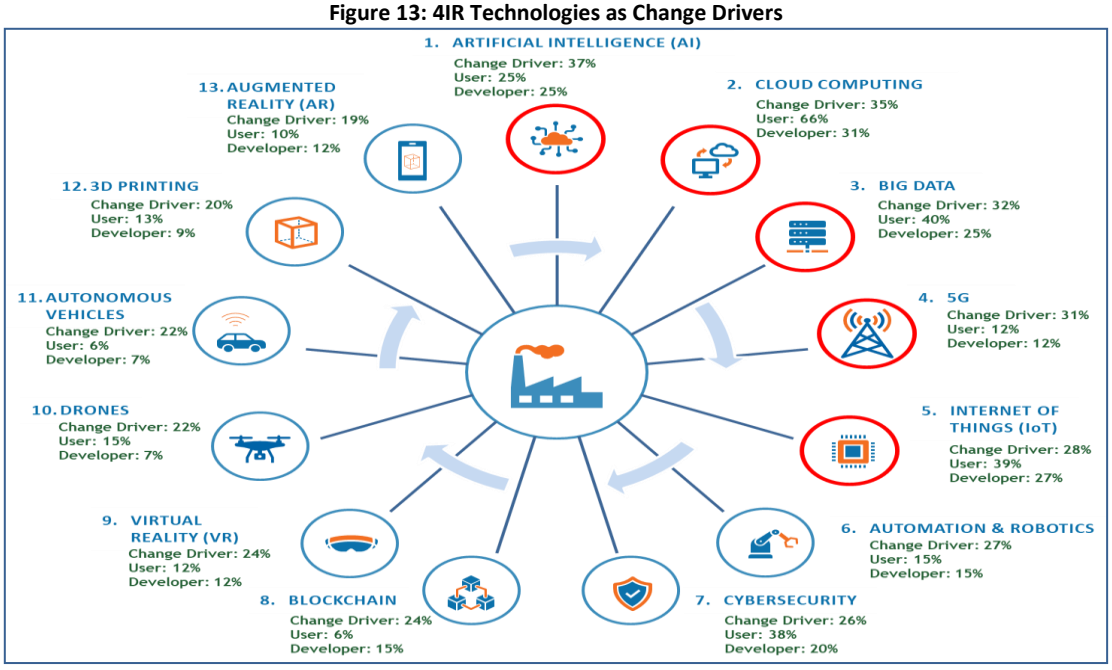
2.1 Introduction

This chapter examines the factors influencing the demand and supply of skills in the MICT sector. The chapter draws on a review of current literature, the employer survey, and interviews with various stakeholders across all sub-sectors within the MICT sector and focus groups. The aim of this chapter is to identify the skills change drivers and national policies that may impact skills demand and supply. It identifies five change drivers, outlining how these change drivers may or are already impacting aspects of skills demand and supply in the MICT sector.

2.2 Factors Affecting Skills Demand and Supply

A change driver is a factor affecting change in the sector and causing it to develop in a positive or negative way. The MICTSETA has identified five change drivers linked to 4IR technologies. The introduction of 4IR technologies will alter the way communities live and work through a fusion of technologies. The Covid-19 pandemic has accelerated the use of digital technologies and has revealed the urgency with which the sector must transform with regard to both skills demand and supply. Key technologies such as 5G and Cloud Computing have become important as many South Africans are working remotely using digital platforms. With South Africa striving towards being an E-Skilled economy, as outlined in the National Development Plan Vision 2030, key change drivers that affect the MICT sector and socio-economic systems are identified here.

Figure 13: 4IR Technologies as Change Drivers



Source: MICT SETA SSP Survey, 2020

The diagram above demonstrates the presence and influence of 4IR technologies in the MICT sector, ranked by "Change Driver" (the percentage of stakeholders who view the technology as a change driver). "User" indicates the percentage of stakeholders who use the 4IR technology in operations and "Developer" indicates the percentage of stakeholders who develop products in the 4IR technology. Circled in red in the diagram are the five 4IR

technologies which ranked highest for driving change in the sector: Artificial Intelligence, Cloud Computing, Big Data, 5G and the Internet of Things. These are discussed below.

2.2.1 4IR Technologies as Change Drivers

2.2.1.1 Artificial Intelligence

"Artificial Intelligence" (AI) has been identified as a key change driver in the MICT sector. It refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. The term may also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving. The ideal characteristic of AI is its ability to rationalise and take actions that have the best chance of achieving a specific goal (Investopedia, Artificial Intelligence (AI), 2020). Nearly half (46%) of South African companies are actively piloting AI within their organisations. Businesses are experimenting with a range of different technologies, including Chatbots, Robotic Process Automation and Advanced Analytics. AI technologies most useful to 67% of South African organisations include machine learning, smart robotics and biometrics (BusinessTech, 2019). The level of skill required by AI is advanced and needs to be financially and technically supported by the industry and government. Other examples of AI relevant to the MICT sector include virtual agents such as "chatbots" and recommendation systems. Ultimately, South Africa still lags behind in terms of improving the quality of education, research, innovation and infrastructure required to create an enabling environment for AI adoption (Accenture South Africa, 2017).

2.2.1.2 Cloud Computing

"Cloud Computing" has emerged as a key driver of digital transformation in South Africa. It is described as the delivery of different services through the Internet. These services include tools and applications such as data storage, servers, databases, networking, and software (Investopedia, Cloud Computing, 2019). It is a disruptive delivery model of Information Technology (IT) services which is based on a business model that is flexible and on-demand. South African organisations are consuming significant amounts of cloud services, including software as a service, platform as a service and infrastructure as a service (Gartner, 2019).

The rise of cloud computing puts pressure on skills development, more so now during the Covid-19 pandemic, as more companies are becoming dependent on cloud computing services. Individuals with the skills to design and deploy such technology are in high demand and often poached not only in South Africa, but by global companies. A study by the International Data Corporation (IDC) revealed that more than 90% of South African organisations are either already engaged in developing these skills or in the process of planning for the development of such skills (Nebula, 2018).

2.2.1.23 Big Data Analytics

"Big data", another 4IR change driver identified in the MICT sector, refers to the large, diverse sets of information that grow at ever-increasing rates. It encompasses the volume of information, the velocity or speed at which it is created and collected, and the variety or scope of the data points being covered. Big data often comes from multiple sources and arrives in a variety of formats (Investopedia, 2019). Properly managing 'Big data' is now an important assignment for many organisations, especially with the rapid uptake of 4IR technologies. However, many organisations are still unaware of the opportunities and insights that big data holds for them.

Big data has grown by more than 50% since 2010, which has in turn enabled AI uptake (Accenture, 2018). In South Africa, many organisations have now realised the potential of 'Big Data and Analytics', however, limited IT budgets and the dearth of skilled resources impede its adoption. Furthermore, organisations are now developing skills internally by sharing resources, undertaking training programmes, and partnering with vendors. This plays a crucial role for organisations to establish a data-driven culture and encourage knowledge sharing to develop internal capabilities (IDC, 2017). The demand for highly qualified big data analysts and artificial intelligence professionals is outperforming supply to the point where it can take many months to fill vacancies (IOL, 2017). This is due to big data analytics being a relatively new field, and the existing workforce is having to retrain in work with large, sophisticated datasets. Larger companies swiftly recruit new graduates, thus, making it difficult for smaller MICT companies to keep up with the changing labour market.

2.2.1.4 5G

The fifth-generation wireless technology ("5G") has been identified as a key driver of network transformation in South Africa. It has been associated with the need for a greater and wider adoption of emerging technologies. This technology is expected to be more effective, more efficient and as much as 100 times faster than its predecessor, 4G (Corfe, 2018). As capacity demands driven by growing internet data traffic increases – further emphasised by the current world of remote work during the Covid-19 pandemic – 5G will significantly speed up data communication (Statista, 2020). 5G will also advance machine-based, IoT-centric functionalities, for example, in automotive for autonomous and self-driving cars. While 5G is going to be a big enabler for economies and will drive efficiency for many complex operations, much needs to be done right before 5G can be rolled out (Connecting Africa, 2020). Governments need to find ways to mitigate the risk of being left behind as technology sweeps the rest of the world into 5G and beyond. Companies currently struggle to attract and retain staff with scarce skills in hard-to-fill occupations (i.e. computer network and systems engineers, cybersecurity specialists, and those with cloud computing skills), and 5G will make this task even more difficult.

2.2.1.6 Internet of Things (IoT)

The "Internet of Things' (IoT) is another 4IR change driver identified in the MICT sector. It refers to a network comprised of physical objects capable of gathering and sharing electronic information. IoT includes a wide variety of "smart" devices, from industrial machines that transmit data about the production process to sensors that track information about the human body (Investopedia, The Internet of Things (IoT), 2020). IoT allows for remote management or monitoring of connected devices. This information can then be supplied to an AI platform, which may be tasked with responding appropriately based on data received. IoT will continue to grow as cloud computing and cloud app offerings expand in the coming years. IoT thus links virtually all of 4IR change drivers, further expanding the impact of 4IR. There is limited recognition of emerging 4IR occupations in the OFO, thus limiting funding and formalised training opportunities in "new-age" fields such as IoT. In consultations, stakeholders expressed a need for more "IoT specialists". However, currently no such occupation exists in the strictest sense, instead IoT specialists may emerge as specialisations of existing fields such as software development and design.

2.3 Skills Implications of Change Drivers

Change drivers affect how businesses operate and survive into the future. Thus, new ways of doing things, including skills training, are required to exploit new opportunities in the market that emerge as a result of 4IR. Furthermore, the Covid-19 pandemic has spurred on the uptake of 4IR technologies and the relevant skills that are required to enable it. The above-mentioned change drivers call for the continued development of technologies and skills. Whilst it may be true that 4IR may invalidate jobs that place emphasis on routine or menial tasks, it also presents an opportunity for the creation and/or advancement of jobs. To this effect, South African organisations are increasingly investing in 4IR technologies. However, funding, formalised training and overall development of emerging occupations is hampered by limited recognition of emerging 4IR occupations in the OFO such as an IoT specialist within the IoT realm, cloud architect for cloud computing and AI specialist within artificial intelligence. To this effect, the SETA is actively engaged with stakeholders such as the QCTO, training providers and industry in the development of new qualifications and improvement of existing qualifications to meet 4IR demands.

Future Convergence technologies

It is also very important to focus on the future and provide a forecast of technological changes that will impact on the future and assist in mapping the type of workforce we will need. It is reported that by 2030, ten powerful converging technologies will entirely transform how people think, work and live. These technologies will have an impact on the type of skills the SETA, companies and training providers are able to invest in and develop. It will also have an impact on qualification development, creating an environment and space where both long term degree qualifications and skills programmes are relevant and needed by the sector. These converging technologies are listed below:

Table 5: converging technologies

1. **Artificial intelligence (AI)-** software algorithms that automate complex decision making tasks to mimic human thought processes and senses. This will exponentially speed up every aspect of human and machine interaction.
2. **Augmented reality (AR**)- is a visual or audio overlay on the physical world that uses contextualised digital information to augment the user's real-world view.
3. **Virtual Reality (VR)-** an interface in which viewers can use special equipment to interact with a three-dimensional computer-generated simulation in realistic ways. This will transform learning and education, entertainment, medicine and more.
4. **3D Printing-** a machine that creates three-dimensional objects based on digital models by layering or "printing" successive layers of materials. This technology will be used to design everything from homes, replacement body parts etc.
5. **Internet of Things (IoT)-** a network of physical objects embedded with sensors, software, network connectivity and computing capability, and be able to collect, exchange and act on data. This will minimise and simplify everyday decision making.
6. **Robotics**- the use of machines with enhanced sensing, control and intelligence to automate, augment or assist human activities. This will decrease physical, manual and basic cognitive skill jobs and transform multiple industries.
7. **Quantum Computing**- a new generation of technology with a type of computer 158 million times faster than the most sophisticated supercomputer. This computer will do in four minutes what it would take a traditional supercomputer 10 000 years to accomplish.
8. **Gene Editing**- a group of technologies that give scientists the ability to change an organism's DNA by allowing genetic material to be added, removed, or altered at particular locations in the genome. This is expected to extend human life span and improve health and quality of life.
9. **Materials Science**- the discovery and development of new materials accelerated by the Materials Genome Initiative. It allows scientists to create new elements and better products, transforming many aspects of everyday life.
10. **Blockchain Technology**- a distributed digital ledger that uses software algorithms to record and confirm transactions with reliability and anonymity. It creates the infrastructure for web3 and transforms the internet, returning power and ownership to individuals.

2.4 Policy Frameworks Affecting Skills Demand and Supply

South Africa's development trajectory is underpinned by the National Development Plan (NDP), which challenges the country to achieve sustained levels of economic growth through to 2030. The MICT sector is an integral part of South African society and is impacted by various policy interventions, some of which are outlined in the table below.

