



- ▶ In spite of a high unemployment rate, South Africa faces a critical shortage of ICT specialists. Industry continuously struggles to recruit suitably qualified candidates equipped with the required skills, particularly in technical fields such as ICT. A closer collaboration between industry and universities / training institutions is essential to meet evolving skills demand of industry driven by existing and emerging digital technologies
- ▶ The technical and vocational education and training (TVET) sector is particularly ill-equipped for producing the type of ICT skills demanded by employers given that qualifications in these types of colleges do not go beyond NQF Level 4 and are not recognised by universities and employers in the ICT sector. The weaknesses of the current system of skills development are well-acknowledged; plans for revising the system exist, but progress has been slow.
- ▶ There are unequal opportunities available to different parts of the population for joining the ICT workforce. The by far biggest under-represented group are Black Africans, Coloured (mixed race) and Indians. Only 43% of South Africa's Media, Information and Communication Technologies (MICT) workforce are Black Africans, against a share of 78% in the economically active population.
- ▶ Available data also suggest that the ICT workforce's gender balance is skewed towards males. In university education, computer and information sciences is the field of study with the lowest share of women after military sciences and engineering.
- ▶ The South African government has embarked on a range of policies to increase access to ICT training and education and to step up production of digital skills.
- ▶ Neither the size nor the nature of existing ICT training programmes targeting young persons from groups currently under-represented in the ICT workforce is sufficient to tackle the digital skills shortage and to significantly improve the inclusiveness of the ICT workforce. Stronger, concerted efforts from all stakeholders are required.
- ▶ A range of initiatives by NGOs and private companies are trying to fill the gap left by South Africa's ineffective national ICT training system, especially in the vocational education and training sphere. Results are promising, but limited in overall impact because of their scope in relation to the size of the challenge.
- ▶ The lack of skilled candidates was reported as the main reason given for the hard to fill vacancies in the MICT sector, which marked 2.9% of total employment in 2017.

Current developments in the ICT labour market in South Africa

South Africa's ICT sector will employ between 290,000 and 350,000 workers in 2025, up from 250,000 in 2015. Estimations are made based on Adelzadeh (2017) model calculation on the forecasted MICT sector employment in 2025. The 2015 figure translates into 2.2% of the country's

total labour force – roughly the same share as the average for the EU and China but significantly higher than in the other BRICS countries India, Russia and Brazil. While no data is available for the number of ICT specialists working in other sectors of the economy, dependence on advanced ICT skills

is expected to grow significantly across most parts of the country's economy in the coming years¹.

Employers find it increasingly difficult to source the skills needed on the labour market, which is reflected in high numbers of hard-to-fill vacancies. The MICT sector reported a 2.9% hard to fill occupations as a percentage of total employment. The list of top 10 occupations with hard to fill vacancies in the MICT sector includes: Software developer; Computer Network and Systems Engineer; ICT Systems Analyst; Programmer Analyst; ICT Security Specialist; Business Analyst; Multimedia Designer; Advertising Specialist; Database Designer and Administrator; and Telecommunications Network Engineer. 75% of senior ICT managers report that the ICT skills shortage is having a major effect on their business. Lack of skilled candidates is the reason most often reported for problems in filling over 63% of occupations in need. 9% of all cases cite "employment equity considerations" as the main cause, which points to difficulties in finding the right skills among the non-white labour force.

South Africa's education system faces severe problems in producing the ICT skills demanded by employers. This applies in particular to the Technical and Vocational Education and Training (TVET) system. In university education, total ICT graduate numbers have increased significantly since 2009, from 3,800 to over 5,300, but only a small share of these advance beyond the bachelor or equivalent level. Employers complain that fresh graduates lack fundamental skills needed for operating in a business environment. Recruitment of young persons who have completed TVET (for entry level positions) is generally not considered a viable option due to substandard level of training provided by many of these colleges.

In terms of gender equality, South Africa is well ahead of most other countries at similar levels of economic development. Overall, South Africa has achieved near gender parity in professional and technical roles. Women are still significantly underrepresented, however, among ICT and engineering students: Currently only 13% of STEM graduates are women. The little evidence available also indicates marked gender imbalances in senior ICT specialist positions.

