# An International Comparison of the South African Occupational Classification System: Lessons from Singapore



Source: https://www.britannica.com/place/Singapore-capital

March 2020

Prepared by Wits REAL

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

real
centre for researching
education and labour

# Contents

## Acknowledgements

BANKSETA has commissioned a series of research within the banking sector under the appointment of a Research Chair: Skills and Occupations, at the Researching Education and Labour Centre at the University of Witwatersrand (Wits REAL) focusing on the following areas:

A) Mapping jobs to occupations: Organising Framework for Occupations; and the development of an open access electronic mapping tool.

B) Investigating drivers of occupational change within a just transition framing: Digitisation and Sustainability

C) Unpacking the structural dynamics and use of occupational frameworks: An international collaboration

D) Analytical and conceptual alignment, gaps and system use in relation to Jobs; Occupations, Knowledge, Qualification and Work

E) Lessons for the Post School Sector: Occupations and Skills

BANKSETA acknowledges the work of the Research Chair and the Research Team for the production of this report. It is envisaged that not only will BANKSETA benefit from the insights generated as a result of this report but that insights and recommendations which arose will assist with the strengthening and development of the South African occupational classification system and especially the strengthening of the Organising Framework of Occupations.

# 1. Background to the Study

Occupational classification systems are developed at international and national levels. They are used to guide statistical data processes and used in labour market analysis. Both Singapore and South Africa adopt the ISCO-08 International Standard, yet their national occupational classification systems and their skills planning systems are different. Singapore and South Africa are two very different contexts; each with their own social, political, economic and cultural historical trajectories and present realities. The skills systems in both countries also operate on different logics.

The primary reason informing the decision to conduct a comparative analysis of the South Africa and Singaporean occupational classification systems was premised on the notion that although the systems are operating within substantially different contexts, both are emergent occupational classification systems. Furthermore, Singapore has made significant progress in utilising its occupational classification system as a mechanism to inform skills planning and provision. Although certain aspects of its system are still in development major steps have been taken to build sophisticated linkages between occupations and the requisite skills needs of these occupations. Using the Singaporean system to benchmark and improve on the South African model can only benefit a country that is faced with high levels of unemployment and low skills.

The United States O-Net system is probably the most advanced occupational classification system in the world. Its advancement may declare it to be an excellent system to benchmark against but it is not within the same structure as the ISCO-08. This does not mean that it does not also have its own limitations (Handel, 2016). The South African occupational classification system is relatively new and still emergent and in the early stages of the development. It would therefore be problematic to assume that South African could, in a short space of time, develop and run an occupational system as sophisticated as the US one. Furthermore the US system, although a potentially useful guide for emergent systems such as the one found in South Africa, is complex and expensive to run (Cifuentes et al., 2010). It would therefore be problematic to assume that it could be directly replicated in the South African context. It could also be argued that a comparative analysis of South Africa's occupational classification system with an African or Southern African country should have been undertaken. As the systems in

Africa and in Southern Africa are at even earlier stages of development the value of examining these systems is questionable. Research and data on these systems are also largely unavailable at present.

By examining an emergent occupational classification system such as Singapore, which is located somewhere in the middle of the continuum of development between South Africa and the United States, valuable lessons can be learnt which can inform and guide the development of the South African occupational classification system. Furthermore, the Singapore occupational classification system is utilised extensively to link the worlds of education and training and work and in this regard is highly advanced. It is envisaged that this report will allow the South African post school education and training system (hereafter PSET), and BANKSETA in particular, to learn from international best practice.

In summary the main reason to conduct a comparative analysis of the Singapore and South African occupational systems is that the examination of the Singapore system allows South Africa to develop an in-depth understanding and provides detailed guidance on how to utilise occupational classification systems to determine the nature of requisite education and training needs. This report therefore aims to contribute to the development of a South African occupational classification system which allows for the accurate and timeous identification of the skills needed to ensure inclusive and socio-environmentally sustainable economic development.  The South African model for skills planning has robust policy; however, the application and actualisation of policies are often not up to standard.  The Singapore skills planning and provision system has developed the Skills Framework model which has linked key aspects of labour demand, economic and business needs into an integrated approach to develop skills for the economy and simultaneously support individual life-long learning.  There surely are lessons to be learnt which can be applied in the South African context for the betterment of skills development in South Africa.

## 2. Research Process

This research was conceptually developed and designed as an international benchmark study. The aim was to study the occupational classification system and its use in skills development in Singapore (skills demand and supply). This data was to be compared to the South African occupational classification system and its use in skills development. Two interconnected and complementary research processes were utilised for the development of this report. The first process being that of document analysis and the second being comparative analysis. Both research processes will be discussed here.

Document analysis, in its simplest form, can be described as the process of systemically reviewing documents in order to develop empirical knowledge and an understanding of a particular phenomenon or set of phenomena (Bowen, 2009). There are multiple advantages to utilising document analysis as a qualitative research method. The advantages of document analysis most applicable to the research undertaking in this instance being: lack of obtrusiveness and reactivity (i.e. documents do not react to the research process), stability, exactness and coverage (Bowen, 2009). All of the afore mentioned being critical to the research being undertaken here as the most stable, exact and well-covered examination, analysis and comparison of the occupational classification systems in question needed to be undertaken. It is important to ensure that document analysis is as rigorous and unbiased as possible. In order to achieve the requisite level of rigour and objectivity the following needs to be taken into consideration:

> "…what sources of data are available; the method(s) of data collection; the reliability or validity, quality and richness of the data; and any gaps in the available data."(Mackieson et al., 2019).

All of the above mentioned were duly considered for the document analysis undertaken in this report. The primary documents being analysed being official documents from the organisations responsible for the occupational classification systems in South Africa and Singapore as well as relevant literature and policy. The occupational classification systems themselves (as accessed online) were also extensively examined and analysed during the course of the research.

The second research method utilised was that of a comparative case study approach. Comparative case study was selected as a research approach as it speaks to the specific objectives of the research in question: an analysis and comparison of the South African and Singaporean occupational classification systems in order to distil suitably applicable and relevant lessons and insights. Said lessons and insights which have the aim of contributing to the development of the South African occupational classification system.