Table 6: MICT sector Policy interventions

Planning Priority	*Skills Implications*	*Measures to support National Strategies and Plans*
National Development Plan (NDP)	The NDP Vision 2030 (November 2011) identifies as one of its core priorities, reducing unemployment to 6% by 2030. Other objectives include eradicating poverty and reducing inequality. In meeting the objectives of the plan, the following are identified: A larger, more effective innovation system closely aligned with firms that operate in sectors consistent with the growth strategy; support for small businesses through better coordination of relevant agencies, development of finance institutions, and public and private incubators; an expanded skills base through better education and vocational training; identify business incubation for SMEs generally and the expansion of business services in particular as priority actions for growth and development.	The MICT sector will contribute towards the National System of Innovation and will thus, play a role in supporting its effectiveness and efficiency. Additionally, the SETAs strategic plan emphasises provision of financial and non-financial support to SMMEs, NGOs, NLPEs, CBOs. Partnerships with stakeholders like SEDA to encourage incubation would play a key role in achieving sustainability and growth of small businesses in the sector.
Medium Term Strategic Framework (MTSF) 2019-2024	The outcomes for 2019 - 2024 are published as annexures to the MTSF: it is premised on achieving 5 outputs leading to the achievement of 'Outcome 5: A Skilled and Capable Workforce to Support an Inclusive Growth Path'. This is part of a comprehensive plan for implementing the NDP.	The MICT SETA is committed to implementing the 4 sub-outcomes through strategic partnerships. These outcomes are: A credible institutional mechanism for labour market and skills planning; Increase access and success in programmes leading to intermediate and high-level learning; Increase access and efficiency of high-level occupationally directed programmes in needed areas; and Increase access to occupationally directed programmes in needed areas and thereby expand the availability of intermediate level skills with a special focus on artisan skills.
White Paper on Post Schooling Education and Training (WP-PSET)	The White Paper envisages an expanded, effective, and integrated post-school system in South Africa. It is premised on achieving: Expanded access to TVET and University education; Establishment of community colleges and skills centres, to mainstream vocational education and training; Establishment of a national skills planning mechanism within DHET; A strengthened NSA to perform a Monitoring and Evaluation role in the skills system; and Opening up workplaces to give more youth access to work integrated learning opportunities. The White Paper calls for a restructuring of the skills system and an efficient skills development system where strategic plans form the foundation of the service level agreements that SETAs sign with DHET.	The MICT SETA will ensure expanded access to TVET and University education through bursaries. This will directly contribute to one of the premises of the White Paper to expand access to TVET and University education.
National Skills Development Plan (NSDP)	The NSDP is informed by and consolidates the NDP, NGP, WP-PSET and IPAP and seeks to "improve access to occupations in high demand and priority skills aligned to supporting economic growth, employment creation and social development whilst also seeking to address systemic considerations" (DHET, 2019). A call for increased emphasis on improving "both basic skills and technical skills, with a specific focus on 'historically disadvantaged individuals'" is made and eight outcomes are presented to this effect.	In addressing the NSDP and new SETA landscape, MICT SETA has incorporated and aligned the outcomes into its Recommended Priority Actions, thus ensuring continued relevance and responsiveness to key issues. Specifically, the MICT SETA responds to the NSDP outcomes by determining and addressing occupations in high demand, strengthening TVETs, CETs and work integrated learning (WIL), increasing the number of workers trained and supported and supporting SMMEs, Cooperatives and rural learners.
New Growth Path (NGP)	One of the NGP focus areas focuses on meeting the shortages in important skills for the economy and sets targets for: the training of engineers underpinned by improved science and mathematics education and expanded bridging programmes for HE courses; improved skills for workers through the provision of certificated programmes facilitated, financed and managed by SETAs; a TVET college system that produces higher graduation rates; and provision of ICT skills in schooling, adult education and public service.	The MICT SETA in line with the NGP places emphasis on the development of ICT skills, as well as the increased supply of highly skilled labour in the economy.

Planning Priority	*Skills Implications*	*Measures to support National Strategies and Plans*
Industrial Policy Action Plan (IPAP)	The IPAP has identified priority sectors which it aims to support for development in the country. Projects such as a South African garment-sizing database using three-dimensional (3-D) body-scanner technology, and computer-aided design using 3-D scanner data were highlighted.	As stakeholders in the sector start to engage in these programmes, the MICT SETA would be a skills development partner, ensuring that the requisite skills are being developed.
National Integrated ICT Policy White Paper	The National Integrated ICT Policy White Paper replaces all the previous white papers on telecommunication (1996) and postal services (1998). The policy outlines the plan for the rollout of broadband services across the country and directs the allocation of spectrum to all licensed operators, new entrants and SMMEs. The White Paper also covers interventions to boost the manufacturing and software development sectors particularly through advancing affordable devices and innovative services and applications relevant to the South African context. The direct link with the MICT sector include: Facilitate upgrade of manufacturing facilities and capabilities for domestic production and growth of exports; Commercialisation of technologies; Skills development for business process outsourcing sector.	The MICT SETA seeks to support this planning priority through managing supply-side issues and infrastructure roll-out, including supporting work done in scarce resources such as spectrum and interventions to facilitate open access and rapid deployment of infrastructure. The SETA commits itself to facilitating multi-stakeholder participation in the drive for an inclusive digital economy.
Economic Reconstruction and Recovery Plan and Skills Strategy	The main skills problems outlined in the Economic Reconstruction and Recovery Plan (ERRP) are a skills mismatch in the South African labour market; the increase in the use of technology which will result in many semi-skilled and unskilled people being left behind; and there is a need to build a skills base for the economy, industries and jobs of the future. The skills strategy was developed because of the urgency for a well-coordinated strategy of skills development to support both the management of Covid-19 pandemic and the economic and social recovery. Short-term in nature, the strategy is designed to ensure that the skills system is strengthened with its implementation. It also aims to enable the immediate rollout of skills development interventions to make sure that the ERRP is supported. The strategy will focus on interventions that allows for large numbers of youth to access opportunities in the short-term. The strategy contains ten interventions to ensure the effective implementation of the ERRP. The SETAs, including the MICT SETA, finds expression in six of the interventions.	The MICT SETA aims to support each of the six interventions which include: Intervention one: Embedding skills planning into sectoral processes; Intervention three: Increased access to programmes resulting in qualifications in priority sectors.; Intervention four: Access to targeted skills programmes; Intervention six: Supporting entrepreneurship and innovation; Intervention seven: Retraining/up-skilling of employees to preserve jobs; and Intervention ten: Strengthening the post-school education and training system. This is done through ensuring that these interventions find expression in the SETAs Key Skills Priority Actions as well as its Strategic Plan and Annual Performance Plan targets.

2.5 Conclusion

South Africa's response to the COVID-19 pandemic has for the most part been quite effective but is not yet in a position to deploy the entire range of currently available 4IR technologies to assuage the pandemic's large-scale disruptions and improve its efficiency. The Presidential Commission on 4IR is causing a ripple effect in the way businesses and the industry operates. South Africa is set to follow a highly skilled intelligence and digital path. The change drivers in the sector suggest an opportunity for ever-increasing access in the intelligence and digital spectrum, and access that needs to be maintained and secured. There is a need to look into the future and forecasting of future skills needs in preparation for the future emerging technologies as forecast. Therefore, skills development must follow course with specialised skills to set up and maintain new and future technologies. However, this must be balanced with also catering for lower-end skills. Ensuring inclusive digital revolution means paying attention to those still becoming digitally literate. This will also allow the SETA to create a qualification mix that caters for all levels of employees in the sector.

Chapter 3: Occupational Shortages and Skills Gaps

3.1 Introduction

The previous chapter examined the factors influencing the demand and supply of skills in the MICT Sector. It is no doubt that the MICT sector is evolving, the sector is changing as a result of the digital transformation, globalisation and demographic changes, but coming up as the biggest factor is the 4IR which aligns to digital transformation. Reflectively looking back in the previous research around this chapter, it was noticed that the misalignment between the supply and demand for skills is inevitable, particularly in the short run and in the context of dynamic transformation. This chapter will explore the extent and nature of demand for skilled labour in the MICT Sector, it will assess the type and extent of training available to the Sector. In order to compile the Sectoral Priority Occupations list and occupational shortages, an analysis of WSP submissions by employers was conducted. While few limitations to the WSPs were realised, including the vagueness in descriptions of occupations, key informant interviews were conducted with key stakeholders in the industry to complement the WSP information, whereby respondents were asked to identify key hard to fill vacancies (HTFVs), skills gaps and change drivers in the Sector. To further invalidate the collected information, a continuous process of data collection will take place, where information will be further validated through online surveys and focus groups. The research will thus be triangulated across various sources to provide as complete and valid picture of skills demand and supply in the Sector.

3.2 Sectoral Occupational Demand

3.2.1 Advertising Sub-sector Occupations with Hard to Fill Vacancies

Using the OFO, the table below provides the top occupations with vacancies that are hard to fill in the Advertising Sub-sector. These five vacancies have been identified by stakeholders and include Multimedia Specialist, Digital Artist, Marketing Practitioner, Multimedia Designer and Advertising Specialist.

Table 7: Advertising Hard to Fill Vacancies

OFO Code	Occupation	Reason	Quantity Needed in Sub-sector
2021-251301	Multimedia Specialist	Lack of skilled people	324
2021-216601	Digital Artist	Equity consideration	320
2021-243103	Marketing Practitioner	Not enough opportunities for workplace placement	112
2021-216603	Multimedia Designer	Lack of skilled people	40
2021-243101	Advertising Specialist	Lack of skilled people	232

Stakeholders in the advertising Sector noted that Multimedia Specialist was the most difficult occupation to find suitably qualified people for. The majority of stakeholders in the sector indicated that “lack of skilled people” was the main reason for these vacancies being hard to fill, with particular reference to niche skills such as digital marketing and social media management. Due to increased digitisation in the Sector, stakeholders attributed the lack of relevantly skilled candidates to the lag in digital skills training. Candidates are required to possess digital marketing skills to complement their traditional marketing expertise. Digital Marketers and Social Media Influencers are examples of emerging occupations spurred on by increased consumer of online presence caused by the COVID-19 pandemic since 2020.

Advertising specialist has also been identified as one of the most in demand skill in South Africa, especially with the key role they play in tracking and assessing data, results analytics to improve and optimize marketing goals. This is important especially since conversions are across all digital Medias.

Furthermore, it was also suggested that whilst there may be shortages in the formal Sector, the informal Sector comprises of freelancers, this creates a challenge as these trends are somehow not captured in modern research if they are not in the employ or ownership of a company. Another aspect of this is that it impacts the levy system, since free lancers are not directly linked to any company within the skills system.

3.2.2 Film and Electronic Media Sub-sector Occupations with Hard to Fill Vacancies

Table 8 presents the top 5 hard to fill occupations of the Film and Electronic Media Sub-sector, by OFO code, which include Media Producer, Multimedia Specialist, Sound Technician, Director (Film, Television, Radio or Stage) and Film and Video Editor.

Table 8: Film and Electronic Media Hard to Fill Vacancies

OFO Code	Occupation	Reason	Quantity Needed in Sub-sector
2021-265412	Media Producer	Lack of skilled people	100
2021-251301	Multimedia Specialist	Lack of skilled people	96
2021-352103	Sound Technician	Equity consideration	96
2021-265401	Director (Film, Television, Radio or Stage)	Lack of skilled people	40
2021-265403	Film and Video Editor	Lack of skilled people	20

The areas of scarcity for most of the Film and Electronic Media occupations exist primarily in more technical roles specific to the Sector and less on generic skills. Most of the shortages are due to a lack of skilled people in the Sector, with the sound technician role evolving to the more specialist roles, most of the stakeholders indicated that there is now a high demand of sound engineers/specialists. This is mainly due to the significant role they play in operating audio equipment to record, enhance, mix and amplify sound in support of television, radio, film or video productions, or stage performances. Moreover, location scouts, will need someone that will be able to collect and mix samples of sound in a movie, and be able to know how to work with voice and silence, these are practicalities to how much the role has evolved. Whilst there may be plenty of sound technicians in the Sector, few of them possess the specialist skills as described above. There is an issue of equity, with black specialists being a few in the field. Furthermore, for the past five years it has been observed that location has a bearing on occupational shortages. Economic hubs such as Gauteng and the Western Cape tend to have different hard to fill vacancies to less economically active areas, especially rural areas, due to rural-urban migration.

3.2.3 Electronics, Information Technology and Telecommunications (ICT) Sub-sectors Occupations with Hard to Fill Vacancies

There are similarities between the Electronics, Telecommunications and Information Technology sub-sectors. Consequently, these sub-sectors are addressed as one ICT sub-sector due to the overlapping nature of their occupational demands. To accommodate this amalgamation and the larger size of the ICT sub-sector, provision is made for 10 hard to fill vacancies instead of 5. Table 9 below presents the top 10 hard to fill vacancies within the ICT sub-sector over the next year.

Table 9: ICT Occupations with Hard to Fill Vacancies

OFO Code	Occupation	Reason	Quantity Needed in Sub-sector
2021-251201	Software Developer	Lack of skilled people	1435
2021-252301	Computer Network and Systems Engineer	Lack of skilled people	1070
2021-251101	ICT Systems Analyst	Lack of skilled people	1036
2021-252901	ICT Security Specialist	Lack of skilled people	270
2021-251203	Developer Programmer	Lack of skilled people	252
2021-672205	Telecommunications Technician	Lack of skilled people	220
2021-215301	Telecommunications Engineer	Lack of skilled people	168
2021-215201	Electronics Engineer	Lack of skilled people	156
2021-311401	Electronic Engineering Technician	Lack of skilled people	100
2021-243403	ICT Sales Representative	Lack of skilled people	115

It has been noted that high unemployment rate that exists in the sector, this is due to the labour market imbalances caused by structural problems that have been aggravated by the economic crisis. Big employers are often at an advantage to poach sought after skills since they have all the attracting packages, small companies or SMMEs struggle to keep and that often leaves them with gaps in terms of skills. Moreover, demographic developments such as ageing and migration also affects the structure of the labour force within the sector. From the labour force profile presented in chapter 1, it is clear that the sector has a relatively young workforce. It has been noted by stakeholders that Software Developer, Developer Programmer and ICT Systems Analyst are some of the top 10 occupations which continue to be hard to fill within the Sub-sectors. While Software Developer and Developer Programmer are two occupations that seem to be similar, Software Developers are more involved with and have a greater understanding of the full project scope. Developer Programmers have a very much specialized role than developers. Through engagements with stakeholders, the 4IR as a factor has forced many companies to seek skilled people in these top programming languages; Python, C and C++. On the other hand, there has been a decline in demand for people to maintain legacy systems (such as COBOL developers).

Frome the onset of the COVID-19 pandemic in South Africa, many South African organizations have developed remote working policies to accommodate the new norm, thus, Cloud Computing specialists have become in demand. Another emerging occupation is the Cloud Architect, an occupation that has picked up even more during the pandemic. In addition, with the rise in e-learning during the pandemic, occupations such as Software Developer and Developer Programmer are required to develop and maintain such platforms.

The telecommunications sub-sector, which includes both the retail side and the technical side, network specific professionals, such as Telecommunications technician and computer network and systems engineer, continued to be in demand. However, pointing to a limitation of the OFO, stakeholders pointed out that occupations such as telecommunications engineers are broadly defined and do not recognise emerging specialities.

Electronics Engineers and Electronic Engineering Technicians are occupations which have emerged as being hard to fill in the Electronics sub-sector. The sub-sector has also experienced increased demand for ICT Sale Representatives.

3.3 Skills Gaps

The MICT sector is always in constant state of change, the sector is operating in an ever-changing environment where new trends are emerging all the time. There is a mismatch of skills between the skills that employers rely upon in their employees, and the skills that job seekers possess. This has been evident in the MICT sector as this mismatch makes it difficult for individuals to find jobs and for employers to find appropriately trained and suitable employees. For those that are already in employment are faced with the pressure of having to constantly upgrade their skills to keep abreast of the latest technological developments (e.g. certified skills affecting IT Security Specialists and Computer Network and Systems Engineers). This is ever more prevalent with the emerging 4IR technologies, another reason for skills gaps is that as people skilled in technologies move on or retire, there is still a need for maintenance of old technologies. That means gaps exist for old technologies where new entrants lack such skills as well as for all the new technologies being rapidly introduced. The broad categories of critical skills gaps that exist amongst employees working across the five Sub-sectors of the MICT are management and leadership skills, customer service skills and technical skills. These are further outlined in the table below by occupation (with OFO codes) and OFO Major Group.