¹ Schofield, A. (2017)

The policy response

Progress has been made in policy formulation on strengthening what the South Africa government calls supply-side ICT skills, i.e. ICT specialist skills, which has resulted in two National e-Skills Plan of Action (NeSPA) in 2010 and 2012. Actual numbers of persons trained in ICT specialist skills have not yet increased sufficiently, however, to mitigate the problems facing employers who seek to recruit ICT skilled staff.

The mechanism used to fund skills development in South Africa is known as the levy-grant system.

Employers pay a levy for skills development, and 80% of this pool of funds is passed to the Sectoral Education and Training Authorities (SETAs). They distribute a portion of the levy funds to contributing employers for training provided to their workers. The ICT professions are managed by the Media, Information and Communication Technologies (MICT) SETA. The levy-grant system is criticised for not achieving its objectives.

MICT SETA has established new learning interventions to help tackle ICT skills shortages.

These include Internships, Learnerships and Skills Programmes, all of which use work placements as essential tools for equipping learners with the soft skills essential for operating in a modern business environment. Their number has increased continuously, from about 3,900 in 2011 to 12,700 in 2016. Further growth is needed, as well as an emphasis on quality: There is evidence that the majority of Learnerships currently being undertaken are at NQF² level 3, and as such do not qualify even for an entry-level ICT job. Greater alignment of training offers with employer demand is urgently needed.

The South African government stresses inclusion and diversity as a horizontal topic across all policy areas, in the tradition of policy-making since the end of apartheid. The country has a framework for affirmative action designed specifically to rectify some of the inequalities resulting from the legacies of South Africa's colonial past and the discriminatory practices during apartheid. Legislation has been developed which requires positive or affirmative measures to attract, develop

² The NQF in South Africa consist of 10 levels divided into three categories; Levels 1 to 4 equate to high school grades 9 to 12 or vocational training, 5 to 7 are college diplomas and technical qualifications, 7 to 10 are university degrees

and retain individuals from previously disadvantaged groups. Employers are required to take effective measures to ensure improved representation of black Africans also in fields traditionally dominated by white workers, as in the ICT sector. Compliance is measured on the Broad-Based Black Economic Empowerment (B-BBEE, see Section 3) Scorecard.

Industry-driven training programmes

Several companies from the ICT and related industries offer inclusive ICT training programmes dedicated to disadvantaged groups. These are usually initiatives funded from the companies' Corporate Social Responsibility (CSR) budget. Examples include:

- T-Systems, in co-operation with the Good Work Foundation, an international NGO, operates the Hazyview Digital Learning Centre (HDCL), which targets students from disadvantaged backgrounds.
- Sci-Bono Discovery Centre, an NGO, co-operates with SAP, the ICT multinational, to adapt the 'Simplon' programme from the original French version for implementation in Gauteng Province, targeting youth from disadvantaged backgrounds.
- SAP also operates SAP Skills for Africa, a 3-months scholarship programme targeting fresh, talented and unemployed graduates who cannot afford commercial SAP education.
- EOH, a large consulting, technology and outsourcing company, operates the EOH Youth Job Creation Initiative which provides MICT-SETA accredited training to

disadvantaged youth over a period of 12 months.

For persons who face difficulties in entering the ICT workforce, Learnerships offered by ICT companies are of particular value, as they expose participants to the business environment and thereby serve as an entrance into the industry. Learnerships are work-based learning programmes directly related to an occupation such as for i.e. IT technician, and offered under the auspices of MICT SETA. This is a route to a NQF registered full qualification. Learnerships combine a structured learning component with practical work experience that is acquired while being employed in a company, government department or small business. Learnerships have been shown to increase access to employment opportunities and to assist in career-pathing and self-development. For the employer, offering Learnerships to black Africans has the advantage of earning Empowerment credentials and B-BBEE points for the company. More generally Learnerships can be used as a vehicle to address employment equity targets and to help fill identified skills gaps.

NGO-driven training programmes

South Africa has a large number of NGOs that are active in providing training to young people from disadvantaged backgrounds, including trainings focused on advanced digital skills. Most if not all of these are facing the challenge of making funding arrangements more permanent. Private sector donors tend to renew decisions about funding individual programmes every few years, based on performance but also on factors unrelated to the level of the initiative's success

Key Recommendations

Secure stronger input from industry in development of learning interventions

- Current programmes such as Learnerships need to be reviewed and new ones developed in a process of close collaboration between MICT SETA (and other skills bodies where relevant), training providers and employers. The aim is to foster development of appropriate qualifications which match to the current demand in the job market.

