

How the Artisan Recognition of Prior Learning model could redress the challenge of unqualified “plumbers”

OVERVIEW

The number of unqualified “plumbers”¹ working in South Africa’s plumbing industry has increased substantially. About 86.8% or 97 000² self-identified plumbers in the industry are unqualified, which has had significant implications for business sustainability, the perceived level of skill in the industry, and the effective delivery of water and sanitation systems. The personal-professional development of unqualified plumbers is affected by this. The lack of a plumbing qualification prevents plumbers from gaining new skills in plumbing technology and green plumbing services, and from earning more income, either from increasing prices or switching to better-paying employers.

The aim of this policy brief is to quantify the extent of unqualified plumbers in South Africa and to provide insights into how the Artisan Recognition of Prior Learning (ARPL) model can assist with integrating skilled craftspeople into a recognised trade qualification, which can ultimately lead to career mobility and decent work in formal employment. A focus on ARPL can also be used as a tool to support transformation of the plumbing industry, and the education and training system in general. The brief also makes recommendations around the limitations of the ARPL model and alternatives to improve outcomes for skilled, but unqualified plumbers.

Trade & Industrial Policy Strategies (TIPS) is a research organisation that facilitates policy development and dialogue across three focus areas: trade and industrial policy, inequality and economic inclusion, and sustainable growth

info@tips.org.za
+27 12 433 9340
www.tips.org.za

Policy Brief by
Lesego Moshikaro
TIPS Economist

THE IMPORTANCE OF THE PLUMBING INDUSTRY IN SOUTH AFRICA

The plumbing industry is essential for providing water and sanitation systems for health, hygiene and well-being, while ensuring efficiency in water usage and waste management (Plumbing & Mechanical, 2015). The General Household Survey of 2018 released by StatsSA (2019:41) estimates that “89% of households in South Africa had access to drinking water (piped or tap water in the dwellings, off-site or on-site), more than any of the other basic services; access to electricity (84.7%), improved sanitation (83%) and refuse removal services at home (66.4%)”.

¹ In this brief, the use of plumbers refers to workers employed in the plumbing industry who self-identify as plumbers, and not necessarily to those who are qualified plumbers, unless stated.

² Figures are rounded off to the nearest thousand. The number of unqualified plumbers includes plumbers with no schooling, less than a matric and those with only a matric.

This further emphasises the integral role of the plumbing industry in delivering basic services to South African households.

According to 2020 data, there are about 96 000 self-identified plumbers (including apprentices) in South Africa, down from 113 000 previously in 2019 (StatsSA, 2020), and 125 000 in 2018 (TIPS and SD4GE, 2019). A substantial number (71.6%) of plumbers in 2019 worked for someone else, 13.8% were self-employed, and 0.4% worked in a household business without being paid. Plumbers can also be employed in plumbing companies, or in construction, commercial and home maintenance, learning institutions and across various other facilities (IOPSA Survey Report, 2021).

Plumbing is a hugely important trade for creating new employment opportunities and has the potential for relatively high wage earnings, which is particularly key to overcoming high levels of income inequality in South Africa.

In light of government’s goals to strengthen the manufacturing, engineering and construction sectors, the need to develop qualified craftspeople, including plumbers, to support the economy remains a high

The problem of unqualified plumbers remains a long-standing challenge that has been singled out as a major impediment to the success of plumbing businesses and to strengthening the professionalisation of the trade.

priority (Burger, 2012). However, in practice, the industry is characterised mainly by unqualified plumbers operating in the informal sector. Figure 1 shows that at least 89.5% of plumbers work in the informal sector.

The problem of unqualified plumbers remains a long-standing challenge that has been singled out as a major impediment to the success of plumbing businesses and to strengthening the professionalisation of the trade (TIPS and SD4GE 2019; IOPSA Survey Report, 2020). Unqualified plumbers impact on several groups, including unqualified plumbers themselves as they cannot charge higher rates for their services, and unqualified plumbers ultimately pull down rates for qualified plumbers. Furthermore, unqualified plumbers could expose customers to potential water and sanitation safety risks.