Table 10: Skills gaps and the top occupations that they apply to[1]

Skills Gap	Lower-Level (plant operators and elementary)	Midlevel (technicians, associates, artisans and clerical)	Senior (managers and professionals)
Business Etiquette	• 2021-862918-Electrical or Telecommunications Trades Assistant • 2021-811201-Commercial Cleaner	• 2021-351201-ICT Communications Assistant	• 2021-243403-ICT Sales Representative
Certified skills (CompTIA A+, Network+, MCSA, MCSE, Azure, CISCO, etc.)	N/A	• 2021-351301-Computer Network Technician • 2021-672205-Telecommunications Technician	• 2021-252901-ICT Security Specialist • 2021-251101-ICT Systems Analyst • 2021-252301-Computer Network and Systems Engineer
Financial Management	N/A	N/A	• 2021-121901-Corporate General Manager • 2021-121101-Finance Manager • 2021-122101-Sales and Marketing Manager
Communication	N/A	• 2021-422601-Receptionist (General)	• 2021-122102-Sales Manager • 2021-133102-ICT Project Manager • 2021-251101-ICT Systems Analyst
Customer Service	• 2021-862918-Electrical or Telecommunications Trades Assistant	• 2021-351201-ICT Communications Assistant • 2021-672205-Telecommunications Technician	• 2021-243403-ICT Sales Representative
Python (Coding language)	N/A	N/A	• 2021-251203-Developer Programmer • 2021-251201-Software Developer
Sales Skills	N/A	• 2021-333903-Sales Representative (Business Services)	• 2021-122101-Sales and Marketing Manager • 2021-243403-ICT Sales Representative • 2021-243401-ICT Account Manager

[1] The OFO major group classifications do not consider seniority by experience or rank. Thus, "midlevel" and "senior" include junior to senior technicians and professionals, for example.

Skills Gap	Lower-Level (plant operators and elementary)	Midlevel (technicians, associates, artisans and clerical)	Senior (managers and professionals)
Problem Solving	N/A	• 2021-352106-Production Assistant (Film, Television or Radio)	• 2021-251203-ICT Systems Analyst • 2021-121901-Corporate General Manager
C (Coding language)	N/A	N/A	• 2021-251203-Developer Programmer • 2021-251201-Software Developer
Leadership	N/A	• 2021-334103-Call Centre Team Leader	• 2021-133102-ICT Project Manager • 2021-121901-Corporate General Manager • 2021-122102-Sales Manager
Business Management	N/A	• 2021-333910-Business Support Coordinator	• 2021-112101-Director (Enterprise / Organisation) • 2021-122201-Advertising and Public Relations Manager

Source: WSP/ATR Submission, 2022;

Employers in the Sector require a combination of hard and soft skills, for instance Software Developers that can code in Python are more sought after and Sales Representatives. Design and Critical systems thinking are some of the emerging skills in South Africa that promises to accelerate innovation, this is also complimented by emotional intelligence at more senior roles. Design and Critical Systems thinking make it possible for project managers and specialists to look at a transformation as a whole, from a systems perspective to propose a real understanding of impact of the project. Scholars in the field, highlight, Design Thinking as an innovative, creative and human-cantered process and mind-set that employs collaborative multidisciplinary approach. It has been applied beyond the original sphere of design work to business, engineering, technology, and more recently, education, because of its ability of advancing creativity and innovation by applying an empathetic, flexible and iterative approach. It is user-centric and oriented towards offering solutions by breaking down a problem into small parts to analyse it, to explore it, to test the results, and to create solutions that benefit the end-user (Yedra etal, 2022).

As the rest of the world is 2 years in since the inception of the pandemic, the South African ICT sector's response has been encouraging, although the COVID-19 pandemic has certainly not triggered Industry 5.0, it has brought home the reality of Industry 4.0 digital workflows, robots, automation is no longer a goal, but a requirement. IoT devices have offered organizations a path toward preserving revenue streams during this pandemic. Skills such as financial management, leadership and business management consistently remain increasingly important to keep businesses open, with Enterprise Directors, Finance Manager and Sales and Marketing Managers being some of the previously affected occupations in the early stages of the pandemic.

3.4 Extent and Nature of Supply

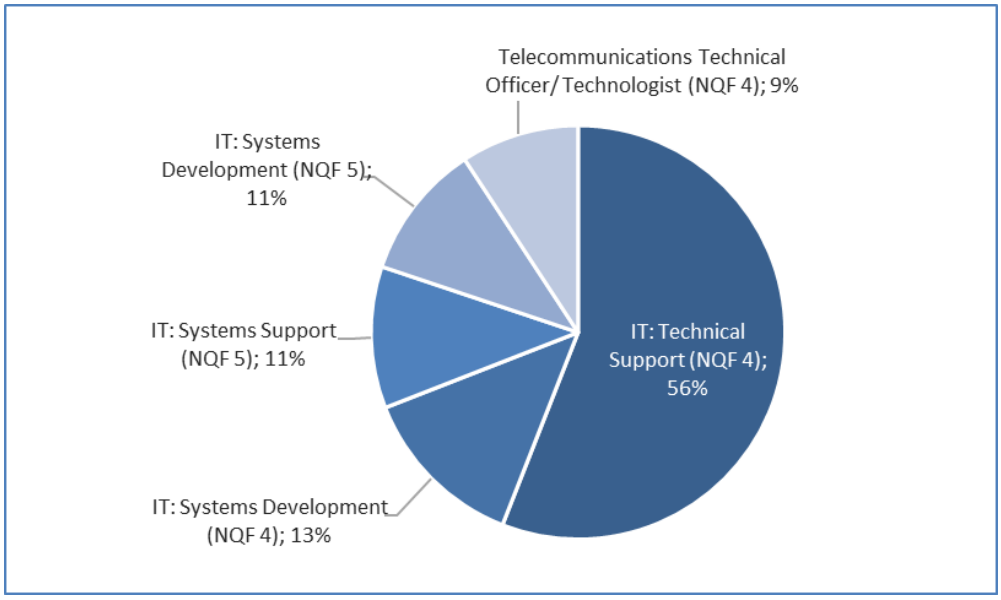
This section looks at the provision of education and training of skills, with the focus specifically on MICT-accredited qualifications. It also reviews provision in higher education, TVET colleges and vendor programmes. It assesses the gaps in the supply pipeline in order to help identify where the MICT SETA can most effectively intervene.

3.4.1 MICT SETA Accredited Qualifications

An analysis of the total learnerships and skills programmes population to date as reflected below indicates that a significant portion of total enrolment has been in the following five qualifications:

- Information Technology: Technical Support (NQF 4)
- Information Technology: Systems Development (NQF 4)
- Telecommunications Technical Officer/ Technologist (NQF 4)
- Information Technology: Systems Support (NQF 5)
- Information Technology: Systems Development (NQF 5)

Figure 14: Top 5 Qualifications enrolled for



Source: MICT SETA QMR, 2021

The NQF Level 4 qualification in Technical Support drew the most learners (56%) in 2021. The two level 5 qualifications in ICT – for Systems Support and Systems Development – match the demand for occupations in high demand within the Sector. Systems Development, for example, allows for specialisation in one of the following disciplines: Procedural Programming; Object Oriented Programming; Fourth Generation Language Programming; Website development; Multimedia; Electronic Commerce.

While there has been an increase in students enrolling for NQF 5 qualifications specialising in advertising, stakeholders in the Advertising Sub-sector raised concerns over the lack of training in digital marketing. Since specialised advertising courses were mainly offered by private universities and colleges, such as Higher Certificates and Advanced Diplomas in digital content creation and marketing, there is limited access for those without financial backing to enrol in such programmes. There is a need for increased awareness of non-traditional career paths amongst high school learners. A study by Cambridge International showed that most South African students still prefer to embark on more “traditional careers” like medicine and dentistry, engineering and psychology (Cambridge International, 2018). Students may be more inclined to follow non-traditional careers in spaces such as Advertising or Film and Electronic Media if they receive more exposure to these careers at high school level. Stakeholders also noted that many of their desired training courses are offered online but

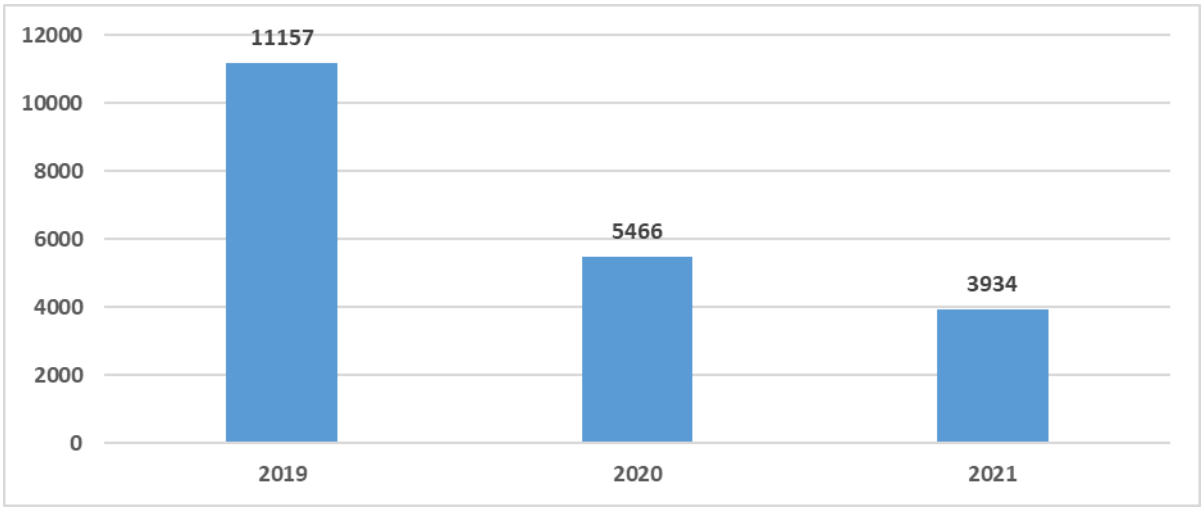
these were not SAQA accredited, complicating their funding and promotion as courses of choice.

The establishment of new, small-scale firms and cooperatives in film production in rural areas and townships has opened opportunities for skills development, especially where they have been able to access DTI funding. In 2021, there was demand for the Further Education and Training Certificates in Film and Television Production Operations (NQF 4) as well as the National Certificate in Film and TV Production (NQF 5) (MICT SETA QMR, 2021). Similar to advertising, programmes relating to Film and Electronic media are predominantly offered by private institutions and costly.

Enrolments in MICT SETA qualifications

Figure 15 shows that enrolment in learnerships and skills programmes have shown steady decline over the past 3 years, decreasing from 17 974 learners in 2019 to 5 499 learners in 2020, and declining further to 3 934 in 2021.

Figure 15: Learnerships & Skills Programmes Enrolment 2017-2019

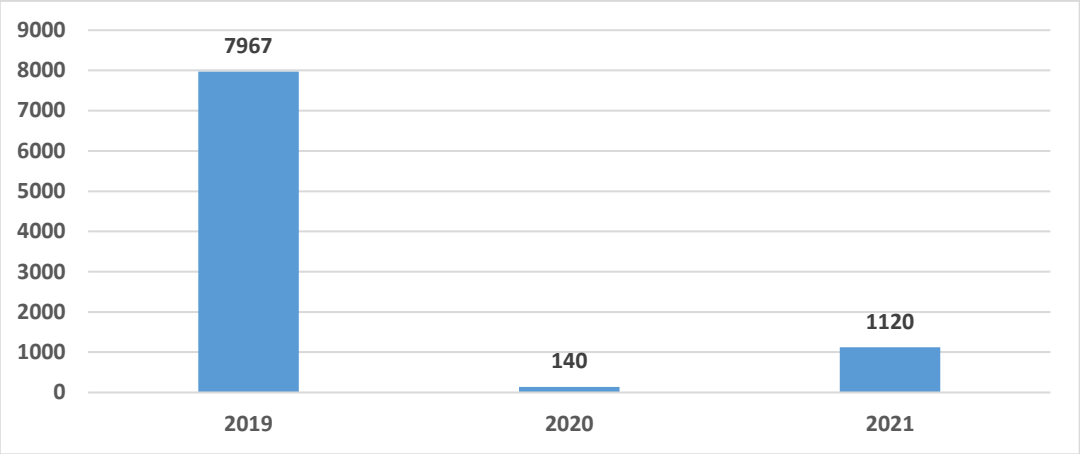


Source: MICT SETA QMR, 2021

Completions

Figure 16 below shows the total number of completed learnerships and skills programmes from 2019 to 2021. While there was significant growth in the number of completions of learnerships and skills programmes in 2019 (7,967), from the year 2020 this number significantly dropped (140) , this has been attributed to the challenges brought by COVID-19 pandemic, such as the delayed academic year, training institutions were still searching for ways for continuous training. In the year 2021, the SETA observed a slight increase (1,120), this is due to businesses and training institutions having now found ways for continuous operation, such as models for e-learning and introduction of remote working policies.

Figure 16: Learnerships & Skills Programmes Completions 2019-2021



Source: MICT SETA QMR, 2021

Equity Demographics

The NSDP seeks to promote equity. The MICT SETA programmes appear to have consistently managed to attract black women into the sector. Stakeholders in the sector confirmed that there was a rise in the number of women in learnerships, especially in ICT technical areas which were traditionally dominated by men. However, it was noted that there were very few black candidates being trained as "creatives" in both the Advertising and Film and Electronic Media Sub-sectors.

