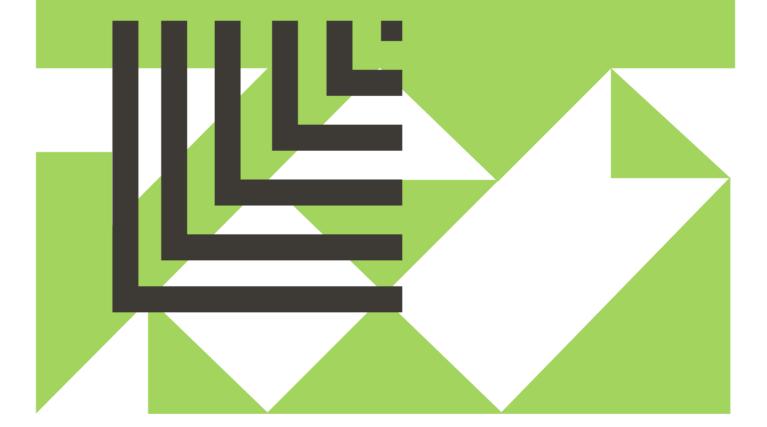# Occupations in High Demand

Green Skills Methodology Case Study

Prepared by Prof Hoosen Rasool

Introduction

What is the status of this research?

The Department of Higher Education and Training (DHET) published a national List of Occupations in High Demand for South Africa in the Government Gazette Vol. 593 No. 38174 (2014). The List of Occupations in High Demand was updated in 2015.

The primary purpose of the List of Occupations in High Demand (2015) is to support the planning processes of the DHET with respect to the post-school education and training system, particularly in relation to enrolment planning, resource allocations, career advice, and qualifications development. Universities, Colleges, education and training providers, employer bodies, employers, professional bodies, trade unions and other organisations are also expected to use the list to support their own decision-making processes.

The need to identify skills needs is part of a process of developing a post-school education and training system that is responsive to the needs of individual citizens, communities and the economy, as well as in meeting the broader social developmental objectives of the country (DHET; 2013a).

The List of Occupations in High Demand in 2014 and 2015 was produced by the DHET research consultant, Prof Hoosen Rasool from FR Research Services. He worked in collaboration with Dr Hersheela Narsee from the DHET. This case study was written by Prof Rasool.

Purpose

Why is there a need for this research?

The DHET needs the List of Occupations in High Demand (hereafter the List) to inform supply-side planning, skills needs for special projects, funding norms, prioritisation of student funding (National Student Financial Aid Scheme), the development of qualifications, and career advisory information services. The Department of Home Affairs (DHA) requires this information to develop strategies to attract skilled immigrants. Other public departments need the information for sector, industry, regional, and employer plans. The List is therefore used by a range of public entities and labour market actors in the private sector to make smart decisions related to the provision of education and training in the post-school system.

According to the DHET, occupations in high demand are those occupations that show relatively strong employment growth, or are experiencing shortages in the labour market. More specifically, occupations are said to be in high demand if they:
- have shown relatively strong employment growth over the past 5 years;
- are currently showing relatively strong employment growth (that is, relatively strong growth over the past two years);
- are expected to show relatively strong employment growth in the future;
- have been identified as being in shortage[1] in the labour market; or
- are expected to emerge in the near future as a result of innovation, technological advancements and the development of new industries (for example, the establishment of new occupations in 'green' industries).

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[1] An occupation is regard as being in shortage if demand exceeds supply for people in particular occupations.

Design

What methodology was used?

The research design for the production of the List involves mixed research methods which include econometric modelling, literature reviews, workshops, interviews and an analysis of the Quarterly Labour Force Survey database:

Data Analysis: Data from the Quarterly Labour Force Surveys provided by Statistics South Africa, and the Job Opportunities Index (2012) compiled by the Department of Labour were analysed to determine occupational growth and job vacancy trends, respectively.