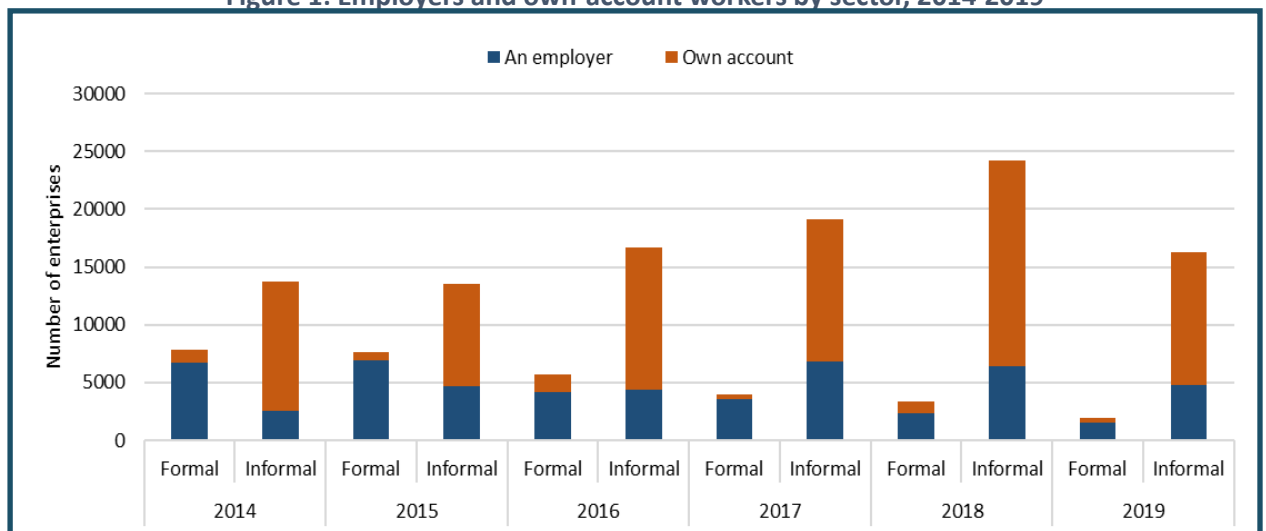
INCREASED INFORMALITY IN THE PLUMBING INDUSTRY: THE INFORMAL VS THE FORMAL SECTOR

Plumbing in the informal sector has different levels of formalisation, as reported by TIPS and SD4GE (2019). Informal plumbers are a mixed group of qualified and non-qualified, experienced and inexperienced. Furthermore, the informal plumbing economy is predominantly Black (TIPS and SD4GE, 2019). The informal economy is a source of employment for many unqualified plumbers. However, both formal and informal enterprises employ unqualified plumbers, typically through informal recruitment methods such as walk-ins, roadside workseekers displaying signs, and through word-of-mouth or referrals by family and friends (TIPS and SD4GE,

Some unqualified plumbers acquire the necessary technical skills through experience in the formal economy, but many leave formal employment to work in the informal sector (could be part-time for formal sector employees), where they drive down market prices by undercutting prices charged by formal enterprises. Alternatively, in some cases, they find new markets with customers who may not want to pay or are unable to afford market prices. For other plumbers, the informal sector serves as an alternative to the limited job opportunities available in the formal sector, particularly for those without formal education and qualifications (PIRB, 2019). The informal sector mainly serves township customers and those who may not be able to afford the market price. Service rates are cheap and enterprises are likely unregistered and non-compliant with plumbing regulations and standards, and it is unlikely that there is any enforcement of regulations in this market. This remains a concern because bad or improper plumbing affects water quality and may result in health and safety consequences, as well as affecting water and energy wastage and damaging municipal infrastructure (Lobanga, 2010; interview with Brendan Reynolds, IOPSA Executive Director, 2022).

Figure 1 shows increasing levels of informality in the plumbing industry. The number of formal enterprises is declining every year, while there is a rise in the number of informal enterprises. In 2018, the informal sector accounted for about 87.9% of plumbers. The high incidence of informal enterprises presents a major challenge for the industry because it means low productivity, poor skills development and training. By 2019, the formal sector had declined, accounting for 10.5% of self-employment enterprises,

Figure 1: Employers and own-account workers by sector, 2014-2019



Source: StatsSA, Quarterly Labour Force Survey data. Excel spreadsheet. Downloaded from www.statssa.gov.za.

The most common route to qualify for a trade is through an apprenticeship or alternatively through the ARPL programme, designed for those who are able to access the trade test based on their previous knowledge and workplace experience.

from 36.3% in 2014. Out of the 18 000 self-employed enterprises in 2019, 6 000 were own-account workers, while 11 000 employed one or more people. The decline in informality particularly from 2016 could be a result of several factors, such as the slow growth in the construction sector from 2017, and “the decline in municipal capacity and appetite to enforce the requirements of their by-laws for the plumbing industry” (Brendan Reynolds, IOPSA Executive Director, 2022).

Informality affects earnings. Qualified plumbers in the formal sector have a much higher earning potential than their counterparts in the informal sector. A plumber’s salary in South Africa is influenced by various factors, such as the plumber’s years of experience, qualifications, and to some extent gender as well. TIPS and SD4GE (2019) report that self-employed plumbers in the formal sector earn more than those who are working for someone else. The difference in earning among plumbers is said to be more evident among White plumbers, while only small differences were observed for African and Coloured plumbers (TIPS and SD4GE, 2019).

The slowdown in economic growth affects where plumbers work. The number of unqualified plumbers and size of the informal economy is influenced by economic conditions (ILO, 2018). Economic conditions, and more recently the COVID-19 pandemic, adversely affected labour supply, creating difficulties for employers to find qualified plumbers to work. The informal economy thus provides employment and income for many unqualified (and qualified) plumbers who cannot find employment in the formal market. The economy is unfortunately not creating

jobs fast enough to absorb qualified and unqualified plumbers looking for work; therefore, the majority of workers (unqualified plumbers in this case) have often remained trapped by low skill levels and inadequate training opportunities.