3.4.2 Developed 4IR Qualifications

The MICT SETA has developed 33 occupational qualifications that align to the demand of the 4IR, in partnership with the QCTO and other key relevant stakeholders. A number of consultative road shows were held to explain the process followed to develop these qualifications. To date, these are the qualifications that have been developed by the SETA:

Table 11: Developed 4IR Qualifications

1. Occupational Certificate: Artificial Software Developer. 2. Occupational Certificate: Cloud Administrator. 3. Occupational Certificate: Cybersecurity Analyst. 4. Occupational Certificate: Design Thinking Innovation Lead. 5. Occupational Certificate: Design Thinking Practitioner. 6. Occupational Certificate: Quality Test Automator. 7. Occupational Certificate: Software Developer. 8. Occupational Certificate: Data Science Practitioner. 9. Occupational Certificate: E-waste Operator Controller. 10. Occupational Certificate: Internet of Things. 11. Occupational Certificate: Robotic Processing Automation Developer. 12. Occupational Certificate: Mobile Computing Technician Devices.	13. Java Programmer (Skills Programme). 14. Cybersecurity Defender (Skills Programme). 15. Python (Skills Programme). 16. HTML (Skills Programme). 17. Java (Skills Programme). 18. Java script (Skills Programme). 19. C++ (Skills Programme). 20. Occupational Certificate: Blockchain. 21. Occupational Certificate: 3D Printing. 22. Occupational Certificate: Extended Reality. 23. Occupational Certificate: Optical Fibre. 24. Mobile Device Repairer (Part qualification). 25. Laptop Repairer (Part qualification). 26. Wearable Repairer (Part qualification). 27. Accessories Repairer (Part qualification). 28. Occupational Certificate: Drone Technician. 29. Occupational Certificate: Remote Piloting Aircraft. 30. Occupational Certificate: Remote Piloting Technician. 31. Wearable Repairer (Part qualification).

	32. 5G Cellular Network Administrator (Skills Programme). 33. Technopreneur (Skills Programme).

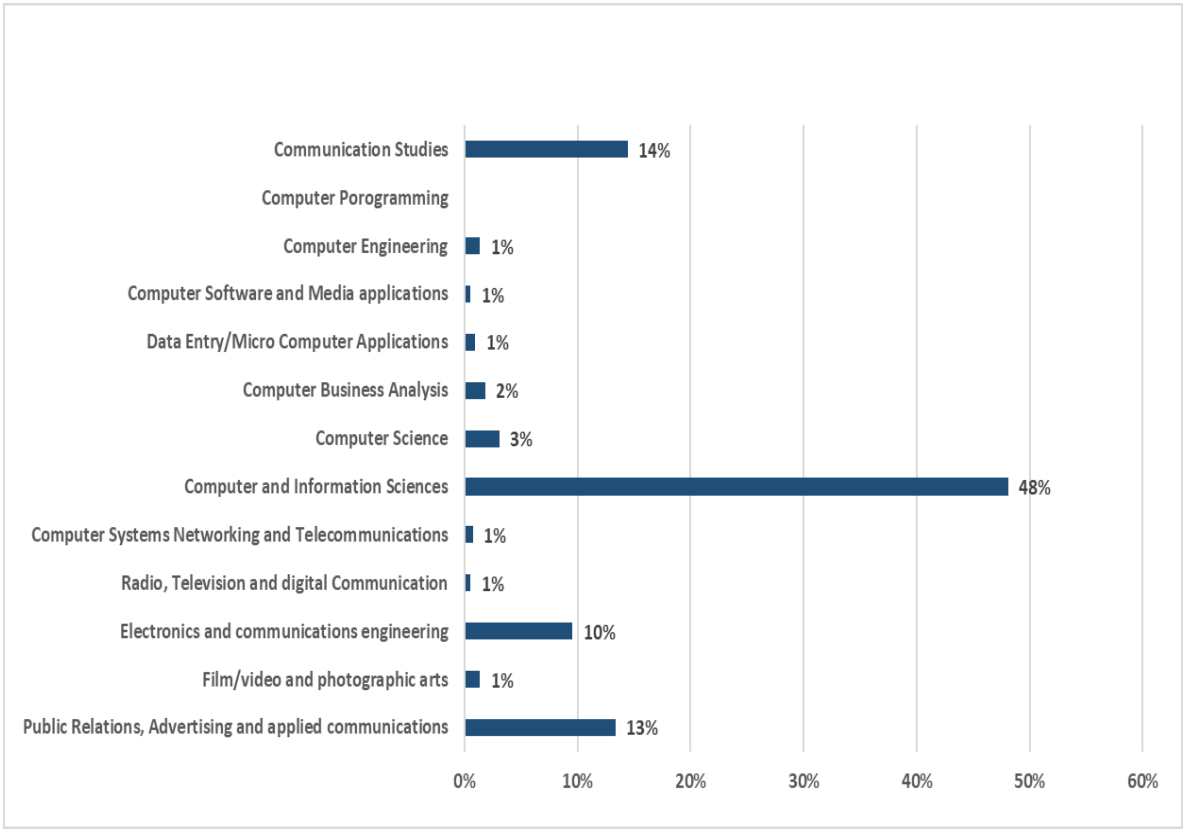
Source: MICT SETA/QCTO, 2021

3.4.3 Higher Education

The higher education Sub-sector in South Africa comprises 26 public universities and 132 private universities. These universities are responsible for generating a skilled workforce and yield academics who are able to produce the research output and innovation needed to drive economic growth in the country (Department of Higher Education and Training, 2019).

Figure 22 is an illustration of enrolments according to major(s)/area of specialisation and qualification type. Due to the limitations of the Higher Education Management Information Systems (HEMIS), the data analysis is based on the 2020 data, the major field/ qualification type within MICT sector with the highest enrolment was observed to be in the computer and information sciences (48%). Stakeholders in the sector highlighted that the qualification gives students the advantage of being able to deal with various aspects of data and information, they learn about efficiently handling a massive amount of information that needs to be analysed, categorized, manipulated and disseminated. Through this qualification they have the opportunities to become Information scientists and engineers design different methods to resolve complex data and information problems in innovative ways. Communication studies (14%), is another major(s) and area of specialisation with the highest enrolment, followed by Public Relations, Advertising and applied communications with 13%. While this indicates that there has been positive growth in public universities, faster growth is necessary to realise the NDP goal of a 1.6 million headcount by 2030.

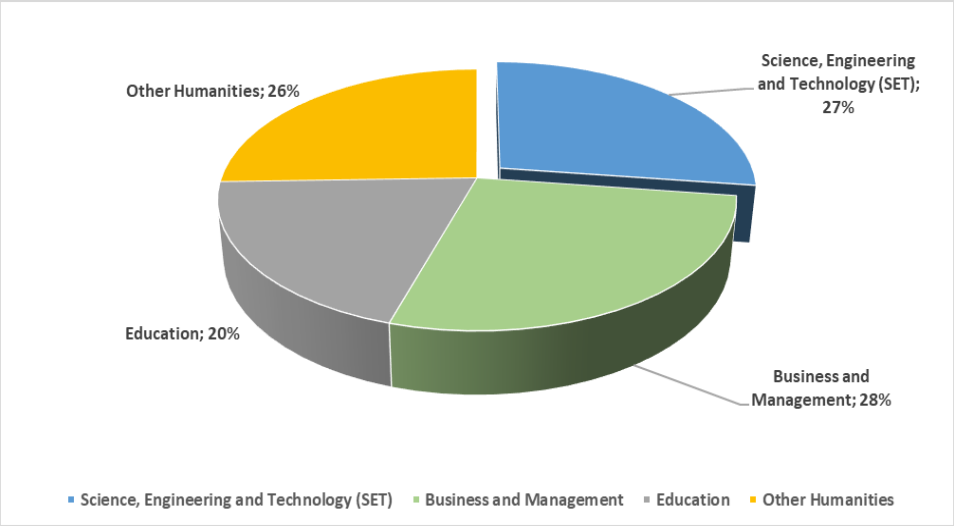
Figure 17: Enrolments Major(S)/Area Of Specialisation And Qualification Type



Source: DHET HEMIS, 2020

Figure 18 presents the graduations across major fields of study in all public higher education institutions in 2020.

Figure 18: Graduations for 2020 in public HEIs by major field of study[2]



Source: DHET HEMIS, 2020

While in the previous financial years Science, Engineering and Technology (SET) had highest graduates compared to the other major fields as specified above, in the year 2020 the SET studies saw a slight decline. These students are in qualifications such as computer and Information Sciences, one of the identified reasons for this decline by stakeholders is the pandemic, many institutions were not prepared for e-learning and when eventually such models were in place the academic year was already affected. The digital divide is another factor considered for this decline. Forced by the pandemic Universities and other training institutions had to develop ICT applications for continuous training. The Universities of the Witwatersrand and Johannesburg and the Tshwane University of Technology, for example, have "innovation hubs", which are creative spaces where people can meet, brainstorm and work on projects. The hubs are also an environment in which skills are learnt and exchanged across a number of disciplines. The MICT SETA has been involved in supporting these initiatives.

Table 12 below shows the total number of enrolments in private higher education institutions across five NQF fields. Such institutions offer programmes spanning from NQF levels 5 to 10. Of the 219 031 students enrolled in private HEIs in the year 2020, 35% of them were enrolled in Bachelor of Commerce, 24% of the students were enrolled for Bachelor of Business Administration, while 16% of them were enrolled at NQF level 9 qualification in Business Administration. Relevant to the sector 13% of them were enrolled for a Bachelor of Science in Information Technology qualification. Lastly, 12% enrolled for law studies. Moreover, stakeholders in the sector highlight that the reason for low enrolments for qualifications in Information Technology is mainly attributed to the expensive fees, youth coming from disadvantaged backgrounds cannot afford such studies, and hence, the SETA through vendor programmes consistently tries to partner with key role players to bridge this gap.

[2] Publicly available data is only available up to 2020.

Table 12: Enrolments in Private HEIs by NQF Field[3]

NQF field	No	%
Bachelor of Science in Information Technology	1926	13%
Master of Business Administration	2424	16%
Bachelor of Business Administration	3616	24%
Bachelor of Commerce	5217	35%
Bachelor of Commerce in Law	1861	12%

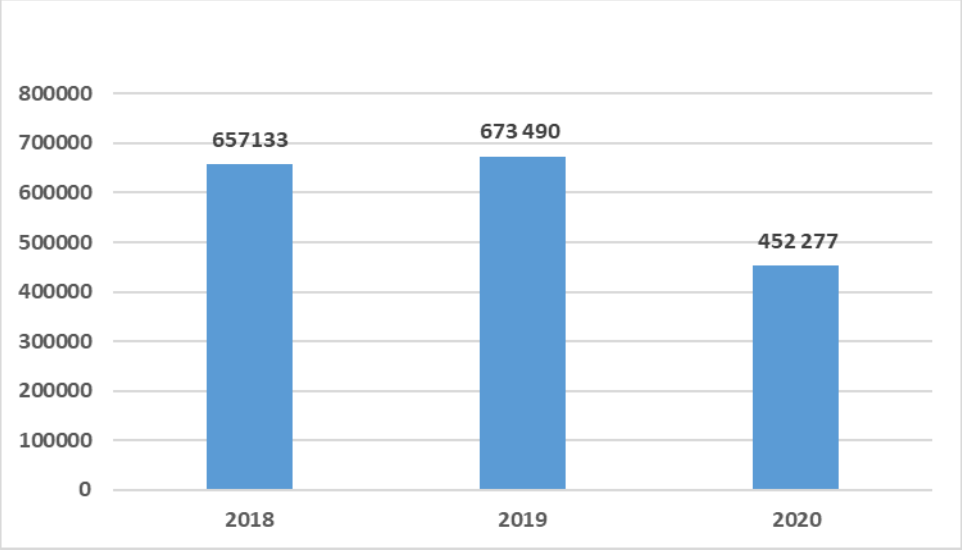
Source: DHET, Statistics on Post-School Education and Training in South Africa, 2020

According to DHET's "Skills for and through SIPS" report, which assessed skills development in relation to government's Strategic Integrated Projects, university curricula have generally not kept pace with the rate of change of technology. The report argues for "curricula to be more relevant and academics to have more practical experience to ensure that graduates were prepared for the workplace". In the case of data scientists most are foreign and need to be harnessed to develop a new breed of local data scientists for this expanding field" (Bijl, A Van Der, 2019).

3.4.4 TVET Colleges

DHET has been promoting TVET colleges to be learning institutions of choice, this has also been supported by legislative mandates such as the NSDP, ERRP and the supporting skills strategy for the ERRP. The aforementioned legislative mandates mirror the objectives of the White Paper on Post School Education and Training, aspiring for a quality post school education which includes expanded access to public TVET colleges. In addition to increased access, the strategic objective of the public TVET colleges sector is to improve success in programmes that produce quality education at intermediate and higher levels, by providing technical and vocational qualifications. Figure 19 depicts the total student enrolments in TVET colleges over the 3-year period ending 2020.

Figure 19: Number of students enrolled in TVET colleges, 2018 to 2020



Source: DHET, Statistics on Post-School Education and Training in South Africa, 2020

[3] Publicly available data is only available up to 2020.

As seen above, there has been a significant decline in enrolments from 2018 (657,133) to 2020 (452, 277). This may be linked to TVET colleges no longer being institutions of choice since they are behind in terms of offering 4IR programmes as compared to private institutions. This makes potential students to be discouraged by the opportunities available to TVET graduates. Another factor is around employers not treating TVET graduates as employees of choice over those that attend universities or private colleges, hence, many remain unemployed. Under increasing financial strain, especially under the COVID-19 pandemic, employers are hesitant to invest resources into recruiting and training interns.

TVET colleges offer a variety of learning programmes and qualifications, typically ranging from NQF level 2 to NQF level 5. Of particular importance are the occupational qualifications offered by TVET colleges, which encompass workplace-based learning programmes, many of which are funded by the SETA. These occupational programmes provide learners with the opportunity to obtain qualifications or part-qualifications that meet the various workplace skills demands in the Sector, as outlined in the beginning of this Chapter (DHET, 2020). However, some stakeholders noted that TVET college graduates are generally not in a position to pass requisite international exams and are therefore not always in high demand upon graduation.

To date, there has been little reliable information about completion rates of TVET College students the only data available goes up to 2018, which is dated for the study. The unavailability of such data limits the study for better reliability and confidence.

3.4.5 Vendor Programmes

Vendor specific programmes provide opportunities for students to integrate disciplinary and theoretical knowledge with work, through the application and use of knowledge and skills in real and professional work contexts. These programmes are designed to meet the advancements in the applications and technologies used by companies and business units, and as a result, are most common and relevant to the ICT Sub-sector. Vendor programmes are usually short and focused programmes that are designed by software and hardware companies as an effective means to introduce new technologies or applications to both existing and new entrants in the labour market. (MICT SETA, 2022).

Vendor courses have the benefit of keeping up to date with rapidly changing technology. But for the same reason, these courses can quickly become obsolete if the product turns out to have a short shelf-life. There is also a concern that training content is focused on the vendor's products and therefore not generic enough to educate on the underlying principles. Consequently, there has been an apparent increase in the demand for customised training solutions rather than more comprehensive off-the-shelf training that covers a broader range of technology solutions. At the same time, stakeholders in the sector reported that employers increasingly want employees to cross-certify with multiple vendors. Having multiple skills is becoming an inherent job requirement lately, with certified skills such as CompTIA A+, Network+, MCSA, MCSE, Azure, CISCO, etc. being the third most in-demand skills for mid-level to senior employees across the sector. These skills also rank in the top 10 skills gaps in Telecommunications across occupational groups. To respond to the persistent demands for vendor certificates, the MICT SETA continues to map these programmes against existing NQF qualifications.