There are many reasons to use a comparative case study approach but in this instance the more conventional utilisation of the approach, that of comparing and contrasting(Bartlett & Vavrus, 2017), was the primary criteria for selection. It was also decided that a comparative case study approach which is sensitive to the macro, meso and micro conditions and contexts in which the occupational classification systems are embedded and form a part of was needed. This was especially required in this instance as the two contexts which are being examined are substantially different and to neglect an awareness of these differences in the research process and ensuing end product would be potentially deeply problematic. In this specific study the case studies were constituted of empirical units (the two occupational classification systems in question) as opposed to theoretical units (Bartlett & Vavrus, 2017).

The report is structured in such a way that there is continual movement from the South African occupational classification to the Singaporean occupational classification system (and vice versa). This resulted in a generative research process where the two systems were subjected to analytic scrutiny and analysis, in turn, utilising categories of analysis which emerged during extensive engagement with the two systems and which were broadly similar. It has been argued that it is problematic to construct rigid analytic boundaries around cases (Bartlett & Vavrus, 2017). This may be true and the limitations of the construction of artificial boundaries was guarded against through a process of critical self-scrutiny and the recognition that occupational classification systems form part of complex and dynamic national (and at times international) systems. Due to the objective of the research in question, and as it has clear practical and policy objectives and outcomes as its motivating rationale, as opposed to an academic objective, a certain degree of analytic distinctness was called for.

Analytically generative comparison takes place along three axes. The three axes of comparison being: *horizontal* where one case is being compared to another whilst allowing for an

examination of influences across cases (in this particular instance The International Standard Classification of Occupations and specifically ISCO-08), *vertical* where comparison takes place at different levels ranging from the international to the local and a *transversal* comparison over time(Bartlett & Vavrus, 2017). All three axes were utilised during the course of the research undertaken here and resulted in the production of this research report. In terms of the horizontal axis the South African occupational system was compared and contrasted with the Singaporean occupational classification system in order to generate insights and recommendations which could inform the evolution and development of the South African occupational classification system and its utilisation within the South African PSET context. The verticality of the comparison is that a comparison (which is still contextually aware and sensitive) of an international nature was undertaken. The transversal dimension of the comparison is less pronounced but nonetheless present as the common genesis of the systems from ISCO-08 was examined. The genesis and evolution of the two systems was also engaged with and constitutes engagement with data from a transversal orientation.

Through the utilisation of document analysis to generate a comparative case study recommendations were developed. These recommendations are applicable not only to the South African occupational classification system but also to the PSET system more broadly—especially in terms of the systems stated objective of linking skills demand (as articulated via occupations) with skills supply.

# 3. Overview of current occupational systems

Tijdens & Kaandorp (2018) explains that the concept of jobs and occupation plays a key role in research regarding school-to-work transitions, labour market forecasting, the gender pay gap, social stratification, occupational health and safety and the processes of professionalization. But jobs and occupations are very vast in numbers across the various industrial and economic sectors. An occupational classification is a tool for organising all jobs into occupations and further into clearly defined set of groups. An occupational classification system consists of a dictionary of occupations consisting of descriptions of the tasks and duties as well as other aspects of the jobs. An occupational classification system is in essence an effective means of classifying the wide variety of jobs into a structured and organised system.

The **International standard classification of occupations**, abbreviated as **ISCO**, is an international occupational classification system under the responsibility of the International Labour Organization (ILO). The South African Standard Classification of Occupations (SASCO) and the Singapore standard occupational classification (SSOC), which are the national occupational standards for their respective countries, both use the ISCO as the framework to build their occupational classification system. This chapter explores briefly the International ISCO-08 and the national SASCO and SSOC systems. A brief overview and discussion of the national contexts in which the systems operate will also be provided.

## 3.1 A Brief Analysis of ISCO-08

ISCO is a tool for organizing jobs into a clearly defined set of occupations. ISCO is intended both for use in compiling statistics and for client-oriented uses such as the recruitment of workers through employment offices, the management of migration of workers between countries and the development of vocational training programmes and guidance.

Its main aims are to provide:

- a basis for the international reporting, comparison and exchange of statistical and administrative data about occupations;
- a model for the development of national and regional classifications of occupations; and

- a system that can be used directly in countries that have not developed their own national occupational classifications.

The first ISCO version, known as *ISCO-58*, was adopted in 1957 by the Ninth International Conference of Labour Statisticians (ICLS); subsequent versions were *ISCO-68* (Eleventh International Conference of Labour Statisticians, 1966), *ISCO-88* (Fourteenth International Conference of Labour Statisticians, 1987) and the *ISCO-08*, adopted in December 2007.

The framework used for the design and construction of ISCO-08 is based on two main concepts: the concept of job and the concept of skill. Job is defined as a "set of tasks and duties performed, or meant to be performed, by one person, including an employer or person in self-employment". Skill is defined as the "ability to carry out the duties and tasks of a specific job".

Before examining how ISCO-08 approaches the notion of skills it is worth providing an extended definition of ISCO-08—especially considering that it is the foundation of both occupational classification systems.

ISCO-08 can broadly be described as:

> "…a system for classifying and aggregating occupational information obtained by means of statistical censuses and surveys, as well as from administrative records. It is a revision of the International Standard Classification of Occupations 1988 (ISCO-88), which it supersedes." (International Labour Organization, 2012).

A more detailed and technical definition of ISCO-08 states that:

> "ISCO-08 is a four-level hierarchically structured classification that allows all jobs in the world to be classified into 436-unit groups. These groups form the most detailed level of the classification structure and are aggregated into 130 minor groups, 43 sub-major groups and 10 major groups, based on their similarity in terms of the skill level and skill specialisation required for the jobs. This allows for the production of relatively detailed

internationally comparable data as well as summary information for only 10 groups at the highest level of aggregation."(International Labour Organization, 2012)

For the purposes of ISCO-08, two dimensions of skill are used to arrange occupations into groups. These are skill level and skill specialisation. Skill level is defined as a function of the complexity and range of the set of tasks or duties to be performed in an occupation. Skill level is measured by the nature of the work performed, the level of formal education, and the amount of on-the-job training or previous work experience. Skill specialisation is defined by the field of knowledge required, tools and machinery used, materials worked on and the kinds of goods or services produced.