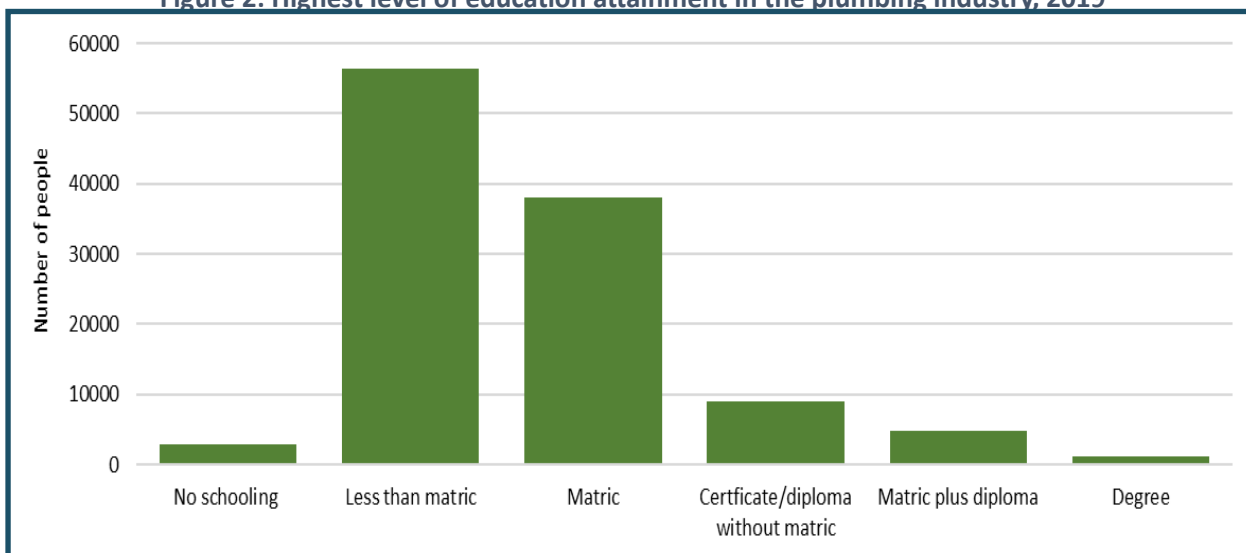
Among other factors, the risks posed by COVID-19 saw many customers postponing or cancelling plumbing installations and maintenance services, therefore making the occupation much less attractive for workers, leading to increases in informality – or, in a worst-case scenario, an exit from the labour market (Askar, 2020; UN, 2021).

PLUMBER QUALIFICATIONS: MOST PLUMBERS IN THE INDUSTRY ARE UNQUALIFIED

An occupational certification is required for the plumbing industry, based on the Quality Council for Trades and Occupations (QCTO) assessment and qualification criteria (QCTO, 2021). The most common route to qualify for a trade is through an apprenticeship or alternatively through the ARPL programme, designed for those who are able to access the trade test based on their previous knowledge and workplace experience (Plumbing Africa, 2019; DHET, 2017). To qualify as a plumber in South Africa, a post-matric National Qualifications Framework (NQF) Level 4 qualification is needed as well as completing the required industry-related plumbing training, and passing a trade test.

Figure 2 shows that about 86.8% or 97 000 of plumbers are unqualified. From the StatsSA data (2019), the highest level of education attainment is

Figure 2: Highest level of education attainment in the plumbing industry, 2019



Source: Stats SA, Quarterly Labour Force Survey data. Excel spreadsheet. Downloaded from www.statssa.gov.za

In 2019, from 112 000 workers in plumbing who reported their education levels, 3 000 or 2.6% said that they had received no schooling; about 50% had less than a matric; and 33.9% were in possession of a matric – StatsSA, 2020

used as a proxy to measure the level of skills and capacity for workers operating in the plumbing industry. In 2019, from 112 000 workers in plumbing who reported their education levels, 3 000 or 2.6% said that they had received no schooling; about 50% had less than a matric; and 33.9% were in possession of a matric certificate (see Figure 2). Looking at the highest level of education attainment, at least 1% of workers had a degree qualification, being a bachelor degree and a post diploma. The 1% of plumbers with a degree were all between 40-49 years old and Black (StatsSA, 2020).

As illustrated in Figure 3, from the 3 000 workers with no schooling, all the workers were Black and over 40 years old (StatsSA, 2020). Despite the lack of schooling, the 3 000 workers most likely have the skills and years of experience that could compensate for their lack of formal education and training.

From the evidence in Figure 2 and Figure 3, 86.8% of workers in the plumbing industry without a post-matric qualification would be unqualified plumbers, while 9 000 or 8% in possession of a post-matric qualification are likely to be qualified plumbers. It is clear that this presents an opportunity to provide a form of certification to these plumbers through the ARPL system. Given their age, they are likely to have adequate experience required for the ARPL programme (experience of more than three years).