Econometric Modelling: The Linked Macro-Education Model, which forecasts occupational growth trends until 2025, provided information on the top 20 fastest growing occupations and the top 20 occupations with the most number of job openings for the next ten years.

Literature Review: Publications that focus on issues pertaining to skills supply and demand, and the imbalances between these, at both national as well as sectoral levels, were reviewed.

Stakeholder Engagement: Interviews with stakeholder representatives, a workshop with skills development experts, and a Call for Evidence were used to obtain first-hand information on occupational trends. This Call for Evidence invited stakeholders to propose:
- the inclusion of occupations in high demand, with supporting evidence;
- the exclusion of occupations, with supporting evidence, and
- new occupations that are emerging, or are expected to emerge in the future, as a result of factors such as technological advancements, innovation and the establishment of new companies, with supporting evidence.

Stakeholders were invited to respond to the Call for Evidence by submitting the following information to the DHET:
- the name of the occupation proposed for inclusion or exclusion;
- the applicable occupational code for the identified occupation (except in cases where no occupational code exists); and
- evidence for the inclusion or exclusion of the identified occupation (citing the source of evidence or information).

Selection of occupations: Various criteria were used to determine whether a particular occupation should be included in the List.

Table 1: Criteria used to identify Occupations in High Demand

No	Criteria	Threshold
1	Use of the 2014 List as a basis for the development of the updated list.	Occupations identified in the 2014 List are automatically included in the 2015 List.
2	Percentage occupational change in employment over the past five years[2].	Above the mean for all occupations.
3	Percentage occupational change in employment over the previous year[3].	Above the mean for all occupations.
4	Percentage change in the number of job vacancies over the past five years[4].	Above the mean for all occupations.
5	Evidence obtained from stakeholders through the DHET Call for Evidence.	Reliable sources of evidence and corroboration with at least two other sources of evidence.
6	Scarce Skills Lists identified in the 2015 SETA Sector Skills Plans.	Scarce skills should be corroborated by at least two other sources of evidence.
7	Occupational Forecast (2015 to 2025)	The top twenty fastest growing occupations and top twenty occupations with the most number of job openings are included on the list.
8	Occupational needs identified for undertaking strategic government projects such as the Strategic Integrated Projects (SIPs).	Occupations identified on approved lists are corroborated with other sources of evidence.

Occupations that meet any one of the above criteria were eligible for inclusion in the List (2015). Occupations are not ranked, so there is no sense of which occupations are more or less in demand relative to others. The researchers ranked occupations in the first iterations of the List in 2014, but eliminated the ranking in the second iteration.

The List (2015) is an update of the 2014 version. It retains the occupations listed in 2014, but reorganises and extends the content, based on the application of new information and an improved methodology. The 2015 document is considerably longer than the 2014 version – it records all occupations at the six digit code of the Organising Framework for Occupations (OFO), as opposed to having some occupations clustered, as was the case in the 2014 version. Furthermore, new occupations were added to the 2015 List, based on new information and an improved methodology.

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[2] For the period 2010 to 2014.
[3] For the period 2013 to 2014.
[4] From 2009/2010 to 2013/2014.

Findings

What did the study find in relation to the research question?

The findings of this study are captured in the List (2015) and available on the DHET website.

Information about occupations in high demand provides useful insights into the skills needs of the economy and mismatches between qualifications and occupations – a problem that is particularly important to address, given that the South African labour market is characterised by high unemployment on the one hand, and skills shortages, on the other.

Reflections on the Research

What can we learn from the research?