Assessment of Education and Training

The MICT SETA conducted a learning programmes tracer study, assessing the demographics and employment profiles of learners who participated in the SETA learning programmes over the period of 2019/20. The results indicated that the majority of learners that had participated in the SETA funded learning programmes did not continue their studies after having completed their learning programmes. The results showed that only 9% continued their studies on a full-time basis, 22% continued on a part-time, while 69% did not continue their studies. Moreover, in terms of employment, the employment rates of the MICT SETA learning programme learners of 2019/20 reflect the issue of unemployment in South Africa, as 66% of the learners are unemployed, with only 15% in full-time employment and 17% in part-time employment. Furthermore, it was raised by employers and training providers that due to challenges in absorbing learners, it is important that entrepreneurship skills are included as part of the learning programmes, as only 3% of learners are self-employed. Keeping in mind the figure of unemployed learners (66%), 54.6% of learners have between 1 and 3 dependents, 9.2% have more than 3 dependents and 36.2% have no dependents. This raises more concern as 74% of learners have indicated an overall negative impact of COVID-19 on their careers.

Despite this, MICT SETA's learning programmes have resulted in some learners getting employed. Of the employed learners, 49% indicated having obtained employment as a result of the MICT SETA learning programme and 49% of learners indicated having had a promotion/increase in rank or position at work after completing their learning programme. Furthermore, 67% of learners' qualifications match their occupations, with 20% with qualifications that do not match their occupations and 13% with qualifications partially related to their occupations. The formal sector accounts for the sector in which 83% of learners are employed, with the remaining 17% in the informal sector. The top 6 sub-sectors being Media, Advertising and ICT accounting for 42% of employed learners, followed by Education (11%), Wholesale and Retail (6%), Banking (5%), Healthcare and Welfare (5%), and Culture, Arts, Tourism, Hospitality and Sport (5%).

To attract and retain learners, stakeholders stress the importance of keeping programmes relevant and up to date, with special regards to 4IR, and directing additional resources towards developing appropriate occupations and qualifications. The SETA continues to respond to this demand through its SSP and revised Sectoral Priority Occupations List. Overall, it appears that while the learning interventions that are undertaken in the sector have some relevance to employers and are beneficial to workers, there is room for further improvement and refinement.

Qualification and Occupation Mapping

The MICT SETA initiated a process of mapping key occupations in the Sector to various qualifications and learning pathways. From this mapping exercise the MICT SETA gained intelligence and insight from the sector in terms of how to address key occupations in the sector. It is anticipated that the Sectoral Priority Occupations interventions' list identified will help address the skills shortages in the sector, as well as enable the employers in the Sector to bridge the gap between skills demand and supply**.** Table 14 below provides a list of possible qualifications mapped to occupations in the Sector.

Table 13: Possible Qualifications mapped to Occupations

Qualification	Career Prospects/Job Roles
BSc. or Nat. Dipl majoring in: – Business Computing – Computer Engineering – Computer Science/ Studies/ Systems – IT (Web Design & Development) – Information Systems/ Technology	– ICT Systems Analyst – Web Technician – Systems Administrator – Computer Network Technician – Software Developer – Computer Network and Systems Engineer – ICT Security Specialist
B. Arts/Learnerships majoring in: – Acting – Drama and Performance Studies – Film and Television	– Actor – Director
B. Arts/Learnerships majoring in: – Audio-Visual Communication – Translation and Professional Writing – Creative writing	– Scriptwriter – Creative Director
BTech or Nat. Dipl. majoring in: – Motion Picture Production – Multimedia – Film and Video Technology	– Multimedia Specialist – Film and Video Editor
B.Com or Nat. Dipl majoring in: – IT Management – Applied Information Systems	– Chief Information Officer – ICT Project Manager – IT Manager
B.Com/BTech/Dipl. majoring in: – Business Management/ Management Sciences – Project Management	– Management Consultant – Business Analyst – Service Solutions Project Manager
B.Engineering/Nat. Dipl/Learnership majoring in: – Electronic Engineering – Computer Engineering	– Computer Network and Systems Engineer Developer Programmer – Software Developer – Telecommunications Technologist – Electronic Engineering Technician
BA Honours in: – Film and Documentaries – Media and communication – Development and communication – Digital Media Design	– Editor – Director – Content producer
B.Com/Nat.Dipl/Learnership majoring in: – Strategic Brand Management – Digital Marketing – BA Creative Brand Communications – Marketing Management/ Communication	– Brand Strategist – Brand Auditor – Digital Marketing Strategist – Copywriter – Social Media Coordinator
Diploma/Learnerships/Higher Certificates in: – Marketing & Advertising Communications – Art Direction Diploma – Graphic Design – Copywriting	– Creative Director – Campaign Coordinator – Graphic Designer – Digital marketer
Dipl./Learnerships/Nat. Certificates in: – Electronic/ Engineering Studies – Information Technology (Networking) – Telecommunications – Information Systems	– Telecommunications Technician – Computer Network Technician – Systems Administrator – Electronic Engineering Technician

Source: DHET, the National Career Advice Portal, 2020

3.5 Sectoral Priority Occupations

The compilation of the Sectoral Priority Occupations (SPO) list follows a process that combines both analytical and qualitative inputs. This involves analysis of WSPs, employer surveys, desk-based research as well as validation through focus groups with stakeholders in the sector. In addition, interviews are conducted with a number of stakeholders, which include industry bodies and professional associations, government stakeholders, trade unions and other key informants. Interviews focused on developments in the sector, emerging trends as well as future skills needs. Given the dynamic nature of the MICT Sector, these interviews helped to identify new trends regarding new occupations as well as future skills needs in the economy.

The quantitative analysis, occupations and specialisations flagged as hard to fill in WSP/ATR submissions were tested for prioritisation against systemic and volumetric considerations via surveys, interviews and focus groups. Appropriate interventions were then determined per occupation based on prior and planned skills development for those occupations, adjusted based on SETA experience, most are not NQF aligned due to them being internationally benchmarked and being vendor specific programmes. The MICTSETA still has a strong focus on vendor programmes as these a demand led by the sector. There is room for vendor programmes to exist next to NQF aligned programmes. However, we recognise the need to get all our programmes NQF aligned, therefore the SETA plans to align all its vendor programmes to its qualifications. This will also be done through Recognition of Prior Learning (RPL).

The quantity to be supported by the SETA was determined based on planned APP targets per type of intervention and distributed across the occupations based on the extent of Sector demand as reported in the WSP/ATR submissions.

Given the central role that 4IR plays in the MICT Sector, important 4IR-related skills requirements were particularly taken into account in the determination of hard to fill vacancies and the SPO list. Consultations sought to unpack the business and skills fundamentals underpinning 4IR. The occupations in the SPO list are linked to 4IR change drivers articulated in Chapter 2. Following the production of the draft SPO list, input is incorporated from deliberations at Executive Committee and Board level, and the final SPO list is signed off by the MICT SETA Board.

The limitation of the data presented is that even though it takes into account other sources such as employer surveys, interviews and focus groups, the input data from employer WSPs is not without challenges. Stakeholders who formed part of the validation processes reflected that OFO codes were vague and confusing with several overlaps in occupational descriptions. In some instances, OFO codes did not exist for their desired occupations.

The SETA is, however, confident that based on the rigorous, practical and balanced approach adopted for the determination of the MICT Sector SPO list, and that the identified priority occupations and interventions will help underpin the skills development planning and implementation required to address skills issues and opportunities in the sector, including critical areas such as 4IR.

The following table below presents the 2023/24 SPO List and the interventions planned thereof.

Table 14: Top 10 Sectoral Priority Occupations List for the MICT Sector

SETA Name	Period	Occupation Code	Occupation	Specialisation/ Alternative Title	Intervention Planned by the SETA	NQF Level	NQF Aligned	Quantity Needed	Quantity to be supported by the SETA
MICT SETA	2023/24	2021-251201	Software Developer	-Software Architect -Information Architect Software -Software Designer -Software Engineer -ICT Risk Specialist	Bursary (diploma)	6	Y	3295	2550
					Bursary (degree)	7	Y		
						8	Y		
					Internship	6	N		
						7	N		
						8	N		
					MCSD Certification	5	N		
					Scrum Certification	6	N		
MICT SETA	2023/24	2021-252301	Computer Network and Systems Engineer	-Computer Systems / Service Engineer -Systems Integrator -Computer Systems Integrator -Network Engineer -Communications Analyst (Computers) -Systems Engineer -Network Support Engineer -ICT Customer Support Officer -Network Programmer / Analyst -Computer Network Engineer	Bursary (diploma)	6	Y	2662	1812
					Bursary (degree)	7	Y		
						8			
						9			
					Internship	6	N		
						7			
						8			
					CISCO Certification	5	N		
						6	N		
						7	N		
					CompTIA Network+ Certification	5	N		
MICT SETA	2023/24	2021-251101	ICT Systems Analyst	-Computer Analyst -ICT Systems Contractor -ICT Systems Coordinator -Capacity Planner Computing -LAN / WAN Consultant / Specialist -ICT Systems Architect	Bursary (diploma)	6	Y	1772	1442
					Bursary (degree)	7	Y		
						8	Y		
					Internship	6	N		

SETA Name	Period	Occupation Code	Occupation	Specialisation/ Alternative Title	Intervention Planned by the SETA	NQF Level	NQF Aligned	Quantity Needed	Quantity to be supported by the SETA
				-Systems Programmer -Internet Consultant / Specialist -ICT Systems Consultant -ICT Business Systems Analyst -ICT Systems Specialist -ICT Systems Advisor -ICT System Designer -ICT Systems Strategist		7	N		
						8	N		
					MCSA Certification	5	N		
					MCSE Certification	5	N		
					Work integrated Learning	4	Y		
						5	Y		
MICT SETA	2023/24	2021-242101	Management Consultant (Business Analyst)	-Management Consulting Specialist -Superannuation Transitions Specialist -Technology Development Coordinator -Operations Analyst -Service Solutions Project Manager -Small Business Consultant / Mentor -Capital Expenditure Analyst -Commercial Analyst -Corporate Planner -Farm Management Consultant -Business Coach -Financial Systems Advisor -Resource Development Analyst -Purchase Advisor -Business Support Project Manager -Strategic Developer / Facilitator -Business Consultant -Management Reporting Analyst -Business Turnaround Management Consultant -Ecommerce Programme Manager	Bursary (diploma)	6	Y	2481	721
					Bursary (degree)	7	Y		
						8	Y		
					IIBA Certification (BABOK)	5	N		
						6	N		
					Work integrated Learning	4	Y		
						5	Y		
	2023/24				Bursary (diploma)	6	Y	748	300

SETA Name	Period	Occupation Code	Occupation	Specialisation/ Alternative Title	Intervention Planned by the SETA	NQF Level	NQF Aligned	Quantity Needed	Quantity to be supported by the SETA
MICT SET		2021-252901	ICT Security Specialist	-Internet Security Architect / Engineer / Consultant -Security Administrator -ICT Security Architect -Database Security Expert -Information Technology Security Manager	Bursary (degree)	7	Y		
						8	Y		
					Internship	6	N		
						7	N		
						8	N		
					CompTIA Security + Certification	5	N		
						6	N		
					CISSP Certification	5	N		
						6	N		
					Work integrated Learning	4	Y		
						5	Y		

SETA Name	Period	Occupation Code	Occupation	Specialisation/ Alternative Title	Intervention Planned by the SETA	NQF Level	NQF Aligned	Quantity Needed	Quantity to be supported by the SETA
MICT SETA	2023/24	2021-251301	Multimedia Specialist	-Digital Media Specialist -Multimedia Developer -Graphical Programmer -Computer Games Programmer -Multimedia Programmer -Animation Programmer	Bursary (diploma)	6	Y	523	390
					Bursary (degree)	7	Y		
						8	Y		
					Internship	6	N		
						7	N		
MICT SETA	2023/24	2021-243403	ICT Sales Representative	-Computer Consultant -Computer Software Support Consultant -Computer Systems Consultant	Bursary (national certificate)	5	Y	95	60
					Short Programme	5	N		
					Internship	8	N		
MICT SETA	2023/24	2021-251202	Programmer Analyst	-Software Configuration / Licensing Specialist -Designer (Hardware - Digital / Software) -Architect (Applications / Call Centre / Computing / Desktop / Ecommerce) -Education Systems Coordinator -Computing (Development / Field) Engineer -Cross Enterprise Integrator -Engineer (Applications / Content / IT / Software / Systems / WAN) -Architect (Enterprise / Internet / IT / Network / Software / Unix / Web) -Database Designer	Bursary (diploma)	6	Y	925	350
					Bursary (degree)	7	Y		
						8	Y		
					Internship	6	N		
						7	N		
						8	N		
					Work integrated Learning	4	Y		
						5	Y		
MICT SETA	2023/24	2021-251203	Developer Programmer	-ICT Developer -ICT Programmer -Applications Developer	Bursary (diploma)	6	Y	451	250
					Bursary (degree)	7	Y		
					Internship	6	N		

SETA Name	Period	Occupation Code	Occupation	Specialisation/ Alternative Title	Intervention Planned by the SETA	NQF Level	NQF Aligned	Quantity Needed	Quantity to be supported by the SETA
						7	N		
					MCSD Certification	5	N		
MICT SETA	2023/24	2021-133102	ICT Project Manager	-ICT / IT / Computer Service Manager -ICT / IT / Computer Marketing Executive -ICT / IT / Computer Support Manager -Hardware Development Manager -ICT Project Director -ICT / IT / Computer Operations Manager	Bursary (degree)	7	Y	217	150
						8	Y		
						9	Y		
					PRINCE2 Certification	6	N		
						7	N		

Most of the occupations identified in the table above are characterized by Design thinking. Design thinking can be defined in a number of ways, one college offering a course in Design thinking defines it as “a human-centered and systematic approach to innovation grounded in the true understanding of customer needs” (Think Agile, n.d). Some of the world’s leading brands, such as Apple, Google, Samsung and GE, have speedily adopted the Design and Critical thinking approach. In simple terms, it is an iterative process that teams use to understand consumers, challenge assumptions, redefine problems and create innovative solutions to prototype and test (Interaction Design Foundation, n.d).