When looking at the highest level of education attainment by age, 19 000 plumbers aged 15-34 do not have a matric compared to 37 000 of plumbers aged 35-64 without a matric. In addition, only 1 000 plumbers aged 15-34 received no schooling, while

2 000 plumbers aged 35-64 said they had received no schooling. Alternative entry routes for both young and older plumbers are therefore important to tackle when dealing with low levels of certification and qualified plumbers in the industry.

THE EFFECTS OF UNQUALIFIED PLUMBERS

Unqualified plumbers may affect different groups and individuals in different ways. Enterprises of unqualified plumbers usually offer low rates for their services, which provides a strong incentive for customers to use unqualified plumbers. Often

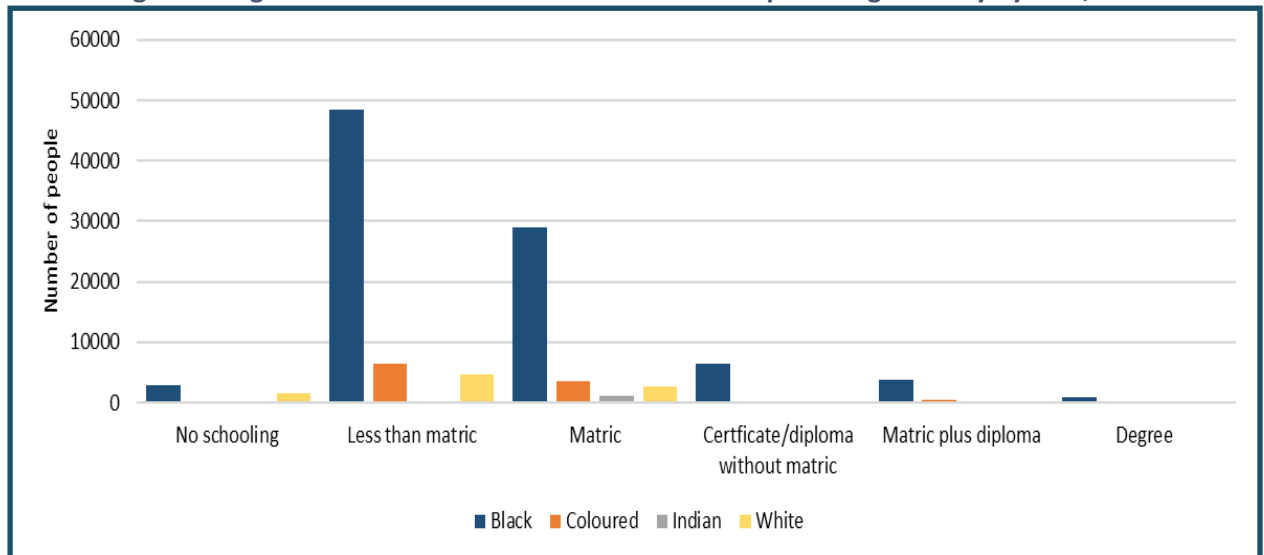
³Although not shown in this brief, a look into the age of plumbers revealed that the median age of plumbers in South Africa is between 30 and 39 years. About 31.2% of all plumbers in the industry were 35-39 years old in 2019. The number of older workers is increasing. According to data, workers aged between 50 and 64 increased from 17.6% in 2011 to 20.4% in 2018.

⁴The 9 000 plumbers with a post matric NQF Level 4 include those with N4/National Trade Certificate (NTC) 4, N5/NTC 5, N6/NTC 6 and Certificate with Grade 12/Standard 10, Diploma with Grade 12/Standard 10 and Higher Diploma, Degree refers to the following categories: Post Higher Diploma, (Masters; Doctoral Diploma), Bachelor's Degree, Post Graduate Diploma, Honours Degree and Higher Degree (Masters/PhD). Others stated they do not know/did not specify. The rest of the plumbers include those with a National Accredited Technical Education Diploma (NATED) Level 1-3, and others who did not know/did not specify their highest level education attainment.

⁵ARPL requires candidates to have at least worked in the plumbing industry for three years to access the trade test (DHET, 2017)

⁶This brief does not look at the apprenticeship route and how young unqualified people can gain certification, but it should be acknowledged that this is an on-going concern for the trade and for skills development in South Africa and the ARPL is only one way to qualify the unqualified. There are other options available, particularly for younger people.

Figure 3: Highest level of education attainment in the plumbing industry by race, 2019



Source: Stats SA, Quarterly Labour Force Survey data. Excel spreadsheet. Downloaded from www.statssa.gov.za

The growing demand for green plumbing over the past few years and technological advancements in the industry are increasingly incentivising plumbers to acquire skills and training necessary to help customers reduce their energy costs and water usage.

customers are under financial pressure to pay low rates for plumbing services. However, using unqualified plumbers to reduce costs for customers, has broader implications for the industry and for customers in general.