There are four broad skills levels used in the classification system as they relate to education and training:

- First skill level        requires primary or no education
- Second skill level       requires secondary or post-secondary education
- Third skill level        requires tertiary education undergraduate degree
- Fourth skill level       requires tertiary post-graduate degree

The structure of the groups within the occupation classification system applicable to ISCO-08, SSOC 2015/2018 and SASCO/OFO are explained in the table below:

| Group Type | Description |
|---|---|
| Major Group | The first digit reflects the major group. Major groups are the broadest level of the classification and are distinguished from each other on the basis of skill level and the broadest concept of Skill Specialization. Major groups carry a broad description of the nature of the jobs related to the specific major group as well as an overview of the related tasks. |
| Sub-Major Groups | The second digit reflects the sub-major group. The sub-major groups are sub-divisions of major groups and are distinguished from each other on the basis of broadly stated Skill Specialization. Each sub-major group contain a descriptor and tasks. |

| Minor Group | The third digit reflects the minor group. Minor groups are subdivisions of the sub-major groups and are distinguished from each other on the basis of less broadly stated Skill Specialization. Each minor group contain a descriptor and tasks. |
|---|---|
| Unit Group | The fourth digit reflects the unit group. Unit groups are subdivisions of minor groups and are distinguished from each other on the basis of a finer degree of Skill Specialization.  Each unit group contain a descriptor and tasks. |
| Occupations (Only applicable to SSOC and SASCO/OFO) | The last digit/last 2 digits reflects the occupation. Occupations are not part of the actual structure, but have been listed as sub-divisions of the unit groups. Occupations are distinguished from each other on the basis of uniqueness of the output, usually due to a specific application of skills and knowledge in a specific context. Occupations relates to a cluster of jobs which involve the performance of a common set of tasks.  Each occupation contains a descriptor and tasks. |

*NB:  The Singapore and South African system both use the same group classifications as explained above.*

ISCO-08 is a four-level hierarchically structured classification that allows all jobs in the world to be classified based on their similarity in terms of the skill level and skill specialisation required for the jobs as follows:

- 10 major groups
- 43 sub-major groups
- 130 minor groups
- 436-unit groups

**Example:  Bank Teller**

| Major group | 4   Clerical Support Workers |
|---|---|
| Sub-major group | 42 Customer Services Clerk |
| Minor Group | 421 Tellers, Money Collectors and Related Clerks |

| Unit Group | 4211 Bank Tellers and Related Clerks |
|------------|--------------------------------------|

ISCO-08 is useful and valuable for international comparisons in terms of jobs and occupations. It provides an excellent international reference point allowing for occupational trend analysis across national boundaries.

## 3.2 Brief Overview of the Singapore Occupational Classification System

The Singapore standard occupational classification (SSOC) is the national standard for classifying occupations according to type of work performed in Singapore. The SSOC adopts the basic framework and principles of the International Standard Classification of Occupations 2008 (ISCO-08). The Singapore standard occupational classification (SSOC) 2015 (version 2018) is updated from the SSOC 2015. It has incorporated the job roles of nine Skills Frameworks that were released and includes the occupational codes, scope and structure of the classification as well as description of the principles. It is reviewed and updated periodically to reflect developments in the labour market, particularly the emergence of new occupations, as well as to align with changes in the international standard.

The basic principle used in the classification of occupations in the SSOC 2015/18 is according to the main type of work performed. Persons who perform the same principal tasks are considered as doing the same type of work and classified under the same occupational group, irrespective of the level of authority, responsibility, work experience, skills and qualifications. SSOC 2015/18 is a five-level hierarchically structured classification system:

- 10 major groups
- 43 sub-major groups
- 144 minor groups
- 420-unit groups
- 1 202 occupations

**Example: Bank Teller**

| Major group | 4  Clerical Support Workers |
|---|---|
| Sub-major group | 42 Customer Services Officers and Clerks |
| Minor Group | 421  Tellers, Money Collectors and Related Clerks |
| Unit Group | 4211  Bank Tellers and other Counter Clerks |
| Occupations | 42119  Other tellers and Counter Clerks |

Although the SSOC uses the ISCO-08 structure for its own occupational classification, it has certainly deviated in many aspects.  It is interesting to note that the SSOC used type of work performed as the basis of the development of its structure and not jobs.  This will be elaborated on in further chapters.

## 3.3 Brief Overview of the South African Occupational System

The South African occupation classification system uses two frameworks, the South African Standard Classification of Occupations (SASCO) which resides with Stats SA and the Organising Framework for Occupations (OFO) which resides with the Department of Higher Education. The South African Standard Classification of Occupations (SASCO) it did not provide the detail that South Africa requires for good skills development planning and project intervention and hence a need was identified to develop the OFO. The purpose of the South African Standard Classification of Occupations (SASCO) is to provide a national framework for the identification of occupations, and a basis for international occupational comparability.  On the other hand, the OFO is a skills-based coded classification system that captures all jobs in the form of occupations and provides a framework for the identification, articulation, reporting and monitoring of skills demand and supply in the South African labour market. It is the Department of Higher Education and Training's key tool for identifying, reporting and monitoring skills demand and supply in the South African labour market.  Both SASCO and the OFO are based on ISCO-08 and forms the basis for all future occupational classification work.

The OFO is constructed from the bottom-up by:

• analysing jobs and identifying similarities in terms of a tasks and skills;

• categorising similar jobs into occupations; and

• classifying these occupations into occupational groups at increasing levels of generality.

The OFO adds value to skills development planning and implementation purposes in that it:

• provides a common language when talking about occupations;

• captures jobs in the form of occupations; and

• groups occupations into successively broader categories and hierarchical levels based on similarity of tasks, skills and knowledge.

Like the Singapore system the OFO 2019 system is a five-level hierarchically structured classification system:

• 8 major groups

• 39 sub-major groups

• 125 minor groups

• 440-unit groups

• 1507 occupations

**Example: Bank Teller**

| Major group | 4  CLERICAL SUPPORT WORKERS |
|---|---|
| Sub-major group | 42  Customer Services Clerks |
| Minor Group | 421 Tellers, Money Collectors and Related Clerks |
| Unit Group | 4211  Bank Tellers and Related Clerks |
| Occupation | 421101  Bank Teller |

The South African Occupational Classification system is unique in that it has 2 systems, the SASCO 2012 and the OFO 2017 (which has been recently updated to 2019).  The OFO has been

designed specifically for skills planning. The South African system will also be expanded on in the later chapters.