However, the 4IR does not only relate to ICT, sub-sectors such as Film & Electronic Media are also called to the fore by occupations such as Multimedia Specialist and their importance in virtual and augmented reality and 4D animation. To sell 4IR to consumers, ICT Sales Representative with strong product and technical knowledge will be involved across the entire spectrum of 4IR. But “there is no 4IR without 5G” (Carew, 2019), the telecommunications sub-sector will thus have increased input in this regard, as well as network and systems occupations such as Computer Network and Systems Engineer.

3.6 Conclusion

This chapter examined the extent and nature of demand for skilled labour in the MICT sector and explored the types and extent of training available to the sector. While it may be difficult to gauge the extent of the impact of Covid-19, given that the country is still in the midst of the pandemic, it is undeniable that skills development has been affected. The MICT sector has been under cost-saving measures since the Covid-19 pandemic and subsequent lockdown, and that has in turn increased demands on employees to be multi-skilled across a number of technologies, with convergence adding to that trend. So, while there are employment opportunities in the sector, these tend to be for high-skilled professionals. Informants in the ICT sub-sector reported that with the shortage of skilled developers (especially in scarce coding languages such as Python or Java), there is fierce competition for talent amongst employers, and this raises salaries to levels many companies cannot afford. This is further compounded by the financial challenges presented by the Covid-19 pandemic.

Matching demand for skilled people with supply is difficult in a sector that is changing so rapidly. Long-term predictions on occupations with hard to fill vacancies are not that reliable on the shifting sands of technology, and as a result there has been a call to speed up accreditation processes and recognise vendor programmes on the NQF. Similarly, short, highly varied online courses that cater to specific employer requirements have become especially useful during the pandemic and lockdown. To this effect, employers urge speedy recognition of online learning on the NQF or at least a mechanism for such programmes to be funded more.

Regarding enrolments in MICT qualifications, Universities and Universities of Technology are the main sources of highly qualified MICT graduates and, according to stakeholders in the sector, the main supply of internship candidates. Despite historical bias towards private colleges, the placement of public TVET graduates is gradually increasing across the MICT sub-sectors with its own challenges elaborated on above.

Chapter 4: SETA Partnerships

4.1 Introduction

While Chapter 3 explored the extent and nature of demand for skilled labour, the skills gaps that exist and the training available in the MICT Sector. This section explores partnerships within the MICT SETA and responds to the mandate of the Skills Development Act of 1998, which encourages SETAs, as agents of skills development, to establish partnerships with both the public and private sectors. Through these partnerships, the SETA responds to the NSDP outcomes and ERRP interventions which seek to ensure that South Africa has adequate, appropriate and high-quality skills that contribute towards economic growth, employment creation and social development. This chapter presents both new and existing partnerships in the SETA.

4.2 An Analysis of Existing SETA Partnerships

With the need to align to the NSDP outcomes and 6 of the ERRP interventions to mitigate the negative effects of labour market change, there is a need to strengthen access to skills development and promote upskilling and reskilling in the sector. The MICT SETA has entered into partnerships with various institutions to advance Sector development and growth. These partnerships are structured into the following typologies:

- Partnerships with TVET colleges
- Partnerships with Universities
- Partnerships for Special Projects
- Partnerships with SMMEs
- Partnerships with Industry Vendors

The table below illustrates existing partnerships with TVETs, and programmes supported by the MICT SETA.

4.2.1 Partnerships with TVET colleges

Table 15: Partnership with TVET Colleges

Name of TVET	Term and Duration	Objectives of Partnership	Partnership challenges
Northlink TVET College	26/07/2021 - 25/10/2022	The objectives of these partnerships with TVET colleges is to ensure that TVET college lecturers are equipped with the relevant skills and knowledge in order to provide quality teaching or training. Moreover, these partnerships have the potential to produced favourable labour market outcomes, which ultimately should lead to quick absorption of graduates into the workplace. This partnership supports Work Integrated Learning placements, also provides for other workplace-based learning opportunities, such as learnerships and internships	There is lack of industry experience for many TVET lecturers, TVET institutions cannot really hire trainers from industry as their fees are much higher, which in turn puts a question of quality for employers. Moreover There is a problem of weak participation from the industry, the concern is on the relevance of TVET programs and the lack of skills of TVET graduates in industry.
Flavius Mareka TVET College	07/09/2021 - 07/12/2022		
Goldfields TVET College	23/08/2021 - 23/11/2022		
King Sabata Dalindyebo TVET College	23/08/2021 - 23/11/2022		
Lephalale TVET College	10/08/2021 - 09/11/2022		
Lovedale TVET College	23/08/2021 - 23/11/2022		
Sekhukhune TVET College	23/08/2021 - 23/11/2022		

Source: MICT SETA Commitment Registers, 2022

The partnerships outlined above mainly support Work Integrated Learning placements, but also provide for other workplace-based learning opportunities, such as learnerships and internships. Furthermore, they respond to the NSDP Outcome 2: Linking education and workplace. The reality is that TVETs are not well placed to identify the opportunities for partnership formation. Furthermore, they may lack the resources or skills needed to facilitate the development of partnerships. As a result, the MICT SETA plays a key role in proactively initiating these partnerships which in turn accelerates the realisation of the White Paper for Post-School Education and Training goal which states that TVETs need to enrol 700,000 to 2.5 million students by 2030. Similarly, University partnerships, as outlined below, provide parallel opportunities.

4.2.2 Partnerships with Universities

Table 16: University Partnerships

Name of University	Term and Duration	Objectives of Partnership	Partnership Challenges
Cape Peninsula University of Technology	2022/04/01 - 2023/03/31	The objectives of these partnerships with universities is to drive skills development and the implementation of knowledge to youth and society for a technologically driven, service and knowledge economy. Tertiary institutions are at the forefront of cutting edge knowledge generation and research. The objectives of these partnerships is also to ensure that university students who need to complete WIL in order to obtain their qualification are given the opportunity to do so. These partnerships improve the supply of skilled people in the sector and afford learners from previously disadvantaged backgrounds opportunities to acquire high-level skills critical to industry development and growth, thus creating employment for those graduates. These partnerships are in response to NSDP outcome 4.2.	Some of the challenges around these partnerships include: - Uneven capacity to implement MICT funded bursary programmes. There is a problem of document management, some institutions submit the required student documents timeously, some struggle. - There is also a challenge of delays in returning signed SLAs, legal teams within those institutions take time to review the proposed agreements, when they eventually respond they want to change some of the clauses in the document and that delays the project commencement and implementation. - University Bursary offices should be the liaison between the SETA and students to ensure consistent flow of information and to ensure that bursary assistance reaches the most academically and financially deserving students, however, they do not play they role very well, in some instances, students contact the SETA directly in search of funding. Ideally, this should not be the case when the University Bursary offices are there for such function.
Tshwane University of Technology	2022/04/01 - 2023/03/31		
University of Western Cape	10/11/2021 - 30/11/2022	These are 4IR research partnerships, which have the objective to improve research and innovation capacity, producing high quality postgraduate students and research and innovation outputs. Ultimately, these partnerships are about improving the ways in which the education and training system produces skilled workers, as well as the ways in which workplaces support skills development and support the ability of workers to use their skills to the maximum. The research conducted in these Chairs draw on the political economy of development as well as the sociology of knowledge, to build insights into the ways in which skills development interacts with the economy, industrial policy, and working conditions, as well as into the possibilities and limitations of education.	
Durban University of Technology	10/11/2021 - 30/11/2022		

Source: MICT SETA Commitment Registers, 2022

4.2.3 Partnerships for Special Projects

The table below highlights some of the Special Projects Partnerships, which are aimed at maximising the provision of job opportunities and the transformational agenda.

Table 17: Special Project Partnerships[4]

Industry Vendor	Term and Duration	Objectives of Partnership	Partnership Challenges
Khunjulwa Marketing Services	April 2022 – March 2023	The Project is a Labour Activation Programme, which seeks to reskill and upskill unemployed South Africans who previously contributed UIF. It is with the view that the new set of skills received from this project will help the beneficiaries to not only look for work, but to also have options of becoming entrepreneurs.	There is a lack of Administrative ability to implement learning programmes e.g. record keeping, financial management, reporting. Moreover, some of the service providers lack knowledge on some of the MICT SETA administrative requirements in implementing learning programmes.

4.2.4 Partnerships for with SMMEs

Table 18: Partnerships with SMMEs[5]

SMMEs	Term and Duration	Objectives of Partnership	Partnership Challenges
250 SMMEs (Please see Annexure A)	April 2022 –March 2023	SMMEs are major drivers of employment within the South African economy. Partnering with them ensures that they can run programs such as Learnerships, Internships and Short programs that provide training and the relevant workplace exposure to youth. These partnerships ensure that employees of these SMMEs are also afforded opportunities for training, thus, making these organizations to remain competitive and sustainable. These partnerships are about establishing requisite capability and skills within South Africa's SMMEs, this will translate to economic benefits whereby SMMEs will be able to support government in the ICT space and by so doing, generate revenue and create employment within the unemployed youth, which is the ultimate goal.	It has be observed that not all lead employers are able to absorb learners at the end of the learning programme, this is a challenge when pushing the principle of sustainability and impact. The scale of operations often does not permit learners to get the proper workplace exposure that they need. Some SMMEs also do not arrange the necessary host employers to host learners if they themselves do not have capacity to host the learners.

[4] MICT SETA Commitment Registers, 2022

[5] MICT SETA Commitment Registers, 2022

Table 19: Partnerships with Industry Vendors to Map Qualifications

Industry Vendor	Term and Duration	Objectives of Partnership	Partnership Challenges
QCTO	April 2012 – December 2023	The objective of the partnership is to develop occupational qualifications. The value lies in the development of occupational qualifications to ensure that the system is more responsive to labour-market skills needs.	There is consistent change in the requirements for qualifications realignment and development with a lack of formal communication and capacitation on the shifts. From a quality assurance perspective, accreditation for occupational qualifications, the roles and responsibilities have not been clearly defined which impacts on the SETAs ability to plan for required resources and the accompanying budget. Moreover, this also creates a challenge as the SETA is unable to communicate the changes in requirements to stakeholders, which results in confusion and frustration.

4.2.5 Partnerships that are working successfully

Provision of exposure to relevant training and employment opportunities facilitates learners' transition into the labour market. The model that the SETA uses across all partnerships to ensure successful outcomes is based on collaborative efforts between the SETA and the sector. It begins with the identification of the right partnerships, delineation of the roles and responsibilities for both parties and the maintenance of constant and open communication in order to mitigate potential risks that can impede the achievement of intended objectives. The figure below depicts the SETA partnership model.

Figure 20: MICT SETA partnership model

One of the successful partnerships based on this model is that between the MICT SETA and the South African Mobile Devices Distributors and Repairs Association (SAMDDRA), through this partnership young South Africans were afforded the opportunity to participate in a phone repairs Skills Programme which saw 61 learners successfully completing and graduating from the programme. The key value of this partnership is that it recognized the skills gap that exists in townships, where the cell phone repair market belongs to foreign nationals than South Africans, therefore, there is no way that it is impossible that this skill can be transferred to the unemployed youth in South Africa. This partnership also recognized the important element of reskilling. Moreover, another successful partnership is that with Solly Wood SA which saw 20 interns completing an internship in Film & TV Production, this partnership also included Entrepreneurship training done by the National Youth Development Agency.

4.3 Partnerships that are not working well

TVET colleges in rural areas are lacking in skilled lecturers, infrastructure, and alternative centres of excellence. Thus, TVET colleges may at times lack delivery capacity, which impacts negatively on the timeous implementation of programmes. The challenge with universities is often an administrative one excessive deliberation on and reviewing of SLAs may result in delays with the implementation of programmes. Partnership challenges with employers are often rooted in employers delegating to training providers who are not able to deliver on the mandate of the SETA. However, the SETA in mitigation to this, has responded to some of the key outcomes as proposed by the NSDP, specifically outcome 5 on promoting the growth of the public college system, this is also in alignment to the ERRP interventions.

4.3 Planned Partnerships

The following table highlights the SETA's planned partnerships.

Table 20: MICT SETA's Planned Partnerships[6]

Industry Partner	Objectives of Partnership
Department of Science and Technology	These are Skills Programme partnerships aimed at provision of new technology and innovation skillsets, particularly in relation to 4IR, while at the same time exposing beneficiaries to job opportunities within and beyond the MICT Sector. They are about ensuring that beneficiaries gather innovative skills to compete globally. These partnerships have the value to better prepare beneficiaries for 4IR, effectively propelling them into innovative environments and exposing them to employment opportunities at both national and international levels.
CSIR	
CHIETA	
WRSETA	
NEMISA	These partnerships aim to expose young emerging professionals, especially from disadvantaged backgrounds to workplace experience. It is about helping them gain skills that can be applied to future jobs. The value of these partnership lies in enhancing skills development, knowledge and experience, with the potential to reduce high rate of unemployment within the ICT environment by making unemployed graduates employable
Department of Planning Monitoring and Evaluation	

[6] MICT SETA Commitment Registers, 2022

4.4 Conclusion

The partnerships highlighted above are essential for the successful advancement of skills development. The SETA understands that these partnerships should be undertaken with priorities in mind, specifically those outlined in the NSDP, ERRP and ERRP Skills strategy, all of which have the intended goal to contribute to the NDP vision 2030. Through these partnerships, the SETA will continue to build capacity, ensure efficient and effective implementation. Transformational imperatives will continue to be a priority – these includes race, gender, geography and people with disabilities. Through these partnerships, the SETA will continue to increase the participation of previously disadvantaged people, especially in rural areas. The partnerships highlighted above show that the MICT SETA is a reflective organisation which has learnt to prioritise quantifiable public goals and stakeholder engagement, thus ensuring transparency and long-term planning.