For customers, inadequate plumbing or a bad plumbing job may cause pipe leaks or bursts, often resulting in “financial losses to building owners and/or municipalities due to water losses, damage to property, and possible replacement of the plumbing system” (Lobanga, 2010). Other common problems that result from using unqualified plumbers include contamination of clean drinking water, spreading of disease, scalding and burns injuries, and in some cases explosions (Meyer, 2020). Although some unqualified plumbers may be experienced, their lack of compliance and enforcement of regulations, and not belonging to an industry association, makes it difficult for customers to report poor workmanship or unethical behaviour.

Unqualified plumbers affect the industry and formal enterprises by diminishing productivity and investment, while also driving prices down for formal enterprises. The impact on productivity and investment results from unqualified plumbers undermining investment, which then directly affects skills development and improved productivity in the industry (TIPS and SD4GE, 2019). The low productivity has to do with the low skills levels of many of the workers, the low use of technology, and the low levels of financing and capital investment, particularly among informal enterprises.

Employees in the plumbing industry are often said to be aging and, according to Plumbing Africa (2019), it is estimated the average age of a tradesman in South Africa is at least 55 years, and business owners in the formal plumbing industry are mainly White. This lack of certification could lead to attrition, whereby if the qualified and licensed business owner retires, the business would likely collapse because employees do not have plumbing certification and therefore cannot sign off a plumbing Certificate of Compliance (CoC) to ensure the work meets the standard required to ensure customer safety.

The non-compliance and non-enforcement of regulations and by-laws by authorities impacts on the industry and may influence informality. Various laws include regulations and national standards comprising several stakeholders, including the South African Bureau of Standards (SABS), the South African Water Research Commission (WRC), Plumbing Industry Registration Board (PIRB) and the Institute of

Plumbing of South Africa (IOPSA), municipalities, and educational institutions such as the Construction Education and Training Authority (CETA). Regulations have significant compliance costs, which results in most unqualified plumbers, especially those operating in townships, to be non-compliant and operate outside legislation governing the industry. Non-compliance exposes the lack of enforcement systems in plumbing and this unfortunately undermines the industry’s attempt to improve expertise and proficiency.

The lack of specific training, development and experience in technologically advanced areas affects the industry, and also unqualified plumbers. The growing demand for green plumbing over the past few years and technological advancements in the industry are increasingly incentivising plumbers to acquire skills and training necessary to help customers reduce their energy costs and water usage (TFOT, n.d.). This presents an opportunity for qualified plumbers to gain a competitive edge over their competitors. Formal enterprises are positioned to adapt easily to the technological changes introduced into the plumbing industry. This is not the case with unqualified plumbers, in particular those working on their own account in the informal sector. The failure of unqualified plumbers to keep up with technological changes through forms of formal training and experience in technologically advanced areas may render their skills irrelevant as they might not be able to keep up with changing technologies. This reinforces the characterisation of informality and being a low-skilled and low-productivity sector with low wages.

INVESTIGATING THE ROOT CAUSES OF UNQUALIFIED PLUMBERS

Why are plumbers unqualified?

There is a significant supply of unqualified plumbers in both formal and informal markets. As highlighted, out of the 9 000 plumbers likely to be qualified from the 2019 StatsSA data, 5 000 (57.9%) were aged between 35-64, while 4 000 (42.1%) younger plumbers were likely to have a qualification of at least a post-matric certificate. The low levels of qualification illustrates that the root cause/s preventing plumbers from gaining a plumbing certification results from systemic issues, attributable to the history of South Africa’s education and training system.

First, apartheid policies created historical imbalances in the artisan system, which affected the recognition and learning of trades outside formal education

The ARPL programme seeks to enable a large pool of unqualified, but experienced and skilled individuals attain artisan certification that would allow them to practice as qualified artisans and ultimately integrate into the formal sector.

and training (DHET, 2015). Skills development and training opportunities, particularly for trade careers, were systematically denied to Black and, to a lesser extent, Coloured and Asian people under apartheid, leading to a legacy of poor education and skills underdevelopment in the Black and Coloured population (Wildschut and Meyer, 2017:4). This resulted in few qualified Black and Coloured crafts-people operating across numerous sectors in the economy.

Second, ARPL candidates were once classified as “walk-ins” for the trade test at Indlela, however, with the new artisan development system, candidates are required to take a self-evaluation assessment or interview to assess their trade test readiness. According to IOPSA Executive Director Brendan Reynolds (2022), introduction of the new 2016/2017 occupational qualifications by the QCTO required passing a trade test for that trade or occupation. This new assessment and certification of occupational qualifications “was more difficult to pass and cost relatively more” than the walk-in option. As a result, some failed and others were discouraged from seeking certification, thus leaving them to continue operating as unqualified. A study by the Swiss South Africa Cooperation Initiative (SSACI, 2017) looked at the pass rate according to the different routes to artisanship. Apprenticeships had high completion rates. In 2014/2015, 45% of pass rates came from the apprenticeship route, 25% were walk-ins/ARPL candidates, and 12% were from learnerships.