## 3.4 Conclusion

The Singapore SSOC and the South African SASCO and OFO occupational classification systems are both derived from the ISCO-08. It therefore makes sense that they utilise the same basic definitions and concepts. There is however a difference in the structure of the groupings as shown in the table below:

| Group Type | ISCO | SSOC 2015/2018 | OFO 2017 |
|---|---|---|---|
| Major groups | 10 | 10 | 8 |
| Sub-Major Groups | 43 | 43 | 39 |
| Minor groups | 130 | 144 | 125 |
| Unit Groups | 436 | 420 | 440 |
| Occupations | | 1 202 | 1 507 |

An analysis of the Occupation: Bank Teller indicates that in all three systems, the Bank Teller is found in the same major group, sub-major group, minor group and unit group. However, the SSOC 2015/2018 and the OFO 2019 added the occupation as the fifth level to the groups. It is interesting to note that the SSOC system retains the title Bank Teller at Unit level and creates the Other Tellers and Counter Clerks as the Occupation, whilst the OFO also retains the Bank Teller and Related Clerks at the Unit Level, it creates the Bank Teller at Occupation level. Another difference is that whilst the SSOC system uses five digits for the Occupation Grouping, the OFO uses six digits.

From the above, it is clear that there are similarities but also differences between the Singapore and South African occupational classification systems. The analysis of the two systems did however reveal that there were no substantial differences between the two occupational classification systems. The only major notable difference being that the Singaporean occupational classification seemed to be updated more frequently and rigorously resulting in SSOC providing a more accurate reflection of the labour market.

# 4. A Technical Examination of SSOC and OFO

## 4.1 Introduction

This chapter will consist of a technical examination of the two occupational classification systems. The technical analysis will operate at the level of the individual occupation in order to determine if there are additional categories of occupational information which need to be added to the South African occupational classification system. As has been shown in the previous chapter, and as will be briefly discussed here, the two occupational classification systems are broadly similar in overall structure. In chapter three and four the two systems will be compared to determine if there are major differences in terms of how the two systems are utilised. From this comparison recommendations that are applicable to the South African occupational classification system and PSET system will be generated.

An in-depth examination of the South African organising framework for occupations (OFO) is provided. Such an in-depth examination is much needed as superficial critiques have been levelled against the OFO without the requisite detailed technical examination, and ensuing analysis, required to provide substance to these critiques. There is also a marked lack of research in South Africa which engages analytically and at length with the OFO. Considering that it is the main mechanism used by the PSET system to determine demand in the economy, this is a gap that needs to be addressed. This research report aims to contribute to such an undertaking.

Over 1400 occupations from the OFO were examined, reviewed and subjected to analysis during the research process culminating in this report. The categories of analysis have been included as an annexure to this report. A sample of 15 OFO occupations (from the banking) which were examined and analysed have been included as annexure 1. A sample of 15 SSOC occupations from the Singapore banking sector which were also subjected to the same analysis (albeit slightly modified) have been included as annexure 2.
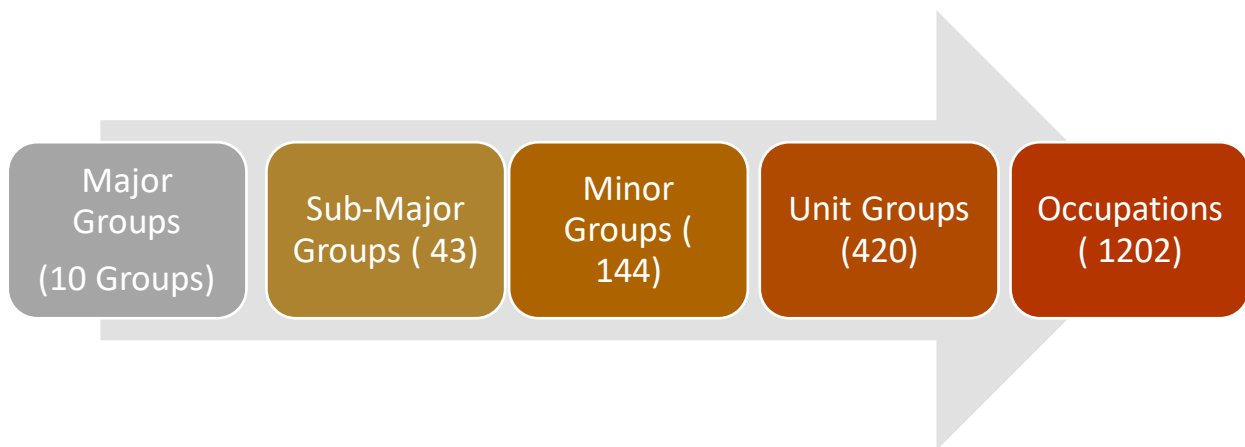
In terms of the Singapore occupational classification system it would seem that an in-depth analysis of its system has also not taken place. Most of the work conducted on the Singapore system is from a skills perspective (Sung et al., 2013). The main source of information for the technical examination of the Singapore Standard Occupational Classification (SSOC) was therefore the official extended document ( 449 pages in total) published by the Singapore Department of Statistics when updates are made to the SSOC. The 2015 (updated in 2018) version of SSOC will be utilised for the technical examination conducted for this report.

As illustrated in the previous chapter the OFO and SSOC have their origins in ISCO-08—both occupational classification systems have however been adapted to more accurately reflect the occupational realities in each context. The SSOC more so than the OFO. This is due to certain occupations existing in each context which might not be reflected on ISCO-08 as ISCO-08 provides a foundation and structure which countries can then use to build their occupational classification systems.

It will be illustrated during this chapter, when the technical examination is undertaken in earnest, how the two occupational classification systems are (broadly) structurally very similar. This is to an extent understandable considering that both have the same origin. A technical examination of the two systems will also assist with determining whether the primary lessons to be learnt lies in the occupational classification systems themselves or in how the systems are used for education and training purposes, how they are updated and maintained and in the contexts in which they are utilised and from which they arise. An expanded examination and comparison, moving beyond the confines of the actual systems themselves, will be undertaken in chapters three and four of the report.