Chapter 5: SETA Monitoring and Evaluation

5.1 Introduction

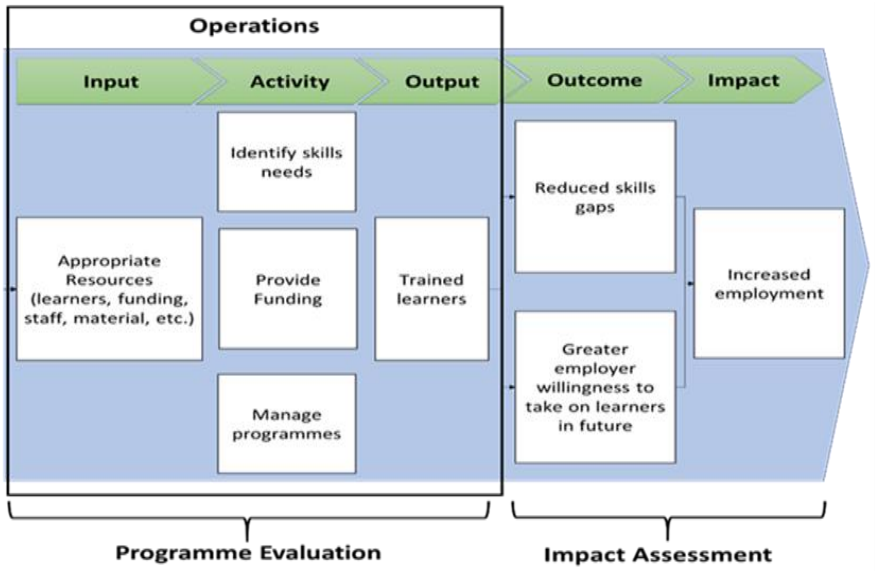
The MICT SETA considers itself as a reflective organisation, applying the results-based approach to Monitoring and Evaluation, which is intended to aid decision-making through credible, reliable, and useful information generated from monitoring reports. This approach increases transparency and accountability allowing skills development interventions to complement each other to achieve the outcomes of the National Skills Development Plan 2030 and broader goals of the National Development Plan (NDP) 2030. This thus includes the M&E of the design, relevance, and implementation of the MICT SETA programmes and strategies to identify the factors that contribute to successful skills development interventions and challenges that should be avoided in future interventions. This Chapter reflects on MICT SETA's approach to M&E, with a focus on the overall organisational performance including the three core programmes, which are the Sector Skills Planning (SSP), Learning Programmes (LP) and Education and Training Quality Assurance (ETQA). It will reflect on the previous financial year's strategic priorities and assess the extent to which those priorities were addressed. It will also identify the mechanisms that are in place to address priorities that were not achieved in the previous financial year.

5.2 Sector Skills Planning Reflections

5.2.1 SETA's approach to Monitoring and Evaluation

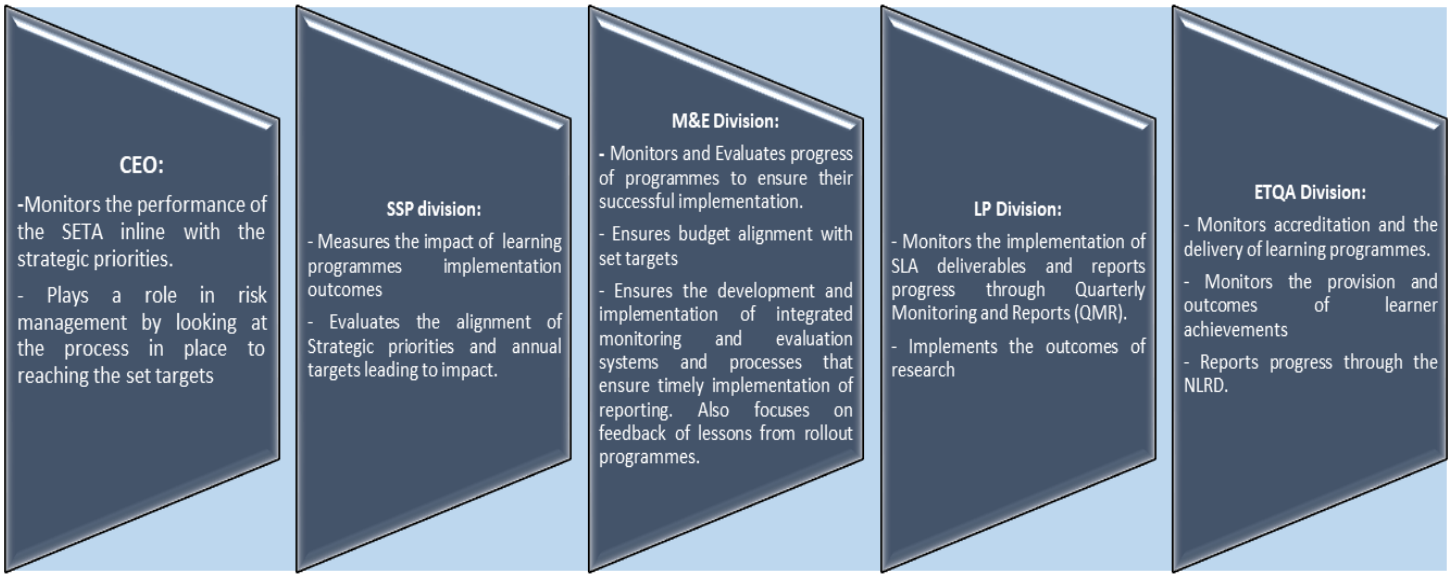
The MICT SETA has dedicated efforts to establish a meaningful M&E Division in an incremental fashion which will see the staff compliment steadily increasing overtime. In the main, the Division oversees the overall performance of the SETA on implementation of its programmes and initiatives as well as reporting thereof. The concept of monitoring is defined as a continuous function that uses the systematic collection of data on specified indicators to provide management and the main stakeholders the extent of progress and achievement of objectives (OECD) in Kusek & Risk, 2004:121). Evaluation on the other hand is understood as the "systematic and objective assessment of an ongoing or completed project, program or policy including its design, implementation results (OECD in Kusek & Rist, 2004). The illustration below describes the model that is applied by the MICT SETA in assessing the achievement of the outcomes and intended outcome. The Model acknowledges that management of risks at every level of the logic model.

Figure 21: Risk Informed Monitoring and Evaluation model



Taking note that Risk Management plays a key role in organisational success, the SETA uses the Risk Management Strategy across all its core and support functions. Strategic and operational risks are identified during the planning process and mitigating measures are monitored and reported on by relevant programmes regularly. It is about controlling as much as possible on what might affect the organisation and act accordingly rather than reactively. Monitoring is an integral part of the risk management decision making processes, meaning that every step of the risk management process may be related to the monitoring. Figure 24 below is a depiction of the SETA's approach to M&E.

Figure 22: MICT SETA's Approach to Monitoring and Evaluation



The **CEO's Office** plays an oversight monitoring role, which goes hand in hand with the principles of risk management. This means that it monitors the organisation against its priority targets by looking at internal and external risks that may delay the organisation in reaching targets. The governance role played by this office is premised on the understanding that without proper risk management, the MICT SETA will not be able to achieve its goals for the future. There is thus an inter-relationship between all the divisions, with the SSP division and the M&E division working closely with the CEO's office to define measurable strategic outcomes for the SETA.

The **SSP Division** is responsible for the research and strategic planning function in the organisation. The division ensures the alignment of the three strategic documents: Sector Skills Plan, Strategic Plan, and Annual Performance Plan. The division also develops the organisational operational plan.

The **M&E Division** has been recently established. It ensures a more systematic and objective approach towards the monitoring and attainment of outcomes and the assessment of their impact, plays the role of evaluating selected programmes at regular intervals to ensure their successful implementation, and will report on lessons learnt from the rollout of the programmes. The division is also expected to measure the impact of learning programmes implementation outcomes. This is done through the annual tracer and Impact (medium to long-term) studies, which were previously done by the SSP division. Since the establishment of the M&E division this role will officially fall under M&E from the 2023/24 financial year.

The **LP Division** implements the outcomes of research (Sectoral Priority Occupations List). It monitors the implementation of deliverables and tracks progress against targets outlined in the Service Level Agreement through Quarterly Monitoring Reports (QMR) submitted to DHET.

The **ETQA Division** monitors the provision and the outcomes of learner achievements, culminating in certification. Other monitoring functions performed by the ETQA include monitoring of accreditation, the delivery of learning programmes, learning outcomes of learner achievements, verification processes and reporting through the NLRD.

5.2.2 Monitoring and Evaluation Data to Support Research and Planning

The following table demonstrates the data used by the three core divisions and the CEO's office:

Table 21: Data Used by Three Core Divisions

Division	Monitoring and Evaluation Data
CEO's Office	• Divisional Management Committee (MANCO) reports • Risk Management Quarterly reports • Internal Audit Review Reports
Sector Skills Planning	• Workplace Skills Planning/Annual Training Reports (WSPs/ATRs) Learning Programmes Impact Study reports
M&E Division	• Quarterly Monitoring Reports (QMR), Fact file reports • Divisional Management Committee (MANCO) reports • Learning Programmes Impact Study reports
Learning Programmes Division	• Quarterly Monitoring Reports (QMR) • Learner Placement reports
Education, Training and Quality Assurance Division	• Quality Assurance on delivery of learning outcomes • Accreditation/Re-accreditation reports

The monitoring data that is submitted to the CEO's office through the M&E Division by all Programmes. More importantly, the performance data generated from the three (3) core divisions is used for strategic planning and adjustment are made where risks are identified. The data is used to identify risks, so that strategies may be conceived and executed to guard against these risks. Through data submitted, management identifies and prioritises critical risks that may have an adverse impact on the SETA.

Monitoring data from the LP and ETQA Divisions is submitted to the M&E division for verification, analysis and reporting. The LPD submits QMR reports to the SSP division to undertake Tracer and Impact studies, and the ETQA data is used in research documents such as the SSP - an example of this data is the NLRD data. These studies help the SETA to determine if the programmes implemented are producing the intended results. Learning from past implementations, the SETA prepares mitigation strategies for future implementation. Moreover, ETQA monitors the relevance of qualifications and works with the Quality Council for Trades & Occupations (QCTO) in this regard. This exercise of reporting complements the QMR produced by the LPD, as it allows the SETA to distinguish which qualifications are relevant, thus informing the SETA's funding priorities for qualifications.

5.3 Extent to Which Previous Strategic Priorities Were Addressed

In the previous financial year, the MICT SETA had six strategic priority areas aligned to the both the NSDP and ERRP, these were aligned to the targets of the SETA's Strategic Plan and expressed in the Annual Performance Plan. The table below highlights the status of implementation of these strategic priority areas:

Table 22: Status of Implementation of Strategic Priority Areas for 2021/22

Strategic Priority	ERRP intervention	Status of Implementation
1. Support the sustainability and growth of SMMEs, Entrepreneurship, Cooperatives and community-based organizations	**Intervention six:** Supporting entrepreneurship and innovation.	In implementing strategic priority, the SETA funded 802 beneficiaries in SMMEs, Entrepreneurship, Cooperatives and community-based organizations. This was to create skills development programmes that are accessible to the aforementioned beneficiaries. This achievement is a clear indication that there is a high demand in the sector to implement these programmes. It was noted that small companies have difficulty in meeting requirements for learning programmes implementation, the aim was to create a model in which there are key partnerships where large companies mentor and provide incubator opportunities to smaller less well-established businesses. This priority responded to the NSDP outcome 6, which is aimed at providing support to SMMEs. Even though there were successful areas of implementation with regards to this strategic priority, there was poor participation by the industry to train young people on entrepreneurship programmes which resulted a partial achievement of this target.
2. Ensure good corporate governance and a productive workforce.	N/A	This strategic priority action was realized to focus on MICT SETA internal control systems and processes for effective corporate governance. Ensuring the elimination of fraud and corruption by putting in place effective fraud management plan strategies and policies as part of Risk Management. This priority has been partially achieved, with 1 irregular Expenditure identified on 1 of 99 procurements.
3. Increase and improve labour market information that	**Intervention one:** Embedding skills planning into sectoral processes	The SETA continues to ensure that the labour market information signalling the demand and supply of skills is thoroughly triangulated to improve the trustworthiness of data used for skills planning purposes. This was achieved through a systematic and in-depth research in

Strategic Priority	ERRP intervention	Status of Implementation
accurately identifies occupations in high demand.		collaboration with industry bodies, universities, and acclaimed research institutions. There were strategic career guidance initiatives implemented by the SETA in partnership with industry and various learning institutions in both the rural and urban areas. The total of 3329 career guide distribution was mainly through various online platforms. The targeted audience were unemployed learners and those already in employment seeking to progress to identified occupational shortages and skills gaps to ensure meaningful and sustainable Employment. The SETA has achieved this target.
4. Increase focused skills development interventions for rural and marginalized communities to ensure inclusivity	**Intervention four:** Access to targeted skills programmes **Intervention three**: Increased access to programmes resulting in qualifications in priority sectors.	The SETA implemented 191 rural development projects in the 2021/22 financial year, overachieving by 151 programmes. This level of achievement is attributed to the high demand by stakeholders to implement programmes in rural areas. The SETA's implementation in this aspect is linked to its rural strategy and to the NSDP outcome 8, which is aimed at increasing access to occupationally directed programmes for rural and previously disadvantaged communities (including townships).
5. Increase access to, and delivery of industry and occupationally directed priority programmes and work placements.	**Intervention four:** Access to targeted skills programmes	With this strategic priority action, the SETA had committed to the development of skills that enable 4IR occupations and Specialisations such as network and systems engineering and cybersecurity specialists. Through its implementation in this aspect, the SETA has successfully achieved this priority with 571 as it final reach, over achieving by 37. This can be attributed to high enrolments in the financial year and the collaboration with the industry. This implementation was also addressing the NSDP outcome 1, 2 and 8.
6. Improve the quality of education to address programmes in high demand within the MICT sector.	**Intervention one**: Embedding skills planning into sectoral processes	The SETA has been successful in addressing this strategic priority, the focus being on the identification and development of occupational qualifications through the QCTO for occupations in high demand in consultation with the sector. Moreover, putting in place mechanisms to prioritise 4IR related qualifications, the SETA has identified 33 4IR qualifications and they have been approved by the QCTO in the 2021/22 period.
7.Enablement of the Fourth Industrial Revolution (4IR)	**Intervention one**: Embedding skills planning into sectoral processes	The SETA has successfully achieved this priority through a systematic and in-depth research in collaboration with industry bodies, universities, and acclaimed research institutions. Through its implementation it was able to fulfil the objective of the NSDP outcome 1, which calls for the identification and increase in the production of occupations in demand (examples of which include Cloud Architects in the Cloud Computing space and AI Specialists in the Artificial Intelligence space). Moreover, the identified and the developed 4IR qualifications are an indication that the SETA is moving towards the right direction to respond to the needs of the sector
8. Enable the growth of the public college system through sectoral partnerships in the delivery of learning interventions.	**Intervention ten**: Strengthening the post-school education and training system	The SETA identified TVETs with the potential for meaningful collaboration. These partnerships have recognized some of the TVETs as Centres of Specialization, linking them with industry and ensuring that programmes offered are in alignment with identified skills gaps for ease of learner placement on programmes such as WIL. To date, the SETA has established 116 partnerships with TVET, HET and CET colleges. Furthermore, 12 SETA offices were established and maintained.