For young people aged below 35 years old, there are at least two routes which they can use to enter the formal plumbing industry. These are either through the formal apprenticeship system, where a matric certificate with maths/science is a minimum entry requirement or through a newly created entry-level pathway comprising of a “13 week course hosted by select TVET [Technical, Vocational Education Training] colleges identified by the National Business Initiative in partnership with IOPSA” (IOPSA, 2021). The course is, however, not a qualification, but an easier entry point to the industry with a defined route to qualification (IOPSA Executive Brendan Reynolds, 2022). Despite this, young unqualified plumbers exist, likely resulting from challenges within the country’s unequal education and training systems. The South African reality is that many learners struggle to pass matric, so they do not qualify for apprenticeships. Also, young candidates who might have qualified for an apprenticeship tend to fail the trade test because of various challenges relating to the misalignment of theory learning and industry requirements, inadequate training received by TVET colleges,

inadequate training received by TVET colleges, ill-preparation, and incompetency, leaving them unqualified. It is important to acknowledge that some young people may not be eligible for ARPL because of the lack in experience and training, therefore apprenticeships and exploring other avenues towards certification and formal employment remain key.

IMPROVING THE PERCEPTIONS OF PLUMBERS

How ARPL can assist unqualified plumbers obtain certification

The ARPL programme is a policy instrument that seeks to enable a large pool of unqualified, but experienced and skilled individuals attain artisan certification that would allow them to practice as qualified artisans and ultimately integrate into the formal sector.

The informal sector comprises over half the plumbing industry’s workforce (see Figure 1). Many workers in this pool serve as a reservoir of skilled unqualified individuals (Jordaan et al, 2018). The recovery of this untapped pool of skills is thus not only important for increasing the number of qualified plumbers in the industry, but could support the National Development Plan’s goal to produce 30 000 artisans each year to alleviate the shortage of skills in the country (DHET, 2015; National Planning Commission, 2012).

The goal for ARPL is to redress historical inequalities in access to education and skills development and training opportunities for Black and Coloured people. Furthermore, ARPL acknowledges the value of informal experiences and makes it possible for individuals who acquired their learning outside of formal education and training to attain certification, whereby their prior knowledge, skills and competencies are recognised (Coombridge and Alansari, 2018). Formal recognition of unqualified plumbers, through proper assessment processes, would open doors of opportunity for a large population of previously disadvantaged adults, either for career growth, increased mobility and earning potential, or for further learning.

Previously, employers in the industry applied discriminatory practices against ARPL candidates, however the introduction of the Section 26D (5) of the Skills Development Act No. 97 of 1998 aimed to eliminate discrimination against this group of artisans through implementing a single certification process (DHET, 2017). The current certification does not distinguish between qualified artisans who went through a structured apprenticeship programme compared to

ARPL acknowledges the value of informal experiences and makes it possible for individuals who acquired their learning outside of formal education to attain certification, whereby their prior knowledge, skills and competencies are recognised.

qualified artisans who qualified through the ARPL route (DHET, 2017). The Department of Higher Education and Training (DHET, 2015) requires that ARPL candidates conduct evaluation or interview checklists and phase assessments to assess their trade test readiness before testing. The aim of the assessments is to assess the trade test readiness of the ARPL candidate. If there are gaps, then the candidate will be referred for gap training based on the identified gaps. The completion of gap training will result in the compilation of a technical Portfolio of Evidence, which is then used to recommend candidates for trade testing (DHET, 2015).

ARPL also intends to facilitate transformation through providing admission for Black and Coloured people to access the formal sector should they wish to move into formality (TIPS and SDG4, 2019). The (formal) plumbing industry is generally White with a median age of 35-39, therefore policy mechanisms such as Broad-Based Black Economic Empowerment (BBBEE) are key to driving transformation through changing ownership and management structures to increasingly reflect the demographics of the country. The TIPS and SDG4 (2019) report notes that “further steps need to be taken to ensure that transformation does not develop into a separate issue, but that it is treated as a cross-cutting theme, such as improving professional standards”.

Plumbing authority bodies IOPSA and PIRB are committed to promoting the ARPL process against a plumbing occupational certificate. PIRB has also committed to a process that assists candidates on navigating the ARPL system, in partnership with training providers alongside other industry bodies (TIPS and SDG4, 2019).

LIMITATIONS OF THE ARPL: WHY HAS EXPANSION AND IMPLEMENTATION BEEN SO SLOW?

According to DHET (2015), the effective implementation of ARPL has been a goal of education and training policy since 1994. Various blockages or limitations that have prevented the successful implementation of the ARPL system, and may have resulted in the slow expansion of the ARPL in the plumbing industry, are discussed in the following subsections.

The cost of the ARPL programme

To qualify plumbers through the ARPL programme, unqualified plumbers and employers are required to invest time, cost and effort in ensuring a smooth transition through the system. First, unqualified

plumbers and employers bear the cost of the ARPL qualification.⁹

According to IOPSA Executive Director Brendan Reynolds (2022), the ARPL cost ranges between R15 000 and R28 000 per candidate (IOPSA currently pays R28 000 per ARPL candidate), which is relatively expensive for low- to middle-income earners, especially considering that, on average, a plumber earns R5 245 a month (StatsSA, 2019). According to Payscale (2020), an unqualified plumber makes R8 160 at the lower scale in a month, which is slightly higher than the StatsSA estimate. In efforts to remove the cost barrier, False Bay TVET College, the Chemical Industries Education & Training Authority (CHIETA), IOPSA, PIRB and Harambee offer fully funded ARPL training with trade tests for all trades, including plumbing. ARPL practice should ideally be oriented towards workforce development rather than access for it to prove effective.