## 4.2 Technical Examination of the Singapore Occupational Classification System

This technical examination will focus on the categories of occupational information contained on the SSOC. On the SSOC there is a comprehensive list of all 1202 occupations in Singapore. The occupations are categorised from general (i.e. manager or professional) down to the specific individual occupational level. The structure can be illustrated as:

Major Groups (10 Groups) → Sub-Major Groups ( 43) → Minor Groups ( 144) → Unit Groups (420) → Occupations ( 1202)

The major group (one digit) is the highest level of aggregation and represents very broad fields of work rather than specific types of work performed. There are ten major groups including nine numerical groups for various occupational groups and a Group X for occupations not classified.

Sub-major groups (two digit) are the sub-divisions of the major group. There are 43 sub-major group.

Minor-groups (three digit) are sub-divisions within the sub-major group. There are 144 minor group.

Unit group (four digit) are sub-divisions of the minor group. There are 1202-unit group. It is finer and more detailed.

Each occupation has a five-digit code. There is no description for each occupation on the SSOC (as is the case with the OFO) and the occupational titles are merely listed. A brief description and a list of common tasks are however provided at unit level. A unit level being a group or family of occupations which are very similar or share certain core common attributes in terms of the purpose and tasks of the occupations which belong to the unit group in question. An example from SSOC applicable to banking would be: Finance and Administration Managers (1211 on SSOC (2015) (2018 version). This unit group falls under the minor group of 121: Business Services and Administration Managers. The sub-major group being 12: Administrative and Commercial Managers and the major group being 1: Legislators, Senior Officials and Managers.
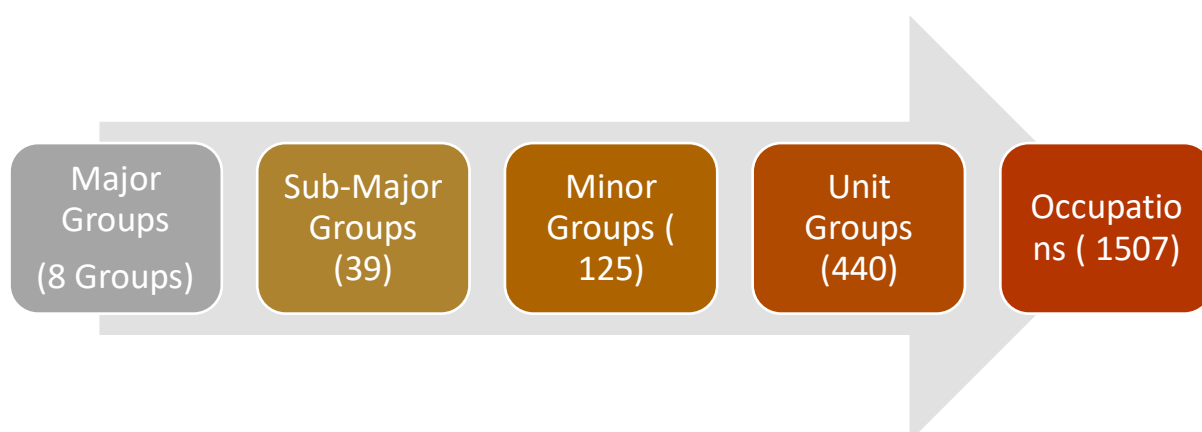
For Finance and Administration Managers (1211) three occupations are listed: Administration Manager, Finance Manager and Financial Controller. The SSOC also list occupations that are broadly similar but which are not categorised under this unit group. This is to avoid confusion between unit groups which are broadly similar which could lead to the incorrect categorisation and classification of occupations. At the end of the information provided for the unit group in question it states: this unit group *excludes* Financial and Insurance Services Managers (1346). The purpose and tasks operate at a certain level of generality in order to allow for adequate coverage of the occupations which are classified under the specific unit group in question. More detailed information is also provided for each major group. Based on experience working with the South African OFO the provision of this information by SSOC makes sense as it was found that confusion and uncertainty often arose even at the major group level when mapping from job to occupation.

As will be seen when the South African occupational system is examined, the differences between the two occupational classification systems are minor. What is however substantially different, and where valuable lessons can be learnt by South Africa, is the manner in which occupational data is collected, developed and utilised in terms of skills planning and provision. This will be expanded on and further developed in chapters three and five of this report.

## 4.3 Technical Examination of the South African Occupational Classification System

Herewith a technical examination of the categories of occupational information contained on the South African occupational classification system—the OFO.

The OFO is slightly different from SSOC in that there are different numbers for each major category on the occupational classification system. The diagram below illustrates the differences:

| Major Groups (8 Groups) | Sub-Major Groups (39) | Minor Groups ( 125) | Unit Groups (440) | Occupations ( 1507) |
|---|---|---|---|---|

The OFO is not contained on a single, well-organised document but is distributed and worked on in the form a spreadsheet with multiple sheets. There is a total of 16 individual sheets with extensive occupational information. There is for instance a list of occupations which are green occupations and another list which is just focused on trades. As new versions are developed the latest spreadsheet is distributed to Sector Education and Training Authorities (SETAs).

Information on purpose and tasks are provided at major group, sub-major group, minor group and unit group level. The movement of information operates on a continuum from general to specific. The information provided at major group level will be much more general as it covers a wide range of occupations. The information provided at unit group level will only (or mainly) be applicable to the selection or family of occupations classified under the unit group although unit group tasks are sometimes of a generic or transversal nature. Tasks are only provided at unit group level on the OFO. A purpose for the unit group is also provided.