Stronger multi-stakeholder partnership at local level

- Building partnerships in which state agencies such as MICT SETA work closely with employers and other stakeholders is a tried-and-tested way to increase the responsiveness of colleges to local labour markets.
- Partnerships at the local level might be most appropriate for developing cross-sectoral partnerships and projects in the delivery of learning interventions.

Expand opportunities for work-integrated learning

- Private sector companies should step up co-operation with MICT SETA for offering Learnerships and Internships to people for groups currently under-represented in the ICT workforce.
- There needs to be more exchange of experience and best practice between companies active in this area.

Explore innovative ways to increase private business investment in ICT training

- Pay for Performance funding mechanisms should be explored as an incentive for South African companies to invest in ICT training of youth from a disadvantaged socio-economic background.
- The Broad Based Black Empowerment Scorecard system should be used to create incentives for the outsourcing of ICT training to NGO-driven training programmes.

Boost quantity and quality of ICT training at TVET colleges

- The TVET pathway into ICT careers should be strengthened not only by increasing the input of colleges but also by improving the quality of their output. Evaluators have emphasised the need to update the curricula to industry standard, improve the low certification rates and improve management staff training and their attitudes.³
- Investments in TVET colleges in underserved areas, e.g. in former townships, should put a special emphasis on ICT training because of the latent demand for advanced ICT skills in the labour market, too

Improve the capacity of SMEs to provide inclusive ICT training

- The large numbers of SMEs that employ ICT specialists require targeted support for empowering them to offer Learnerships or provide other types of ICT training to jobseekers.
- MICT SETA should follow through with its idea to win over established larger companies in the sector to mentor smaller companies that are willing to engage in training provision.

Putting more emphasis on soft skills

- Employers request ICT graduates who do not only come with the technical knowledge and practical skills required for the job, but also with workplace readiness in terms of interpersonal and self-management skills. This needs to be fully reflected in all training programmes.
- Stronger use should be made of mentoring programmes, e.g. for supporting members of groups currently under-represented in the ICT workforce such as women during their education.
- Innovative mentorship models should be explored. This could include train-the-mentor schemes in which seasoned employees working for multinationals in a developed country give active support to mentors who work in the same company's South African branch.

Make career advice more effective and step up online promotion

- More efforts are required for establishing effective career advice, including set-up of MICT SETA offices in each college with ICT training programmes.
- These offices could also build relationships with local schools in order to streamline promotional activities and attract young persons as early as possible to the ICT field.
- Targeted use should be made of cost-efficient ways to reach young people via their preferred channels of communication (e.g. social media).

³ Mason, R.B., Mbambo, S.N. & Pillay, M.A.: Service quality at technical and vocational education and training colleges: perceptions according to demographic factors. In: Journal of Technical Education and Training (JTET), Vol. 10, No.1, June 2018: "Clearly most students have high expectations of the service they want to receive and most students feel that they are not receiving this desired level of service. In other words, students are receiving a poor level of service and it does not appear as if any particular demographic is being discriminated against in terms of service level. This implies that it is not the nature of the student that is attracting poor quality service, but that poor service appears to be endemic at TVET colleges. It is probably therefore that the poor service quality is due to inadequate systems, inadequate administrative staff training, demotivated staff, or staff with inappropriate attitudes being employed. This further implies that the management of the colleges may be unprofessional and inadequate, as strong and professional educational management should have addressed these issues."

Urgent need for better data, evaluation

- There is an urgent need for better data to give stakeholders vital insight into the size and nature of digital skills shortages, employer investment in training, and the outputs of the country's education and training system. This may require establishment of a new, central coordinating body, as SETAs have not yet been able to fill the role.
- A commitment to thorough evaluation needs to be mainstreamed across all training interventions in the ICT domain, especially in terms of impact on employability.

Further information

For further details about our survey results and methodology, you can request access to our full report, forthcoming in 2018. For questions and queries, please contact:

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