Second, the ARPL process consists of several stages before candidates can sit for a trade test. Although training is beneficial for both employers and employees, taking candidates through the process costs businesses time that employees could have spent working. For own-account workers, the opportunity cost could simply be forgone earnings. These barriers and opportunity costs are partial reasons why unqualified plumbers remain without certification even though this restricts career progression opportunities in the long run, and can also result in poor skills development.

Concerns and challenges employers face

Building capacity of unqualified plumbers and supporting their qualification leads to skills development. Training is an essential component of maximising productivity and achieving efficiency, while also motivating and supporting staff to maximise their potential. Despite the importance of skills development, there are employers in the formal industry who may be reluctant to develop and invest in employee skills because of the increased associated costs to the business resulting from having to pay qualified plumbers relatively more.

Other challenges or concerns for employers may be that (a) once qualified the employee may leave to start trading on their own account, and the employer would not only lose their employee, but would need

⁹ According to merSETA (n.a.), an arrangement may be made for the SETA to pay for the trade test for unemployed candidates.

It is important to make unqualified plumbers and employers increasingly aware of the availability of ARPL as a way of obtaining certification. Part of the work of roleplayers and key stakeholders would be to debunk some of the misconceptions surrounding ARPL, relating to costs and the admission period, while also highlighting the associated benefits for both employers and employees in the industry.

to incur costs in training a new person; (b) the increase in new own account plumbers would also create more competition; and (c) if newly qualified plumbers decide to stay at the company then they would have to be paid higher rates. If properly incentivised, employers could be a major supporter of ARPL, yet there appears to be limited benefits for the employers.

REMAINING IN THE INFORMAL SECTOR

The evidence shows that unqualified plumbers and informality in plumbing are key challenges affecting the industry's success and the personal-professional development of plumbers that can unlock better income earnings and new opportunities. While keeping in mind the benefits of the ARPL, consideration must be made for those who choose to remain informal. The ARPL could be considered limited in scope as it primarily focuses on providing certification for skilled unqualified workers employed formally or informally. The issue of informality in the plumbing trade requires a different policy response to the "problem" of the informal sector outside of the ARPL.

While formalising the informal sector has been a constant, similar to unqualified plumbers, there will be enterprises which choose to remain informal, because they are operating for different markets, but also because there might not be compelling reasons for them to formalise. Therefore, finding ways to reduce informality and strengthening the formal industry could be more appropriate (formalisation also allows for the increase and broadening of the tax base). That said, although certification gives qualified plumbers the right to practice the trade, finding ways of recognising or promoting sub-specialisations and focus areas in the industry could provide an alternative option for those who might view the ARPL process as overwhelming or discouraging.

Given these limitations, it becomes important to make unqualified plumbers and employers increasingly aware of the availability of ARPL as a way of obtaining certification. Part of the work of roleplayers and key stakeholders would be to debunk some of the misconceptions surrounding ARPL, relating to costs and the admission period, while also highlighting the associated benefits for both employers and employees in the industry.

CONCLUSIONS AND RECOMMENDATIONS

The findings indicate that a recognition of prior learning is one of many key mechanisms to redress the issue of unqualified plumbers, but it might not be the most appropriate tool for solving the increasing informality in the sector. The findings also highlight the importance of removing some of the ARPL limitations and barriers, with the aim of ultimately reducing informality while increasing and improving professionalisation among plumbers, and expanding the economic participation of previously disadvantaged groups.

ARPL candidates must be supported by the development of appropriate qualifications and by the continuation of professional development activities for unqualified plumbers. It is widely agreed that ARPL implementation needs to be a concerted effort supported by a co-ordinated advocacy consisting of government, education and industry stakeholders.

- Plumbing industry authorities, the DHET, Sector Education and Training Authorities (SETAs) and the National Artisan Moderation Body should work towards either (a) removing the cost of the ARPL entirely; or (b) through offering a subsidy or incentive to reduce the cost of the programme.
- IOPSA and PIRB should encourage its members, specifically those that are employers, to register unqualified employees for the ARPL. The benefits and costs of the programme should be made clear to employers and employees so both parties understand the opportunity costs of not being qualified/not having qualified employees.
- IOPSA and PIRB have made extensive efforts to support transformation in the plumbing industry through the ARPL and various other initiatives. The plumbing bodies are making progress to push forward the ARPL against the professional designation, but more is needed to capacitate these stakeholders through increased funding for ARPL in the industry.
- Education and skills bodies, TVETs, QCTO and the DHET should work together with industry to look into providing alternative routes or bridging courses that offer certification and qualifications in the industry (qualifying as an assistant plumber for example), that are not a Red Seal QCTO qualification. This would ensure skilled individuals (who might fail the trade test) in the formal market have access to decent employment.