Each and every occupation on the OFO contains a brief purpose (known as a descriptor) as well as a list of specialisations and alternate titles. Individual occupations on the OFO do not have tasks listed for them. Each occupation on the OFO has a unique 6-digit code. The 6-digit code follows the logic of the overall structure of the OFO. If for instance a 6-digit code starts with the number "1" this occupation belongs to major group 1 which is that of managers. Herewith the information provided on the OFO for the unit group of Finance Managers (1211):

**Finance Managers (1211)**

| |
|---|
| Finance managers plan, direct and coordinate the financial operations of an enterprise or organization, in consultation with senior managers and with managers of other departments or sections. |
| Tasks include: |
| Establishing and directing operational and administrative procedures |
| Planning and directing daily operations |
| Establishing and managing budgets, controlling expenditure and ensuring the efficient use of resources |
| Assessing the financial situation of the enterprise or organization, preparing budgets and overseeing financial operations |
| Overseeing the selection, training and performance of staff |
| Consulting with the chief executive and with managers of other departments or sections |
| Planning, directing and coordinating the financial operations of an enterprise or organization |
| Representing the enterprise or organization in dealings with outside bodies |

This same pattern is repeated throughout the OFO for all the 1507 occupations in South Africa with some minor variations as is the case with "Occupations not Elsewhere Classified". For this category of occupations, found throughout the OFO, no tasks are listed at unit group level due to the diversity of occupations (and hence lack of task similarity) classified under this designation.

## 4.4 A Technical Comparison of the Two Occupational Classification Systems

As mentioned earlier the two systems are structurally very similar as they both have the same origin: ISCO-08. Both systems have however been adapted to reflect the occupational reality of each country.

**The SSOC has 1202 occupations whereas the OFO has 1507 occupations.** Whether more or less occupations are required is a matter of contention; especially with employers. Research conducted by Wits REAL has indicated that there are certain employers within the South

African banking sector who argue for what amounts to a 1:1 correlation between job and occupation. This could potentially lead to a proliferation of occupations resulting in a system which is even more complex and cumbersome than the current OFO. At present it is difficult to determine whether 1507 occupations on the OFO are sufficient but a proliferation of occupations should be guarded against as there is a clear conceptual and practical distinction between a job and an occupation.

Occupation has many meanings and can be approached from various theoretical, conceptual and methodological perspectives but can in short be defined as:

> "...socially constructed entities that include: (i) a category of work; (ii) the actors understood—either by themselves or others—as members and practitioners of this work; (iii) the actions enacting the role of occupational members; and (iv) the structural and cultural systems upholding the occupation." (Anteby, Chan, & DiBenigno, 2016, p.187).

A job, and its relationship with yet analytic and practical separation from a job, can be defined as:

> "Jobs are bundles of tasks performed by employees under administrative job titles; a given job is thus particular to a specific workplace, just as a job title is often particular to a specific workplace. An occupation, on the other hand, is broader membership in a shared community that spans across jobs. An occupation is therefore a category of work that is concretely instantiated as particular jobs in particular organizations under particular job titles." (Cohen, 2013, p.243; Grant, Berg & Cable, 2014).

The above illustrates that there is indeed a clear, albeit at times complex and difficult to determine, distinction which can and needs to be drawn between a job and an occupation.

**The SSOC operates with 5-digit codes per occupation whereas the OFO has 6-digit codes identifying occupations.** This is a minor difference. The benefit of having 6-digit occupation codes being that it allows for the addition of a large number of occupations under a unit group as two digits allow for 1 to 99 occupations to be added under a single unit group. This flexibility of the OFO is to an extent positive as it allows for the incorporation of additional new

occupations as the world of work evolves. It could however lead to a situation where new occupations are added without removing occupations from the occupational classification system which have become redundant or outdated. This is potentially problematic.

**The SSOC has 10 major groups whereas the OFO has 8 major groups.** This difference is minor although it could be argued that the additional major group categories on the SSOC allows for a slightly more granular differentiation to be made at the major group level. Said granular differentiation allowing for less confusion and uncertainty.

In terms of categories of information at the individual occupation level **the SSOC contains no descriptions of occupational purpose or specialisations and alternate titles at the 5-digit level whereas the OFO does include these categories at the 6-digit level.** Depending on who is working with the occupational classification system it could be argued that the inclusion of an occupational purpose as well as specialisations and alternate titles at the individual occupational level is a positive feature of the OFO. In the case of South Africa where employers utilise the OFO to submit occupational data to their respective SETAs via work place skills plans (WSPs) the inclusion of this information at the individual occupation level is indeed needed to assist employers with the process of categorising their jobs as OFO occupations.

## 4.5 Conclusion

This chapter has provided an examination and comparison of the occupational classification system in South Africa and Singapore. It has shown that due to the two systems both originating from ISCO-08 there are only minor differences between the two occupational classification systems and that they are indeed structurally very similar. Chapter three and four will explore how these systems are utilised as labour market intelligence tools and skills planning and provision mechanisms. By examining and comparing how the two systems are utilised substantive differences will emerge and recommendations developed which can assist with the evolution of the OFO in South Africa. These recommendations will be presented in chapter five.

# 5. An Analysis of the Singapore system: Implications for Skills Planning

This chapter will examine how occupational data generated via the SSOC is utilised for skills planning and eventual skills provision interventions on the supply side in the form of education and training programs. In essence what this chapter seeks to examine are the ways (and supporting structures and mechanism) in which skills supply and skills demand are aligned in the Singaporean context.

Singapore has a comprehensive skills planning system supporting all key industries with skills development (Kuruvilla et al, 2001).  In Singapore the following ministries are involved in skills development: The Ministry of Trade and Industry, the Ministry of Manpower, the Ministry of Education, the Economic Development Board and various ministerial divisions (Kuruvilla et al, 2001).  The importance attached to matching supply and demand is seen in the fact that every six months a cross-ministerial committee meets to identify the degree to which the country's skills needs are being met (Kuruvilla et al, 2001).

Singapore has been described as a developmental state (Sung et al., 2013). A developmental state being one in which the state plays a central (or often dominant) role in forming, determining, leading and co-ordinating socio-economic systems with the ultimate goal of economic progress over time (Sung et al., 2013). As a result there is often direct and extended involvement by the state in the skills systems with the goal of linking the skills system (the supply side) with industrial policy (the demand side or at least the side of the "skills equation" which is predominantly concerned with creating and/or facilitating the development of demand).