- There are very few organisations conducting research on occupational demand at the above-mentioned digit levels in South Africa. Countries such as the United Kingdom, United States, Canada, Australia, New Zealand and Singapore produce national lists using significant financial and human resource capacity. Additionally, they have well-defined institutional arrangements, labour market researchers and systems in place. Currently, such tried and tested systems do not exist in South Africa. These limitations were factored into the research design consideration for the 2015 List.
- There is a need to use both quantitative and qualitative research methods. The value of the qualitative research should not be under-estimated in clarifying the problem that we are trying to solve. For example, 'high demand' per se is not an issue. The issue, surely, is whether 'demand' is being, or is able to be, effectively met. If not, then the issue becomes one of a 'skill shortage' (unmet demand), which is indeed a problem. Therefore, knowledge of which occupations are growing and declining, at what rates, in which locations, is valuable intelligence. The challenge is to obtain the data at OFO digit 4 to 6 levels.
- Whether or not we should have one or more lists of occupations in high demand for South Africa is ostensibly a matter of opinion. It is the contention of the lead researcher that the compilation of multiple list should be encouraged. Public entities have differing mandates, priorities and programmes. They may need to identify different occupations in high demand according to their respective priorities. For example, a list of occupations in high demand for skills immigration purposes (for the DHA) should not necessarily be the same as the list for first-time entry into the labour market (DHET). Firms wanting to attract skilled immigrants are probably looking for individuals with high-level, specialised skills acquired over many years. The focus of the DHET tends to be addressing skills mismatches in the labour market with a focus on training learners to enter the labour market successfully.
- Multiple lists could possibly serve as inputs to an 'apex' (all-star) Lists of Occupations in High Demand in the future, but there is quite a bit of work to be done before we get to this stage. The issue of the purpose of the List should be reconsidered in the next iteration.
- The SETAs should ideally be the major contributor to future Lists, because it is fundamentally their task to engage directly with workplaces. They also produce Sector Skills Plans which are supposed to provide intelligence on skills imbalances in their respective sectors. There is an urgent need for SETAs to capture information on occupational demand in a more accurate, valid and reliable way, than is currently the case. Moreover, their diagnostic capability should be strengthened to convert skills information to skills intelligence. From a research perspective, there is a cogent case to steer, support and manage SETAs more tightly through the sector skills planning process.
- Workplace skills plans and annual training reports are not generating reliable skills intelligence data to inform policy-making and planning. This matter is presently under review by the DHET in the form of a

White Paper (DHET; 2013b). The expected outcome is the production of relevant demand and supply data for the purpose of skills planning.

- Public and private technical training (PSET) institutions should also be a major contributor to future lists. These institutions are expected to engage closely with workplaces (employers) for the purposes of marketing, student recruitment, work-integrated learning, programme responsiveness, graduate employment, and work placement. Institutions need this information to remain relevant. However, for this to happen, institutions should be conducting labour market research regularly. With the notable exception of university faculties that cater for statutory professions, PSET institutions are doing very little research on their respective labour markets. From a research perspective, we should encourage, or insist that, institutions conduct research that can be fed into the Lists.

- It is not only the type of List that should be identified, it is also their location and timing. The PSET system may produce the right kinds of graduates, but in the wrong quantities, the wrong locations, or at the wrong times. There are wide variations in our regional economies.

- Many countries, including South Africa, have invested in building their own quantitative forecasting exercises that aim at modelling skills demand and supply taking either a medium- or long-term perspective. Most of these aggregate models focus on empirical projections of employment by industry and occupation, and the likely qualification structure of future employment. However, identifying mismatches on the basis of such approaches is sometimes fraught with problems due to: i) reliance on the historical evolution of 'stocks' of demand and supply; ii) incomparability of aggregate data; iii) lack of detailed information on supply inflows; iv) and data constraints that inhibit the breakdown of projections to finer occupational groups. To overcome these obstacles, several countries have recently attempted to adopt a less 'mechanistic' approach. Instead of using complex macro-economic models, they rely on a variety of suitable indicators that may summarise the performance of the labour market at the cross-roads of the recruitment and skills inflow-outflow process.

- Finally, the design of current and future Lists will ultimately depend on the resources and at our disposal, the type of occupational data (at OFO digit levels 4 to 6) that is available, and how far we want to go, or how deep we want to dig.

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