It is widely agreed that ARPL implementation needs to be a concerted effort supported by a co-ordinated advocacy consisting of government, education and industry stakeholders .

REFERENCES

- Askar, N. 2020. COVID-19: Impact on the plumbing industry. [Online]. Plumbing & Mechanical. 24 March 2020. Available at: <https://www.pmmag.com/articles/102737-covid-19-impact-on-the-plumbing-industry>
- Burger, S. 2012. Workplace experience seen as key to accelerating artisan development. Engineering News. 10 August 2012. Available at: <https://bit.ly/3tt3YpC>
- Coombridge, R. and Alansari, S. 2018. Operationalising recognition of prior learning (RPL): A case study from Bahrain Polytechnic. In *Learning and Teaching in Higher Education: Gulf Perspectives*.
- DHET. 2015. Draft Policy on Artisan Recognition of Prior Learning. Department of Higher Education and Training 23 October 2015. Available at: <https://bit.ly/3vYR9DR>
- DHET. 2017 Criteria and Guidelines for the Implementation of the Recognition of Prior Learning. Department of Higher Education and Training. 17 March 2017. Available at: <https://bit.ly/3kAyhpb>
- National Planning Commission. 2012. National Development Plan 2030. Our Future – Make Work Executive Summary. 15 August 2012. Available at: <https://bit.ly/3MHdpJ1>
- ILO. 2018. More than 60 per cent of the world's employed population are in the informal economy. International Labour Organization. Available at: https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_627189/lang--en/index.htm
- Jordaan, C.J., Bezuidenhout, A. and Schultz, C. 2018. A process model recognising prior learning of informal sector motor mechanics. *South African Journal of Higher Education*, 32(2), pp.143-156.
- IOPSA Survey Report. 2020. Annual plumbing survey. Available at: https://www.iopsa.org/resources/Documents/IOPSA%20Plumbing%20National%20Survey%202020_FINAL.pdf
- IOPSA Survey Report. 2021. Annual plumbing survey. Available at: <https://www.iopsa.org/resources/Documents/IOPSA%20Survey%202021%20.pdf>
- Lobanga, K.P. 2010. The Extent and Impact of Non-compliant Plumbing Components Installed in South Africa. University of Johannesburg. South Africa.
- merSETA. n.a. Artisan Recognition of Prior Learning (ARPL) Trade Test Application Form. Manufacturing, Engineering and Related Services Sector Education and Training Authority. Available at: <https://bit.ly/3zz9Cua>
- Meyer, S.J. Why you should employ professionals for your home maintenance? Available at: <https://bit.ly/3zsRnGM>
- Payscale. 2020. Average plumber salary in South Africa. Available at: <https://www.payscale.com/research/ZA/Job=Plumber/Salary/9060070b/Pretoria>
- Plumbing & Mechanical. 2015. Top 10 reasons why plumbing is so important. 11 March 2015. Available: <https://bit.ly/3O7mqMI>
- Plumbing Africa. 2019. PIRB tackles ARPL for the plumbing sector. Available at: <https://plumbingafrica.co.za/index.php/news-events/news/723-pirb-tackles-aAPRL-for-the-plumbing-sector>
- PIRB. 2019. The extent of informal activity in the plumbing industry – an analysis. Plumbing Industry Registration Board Available at: <https://bit.ly/3MxuCEn>
- SSACI. 2017. Dual System Apprenticeship Pilot Project – Summative Evaluation Report. Swiss-South Africa Cooperation Initiative. April 2017. Available at: <https://bit.ly/3xmuqCb>
- StatsSA. 2019. Household access to services stabilised. Statistics South Africa. Available at: <http://www.statssa.gov.za/>
- StatsSA. 2020. Quarterly Labour Force Survey. Statistics South Africa. Available at: <http://www.statssa.gov.za/>
- TFOT. n.d. The Impact of Technology on the Modern Plumbing Company . The Future of Things. Available at: <https://thefutureofthings.com/11270-impact-technology-modern-plumbing-company/>
- TIPS and SD4GE. 2019. Industry analysis of the plumbing industry. Trade & Industrial Policy Strategies (TIPS) and Skills Development for a Green Economy Available at: <https://bit.ly/3Mxv2KX>
- QCTO. 2021. Trade and Occupational Qualifications. Quality Council for Trades and Occupations. Available at: [k https://www.qcto.org.za/assets/tradesandoccupational.pdf](https://www.qcto.org.za/assets/tradesandoccupational.pdf)
- UN. 2021. World Economic Situation and Prospects: November 2021 Briefing, No. 155. UN Department of Economic and Social Affairs. Available at: <https://bit.ly/3NXGnVE>
- Wildschut, A. and Meyer, T. 2017. The boundaries of artisanal work and occupations in South Africa, and their relation to inequality. *Labour & Industry: A Journal of the Social and Economic Relations of Work*, 27(2), pp.113-130.