The Singapore PSET system (in Singapore it is called the continuing education and training system) is dived into two main components: the workforce development agency (or Workforce Singapore) and a collection of over 440 Continuing Education and Training (CET) Centres and Approved Training Centres which fall under the authority of the Ministry of Education(Sung et al., 2013). Skills Future Singapore is an intra-governmental organisation, primarily under the jurisdiction of the Ministry of Education, and which was designed to establish even higher levels of co-ordination and co-operation not only within the  education

system but also between the domains of education and industry(Skills Future, n.d.). One of its core strategic objectives is to:

"Develop an integrated high-quality system of education and training that responds to constantly evolving needs." (Skills Future, n.d.)

The system in Singapore can be illustrated with the below diagram:
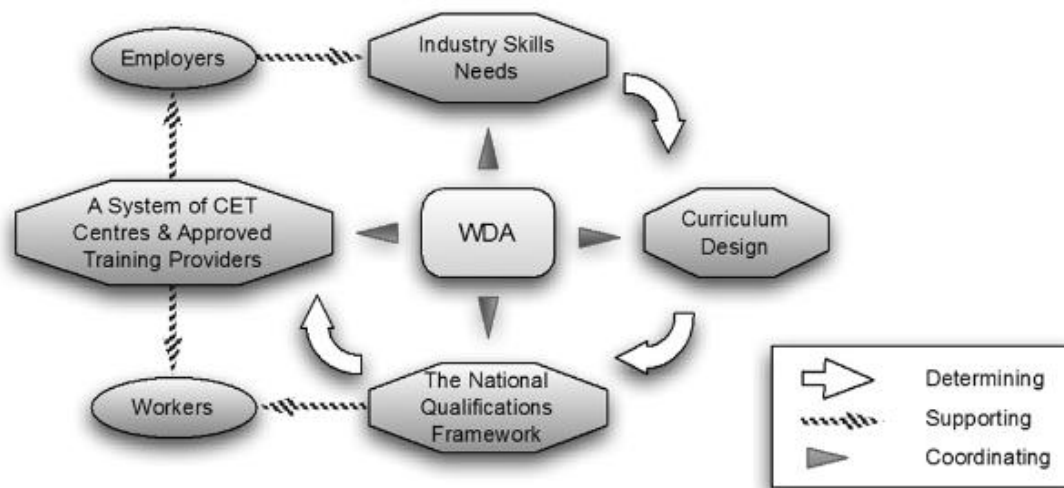


Figure 1: The National Skills System under the Singapore Workforce Development Agency (WDA).

(Sung et al., 2013)

As can be seen from the above the WDA (or Workforce Development Agency) is located at the centre of the system. Considering the centrality of the WDA it is worth briefly examining the Singapore labour market as the WDA responds to the needs of the Singapore labour market.

One of the distinguishing features of the Singapore labour market is that it has a very high share of skilled workers with nearly 54.3% of the labour force being classified as skilled (Thangavelu, 2017). There is still however nearly 45% of the labour force which is classified as semi-skilled (Thangavelu, 2017). There has also been a recent steady shift in economic activity with increased growth in the service sector, broadly defined, and a slowing down of growth in manufacturing(Thangavelu, 2017).As of the last quarter of 2019 the unemployment rate of Singapore stood at 2.3% (Ministry of Manpower, 2019). Overall there were no significant variations in unemployment rates in terms of educational attainment level (Ministry of Manpower, 2019). Or put differently the Singapore labour market showed no substantive

correlation between education level and unemployment rate. The table below clearly illustrates this:
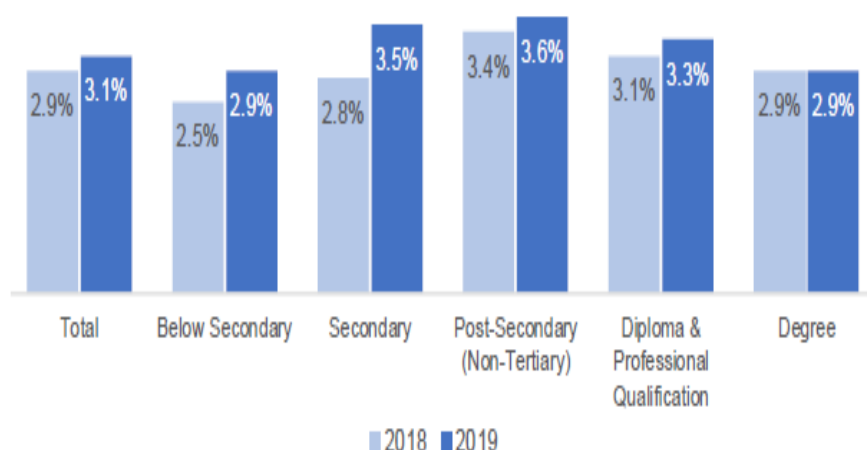


(Ministry of Manpower, 2019, p. 7)

No data was available on race or youth unemployment as regards the labour market in Singapore.

Another unique feature of the Singapore labour market is its high level of foreign workers (Kuruvilla et al, 2001). As well as the issue of sustainability, there is the risk that they may one day return to their home countries. The current policy is to reduce the reliance on foreign workers and adopt the so-called "manpower-lean" strategy (Kuruvilla et al, 2001). There are two dimensions to the manpower-lean strategy. The first is that in the future, foreign workers will account for only around one-third of the total workforce. Hence, future growth is not expected to be met by increasing the number of workers. The second dimension is that there is a simultaneous effort to strengthen the "Singaporean Core". This refers to the need to have a much better skilled local workforce that can operate in a "manpower-lean" environment (Kuruvilla et al, 2001).

The skills development model in Singapore is one where there is a focus on skill utilisation. Singapore skills development system and policy is primarily corned with skills are being utilised

in Singapore by looking at how skills can make an impact in the workplace, and linked to this, how the acquisition of skills can assist with individual career development and progression.

## 5.1 Use of Occupations in Singapore for labour market intelligence

In Singapore there is close synergy between economic development and skills formation.  A multi-facetted approach is used to identify the skills that are required for supporting sector development. Econometric forecasting is undertaken to identify the country's manpower needs for the medium and the long term. Adopting a multi-facetted approach enables the Ministry of Manpower (MoM) to produce a skills map outlining which skills are in demand and the degree to which the country is producing the appropriate supply of skills.