The status of achievement of the priorities, is evident from the table above that the SETA committed itself to the implementation of its key strategic priority areas. The MICT SETA ensured that the above mentioned key strategic priorities interphase with its key strategic outcomes, that all these priority areas were integrated with performance indicators and targets, enabling measuring and reporting on their achievement on a regular basis. In essence, the key strategic priorities were captured in the Strategic Plan and Annual Performance Plan which forms the basis for implementation.

The SETA has met most its targets with few partially achieved targets relating to the delivery of industry and occupationally directed priority programmes.

Plan of Action

5.3.1 Mechanisms that need to be in place to address key Strategic Priority Areas

M&E is important for organisations such as the MICT SETA to assess the extent to which its programmes and initiatives are yielding the intended results and impacts. To ensure that the entire organisation see the M&E function as a true value-add to the core business of the organisation in terms of evidence-based decision making. The SETA will in the strengthen data credibility and integrity at implementation level to improve the quality of monitoring data generated. The MICT SETA, will capitalise on the benefits offered by M&E, including the SETA being able to track, analyse and report on relevant information and data throughout programmes implementation, as a result creating greater transparency and accountability. M&E frameworks will be developed, which will ensure that employees are clear of their roles in the M&E process, this will be complimented by capacity building workshops on the framework to ensure that it is embedded in organization.

5.3.2 Measures to ensure current priorities are achieved

M&E and Strategic Management should not be viewed as two separate functions, as they are both concerned with supporting fundamental decisions and actions, which shape and guide the organisation. The SETA will establish innovative and strategic partnerships with public institutions, centres of specialisation, SMMEs and industry at large for maximum impact on sectoral growth and sustainability. Key Priority Areas will be aligned to the Annual Performance Plan, which could translate into an SLA between the MICT SETA and DHET.

5.4 Conclusion

This chapter highlighted the SETA's approach to M&E and demonstrated how data in relation to the concept is applied - this was useful in understanding how decisions are made, and to establish whether the existing M&E function contributes to decision making. Moreover, the chapter was able to shed some light on the SETA's implementation with regards to the NSDP and ERRP interventions. From the above it becomes apparent that the MICT SETA is moving in the right direction and there is clearly an alignment of its priorities to the national plans, meaning there planning is clearly well research and practical. With the establishment of the M&E unit, the SETA will now be able to fully monitor performance and enhance reporting processes to ensure accuracy and timely reporting.

Chapter 6: Strategic Skills Priority Actions

6.1 Introduction

This chapter summarises the key findings that have emerged from the research, the findings will guide how the SETA responds in the 2023/24 financial year, aligning priorities or strategic outcomes to the research evidence presented. This chapter is informed by the 5 preceding chapters, which are in turn informed by consultations and literature review. The recommended priority actions were drafted with strategic input from MICT SETA senior management and policy directives such as the NSDP, the ERRP and its supporting Skills Strategy.

Key Skills Findings from Previous Chapters

In Chapter 1 it was outlined that the MICT sector the MICT Sector is made up of 32 985 employers, which are spread across five Sub-sectors, this represents a 7% decrease from the 35 569 in the previous financial year. From the current employer base, only 8,896 employers are paying levies, this is a slight decline from 9 093 compared to the previous financial year. The MICT sector experienced an increase in the number of employees recording 228 990 in 2022. The largest proportion (54%) of employees are working in the Information and Technology sub-sector, followed by 28% working in the Tele-communications, 9% in the electronics subsector. The sub-sector with the lowest number of employees is advertising accounting 4%, Film, and Electronic Media accounting 5%. Moreover, the Transport, storage and communication sector is rated in the top 5 of economic sectors that recorded GDP growth in the 2021 financial year. The South Africa's MICT sector is set to chart a strong recovery in 2022, but structural changes may affect growth in various sub-sectors.

Chapter 2 illustrated that the MICT sector is dynamic and in constant technological flux. Thirteen 4IR technologies were studied as drivers of change in the sector, with Artificial Intelligence (AI), Cloud Computing, Big Data, 5G and the Internet of Things (IoT) coming up strongly as the biggest change drivers in the sector. From the drivers of change, the challenges and implications for skills development, with a focus on change brought about by the fourth industrial revolution (4IR), were identified. South Africa still lags behind in terms of adopting 4IR technologies and a major contributor to this is the lack of appropriate qualifications in 4IR related fields. Thus, 4IR introduces new opportunities for training and as new hardware and software products appear on the market, these need to be accompanied with the upgrading of courses. Chapter 2 was also successful in documenting converging technologies that will entirely transform the sector in the next five years.

In 3 consecutive years, chapter 3 continues to highlight predominant skills gaps to be Communication skills, Leadership skills, Technical skills, Project management skills, and certified skills (CompTIA A+, Network+, MCSA, MCSE, Azure, CISCO, etc.). The most recent additions are Design and Critical thinking skills. The MICT sector priority occupations list makes 14% of the national priority skills published by DHET in February 2022, these are 14 occupations out of the 101 occupations in the national list. The interventions identified in the sector priority occupations list are pitched at a higher level since the sector very competitive and its internally benchmarked, most of the proposed interventions are not NQF aligned mainly because the industry favours vendor qualifications as panacea to the environment that is always in constant state of flux.

Chapter 4 identified partnerships between the SETA and various institutions to advance sector development and growth. These partnerships are structured into the following typologies: Partnerships with TVET colleges; Partnerships with Universities; Partnerships for Special Projects; Partnerships with Industry Vendors; Partnerships with SMMEs; and Partnerships with Research. There are a number of successful partnerships that were identified, as well those that come with challenges.

Chapter 5 explored the SETA's M&E approach and articulated the functions of the various divisions of the SETA in M&E. Although all three core divisions play, to some extent, a monitoring function, the SSP and the M&E will continue to collaborate on evaluations both from a performance perspective and from a research perspective. M&E is also intrinsically linked to Risk Management as handled by the Office of the CEO. A plan of action was also presented on how the SETA intends to achieve its priorities.

Recommended Priority Actions

The following sets out the proposed broad skills development objectives for the sector. These areas are intended to include efforts made broadly by MICT sector stakeholders

Table 23: Recommended Priority Actions for the 2023/24 financial year

NSDP Outcomes	ERRP Interventions	ERRP Skills Strategy Interventions	MICT SETA 2023/24 Outcomes/Priority Areas	Description of MICT SETA 2023/24 Outcomes/Priority Areas
Outcome 1: Identify and increase production of occupations in high demand	**Intervention one**: Embedding skills planning into sectoral processes	**Intervention 8:** Embed skills planning in economic planning processes and vice versa	**Credible labour market information that accurately identifies occupations in high demand.**	The MICT SETA will ensure that the labour market information signalling the demand and supply of skills is thoroughly triangulated in order to improve the trustworthiness of data used for skills planning purposes. Of equal importance will be the management and dissemination of research outcomes on occupations in high demand and incremental building of career guidance in partnership with industry and various learning institutions. The idea is for skills planning to incorporate issues pertaining to skills supply and demand, and for skills planning to be demand-led and responsive to the needs of the economy. In this way, skills are part of a package of industrial interventions, together with incentives, trade agreements and other interventions, instead of a separate or parallel "add on". Furthermore, In response to the change brought about by 4IR, the SETA will provide support to enable the Sector to play a key role in the development of technologies and products related to 4IR.
Outcome 8:Support career development services			**Enablement of the Fourth Industrial Revolution (4IR).**	
Outcome 2: Linking education and the workplace	**Intervention four**: Access to	**Intervention 2:** Enable the provision of targeted skills programmes	**Increased access to, and delivery on occupationally directed priority programmes**	The SETA will set realistic targets in collaboration with industry, ensure implementation through the allocation of discretionary grants and monitor delivery of Service Level Agreement deliverables as a way of

Outcome 7: Encourage and support worker initiated training	targeted skills programmes		**that link education and the workplace.**	addressing sectoral occupational shortages and skills gaps. This will prioritise the development of skills that enable 4IR occupations and specialisations such as network and systems engineering and cybersecurity specialists.
Outcome 3: Improving the level of skills in the South African workforce	**Intervention seven**: Retraining/up-skilling of employees to preserve jobs.	**Intervention 1**: Expand the provisioning of short skills programmes	**Support initiatives that prioritize the provision of agile, flexible and demand-led skills development programmes, retraining/ Upskilling being a priority**	The SETA through this priority/outcome, will focus on the provisioning of short skills programmes that respond directly to the skills gaps identified in this research. The emphasis is on those that are driven by industry, rather than supply driven. Through this priority the SETA will ensure that there is provision of agile, flexible and demand-led skills development programmes, special focus will be on employed persons who require reskilling and or/upskilling, new entrants to the labour market who may require work readiness, foundational, digital and other types of short skills programmes to improve their chances of employment (including self-employment and Other unemployed persons whose chances of employment (employability) need to be improved (including for self-employment).
Outcome 4: Increase access to occupationally directed programmes	**Intervention four:** Access to targeted skills programmes **Intervention three**: Increased access to programmes resulting in qualifications in priority sectors.	**Intervention 3:** Expand the provisioning of WBL opportunities **Intervention 4:** Increase enrolments in qualification-based programmes that respond to the occupational shortages identified in this strategy	**Increased and focused skills development for rural and marginalised communities to ensure inclusivity through technology skills development.**	The MICT SETA's rural strategy, linked to NSDP outcome 8, is aimed at increasing access to occupationally directed programmes for rural and previously disadvantaged communities (including townships). The MICT SETA strategy aims to respond to the President's Youth Employment Service, which is known as the "YES initiative". It aims to address the most pressing socio-economic challenges in the country, particularly around poverty and unemployment among the youth. This priority intends to scope the skills development needs and priorities of rural communities, provide career and vocational guidance.
Outcome 5: Support the growth of the public college system	**Intervention ten:** Strengthening the post-school education and training system	**Intervention 10:** Strengthen the PSET system	**Support growth of the public college system through sectoral partnerships in the delivery of learning interventions.**	The SETA will identify TVETs with the potential for meaningful collaboration and enter into partnerships with them. These partnerships will recognise some of the TVETs as Centres of Specialisation, linking them with industry and ensuring that programmes offered are aligned to identify skills gaps for ease of learner placement on programmes such as WIL. Furthermore, the SETA will award bursaries to college lecturers and training opportunities on curriculum related studies to college managers for their continuous development and for them to be adept with industry technological advancements. The SETA will continue to establish offices

				in TVET colleges to ensure accessibility and reach, ensuring that those TVETs are duly accredited to offer the SETA's high-demand occupational qualifications. In all this, the development of skills that enable 4IR occupations and specialisations will be the main focus.
Outcome 6: Skills development support for entrepreneurship and cooperative development	**Intervention six:** Supporting entrepreneurship and innovation.	**Intervention 7:** Strengthen entrepreneurship development programmes	**Support for SMMEs, Entrepreneurship and community-based organisations, particularly in relation to 4IR cross-sectoral partnerships and projects for sustainable growth**.	The SETA through this priority/Outcome will focus on the need to provide the skills required for entrepreneurship development in ways that enable entry-level entrepreneurial activities (private and social) through to higher-end enterprises that rely on innovative research and development. Moreover, the focus will be on the skills required to grow income-generating opportunities in local economies through the establishment of private as well as social enterprises. In developing interventions for SMMEs and community-based organisations, the SETA will make considerations such as: the ability of an SMME to obtain funding for skills development.

Measures planned in response to Change Drivers

The ultimate goal of the MICT SETA is to ensure that all its implementation eventually contribute to the achievement of NDP outcomes regarding skills development. To achieve this, the SETA will align its priorities with the NSDP, ERRP and its Skills strategy as illustrated in table 24, of course this will require close collaboration with various partners to support the achievement of the NDP objectives. Through continued funding of bursaries at research level, the SETA endeavours to propel the sector's innovation system. The MICT SETA strives to be a reliable skills development partner that promotes growth in requisite skills (this is especially important now with the occurrence of Covid-19 and the catalyst effect it is having on the enablement of 4IR). Moreover, the MICT SETA will leverage its partnerships with industry to drive innovative research and offer opportunities to small business, to enable them to play a significant role in the country's manufacturing and technology ecosystem, most importantly, the focus will be on the skills required to grow income-generating opportunities in local economies through the establishment of private as well as social enterprises. The below illustrates the SETA's efforts in response to the change drivers:

1. The MICT SETA through partnerships with various stakeholders will continue to ensure that skills development occurs in all the corners of all provinces in South Africa, research will be the foundation of all interventions, the research will truly guide the SETA to make evidence informed decisions around skills development. The SETA's strategic plan will emphasise on the provision of financial and non-financial support to SMMEs, NGOs, NLPEs, and CBOs. Partnerships with stakeholders like SEDA to encourage incubation would play a key role in achieving sustainability and growth of small businesses in the sector.

2. The Skills strategy contains ten interventions to ensure the effective implementation of the ERRP. The SETAs, including the MICT SETA, finds expression in six of the interventions. The MICT SETA plans to directly contribute to each of these interventions including:

    - Intervention one: Embedding skills planning into sectoral processes.
    - Intervention three: Increased access to programmes resulting in qualifications in priority sectors.
    - Intervention four: Access to targeted skills programmes
    - Intervention six: Supporting entrepreneurship and innovation.
    - Intervention seven: Retraining/up-skilling of employees to preserve jobs.
    - Intervention ten: Strengthening the post-school education and training system.

These interventions are further supported by the 7 interventions of the ERRP support strategy out of the 10 proposed, table 24 above details on these and how they align to the MICT SETA 2023/24 priority actions. Through both the NSDP and the ERRP priorities adopted, the MICT SETA will introduce and/or emphasise unit standards on soft skills and business management skills for all courses. This is expected to improve learners' employability and entrepreneurship skills.

3. The MICT SETA in collaboration with QCTO will continue to develop and realign qualifications to be 4IR aligned and be future forecasting.

4. The SETA in terms of business continuity, it will develop a strategy to anticipate any future major disruptors such as COVID, incubation or mentorship models will be prioritized where larger companies in the sector incubate and/or partner with smaller companies.

Conclusion

The MICT SETA will continue to strive towards the continuous improvement of planning and implementation efforts, as well as the constant monitoring of sector-related changes and developments. From the above it is evident that no legislative framework or mandate can be implemented without affecting another, all these plans align to each other as they have the overall goal of contributing to the NDP. The MICT SETA priorities in the 2023/24 financial year will be taking into consideration key national priorities, such as the response to NSDP, ERRP and its supporting Skills Strategy, also making 4IR interventions a priority. The priority actions identified in this research find expression in the MICT SETA Strategic Plan and Annual Performance Plan and will serve as a guide for the SETA in support of national and sectoral objectives in the best manner possible.

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