The table below shows how occupations are used in Labour Market Data in Singapore:  The graphs are drawn from the 2018 Singapore Labour Force Report.

| Employed residents by occupation: | Employed residents by occupation — Per Cent |
|---|---|
| This displays a trend analysis over a chosen period for Professionals, Managers, Executives & Technicians (PMETs); Clerical, Sales & Service Workers (CSSWs) and Production & Transport Operators, Cleaners & Labourers (PTOCLs) <br><br> Data are classified based on Singapore Standard Occupational Classification (SSOC) 2015/2018. |  |

**Employed residents by occupation**

Per Cent

Professionals, Managers, Executives & Technicians (PMETs)

Clerical, Sales & Service Workers (CSSWs)

Production & Transport Operators, Cleaners & Labourers (PTOCLs)^

| June: | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PMETs | 51.0 | 51.4 | 52.4 | 52.6 | 52.3 | 53.0 | 53.5 | 54.3 | 55.1 | 56.1 | 56.9 |
| CSSWs | 24.7 | 24.5 | 24.5 | 24.3 | 25.5 | 25.2 | 24.4 | 24.2 | 23.5 | 22.8 | 22.9 |
| PTOCLs^ | 24.3 | 24.2 | 23.2 | 23.1 | 22.3 | 21.8 | 22.1 | 21.4 | 21.4 | 21.1 | 20.2 |

Source: Comprehensive Labour Force Survey, Manpower Research & Statistics Department, MOM

Notes: (1) Data are classified based on Singapore Standard Occupational Classification (SSOC) 2015. Data before year 2015 which were coded based on earlier versions of the SSOC were mapped to SSOC 2015 as far as possible to facilitate data comparability.

(2) ^ – Includes Agricultural & Fishery Workers and Workers Not Elsewhere Classified.

(3) Data for each year may not add up to 100% due to rounding.

**Top occupations among resident regular primary own account workers:**

This displays the top occupations among primary own account workers. These occupations are ranked in terms of their demand and the number of regular people working in it as self-employed individuals.

## Top occupations among resident regular primary own account workers, 2018
Number ('000)

|  | Number ('000) | Change from 2017 |
|---|---|---|
| Taxi Drivers | 30.8 | -8.1 |
| Working Proprietors | 21.4 | 2.3 |
| Private Hire Car Drivers (Online Matching Platforms) | 21.2 | 9.1 |
| Real Estate Agents | 15.0 | 1.6 |
| Insurance Sales Agents/Brokers | 12.7 | -1.2 |
| Hawkers/Stall Holders | 9.6 | -1.5 |
| Media-Related Workers | 6.2 | 0.3 |
| Private Tutors (Academic) | 5.3 | -0.8 |
| Car & Light Goods Vehicle Drivers | 3.8 | -0.7 |
| Extracurriculum Instructors | 3.1 | -0.9 |
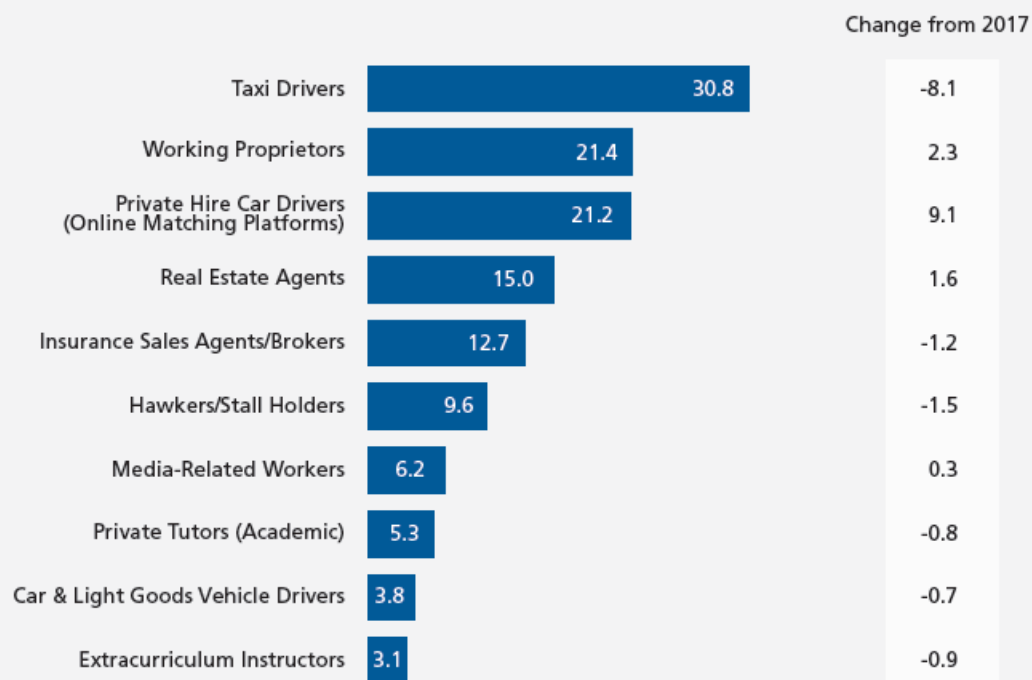
Source: Supplementary Survey on Own Account Workers, Manpower Research & Statistics Department, MOM

Note: Private hire car drivers in this chart refer to those on online matching platforms (e.g. ride-hailing platforms). Private hire car drivers who are not on online matching platforms are covered in the category 'Car & Light Goods Vehicle Drivers', together with drivers of other modes of transport (vans, motorcycles, bicycles, etc.).

**Training participation rate of employed residents aged 15 to 64 by broad occupational group:**

Reflects the knowledge and skills required in their area of work across all the major groups in the occupation classification.

### Training participation rate of employed residents aged 15 to 64, 2018
Per Cent

**By Occupation**

| Occupation | Per Cent |
|---|---|
| Professionals | 64.5 |
| Managers & Administrators | 59.5 |
| Associate Professionals & Technicians | 57.1 |
| Service & Sales Workers | 40.0 |
| Clerical Support Workers | 38.1 |
| Craftsmen & Related Trades Workers | 33.3 |
| Cleaners, Labourers & Related Workers | 26.7 |
| Working Proprietors | 24.2 |
| Plant & Machine Operators & Assemblers | 20.8 |
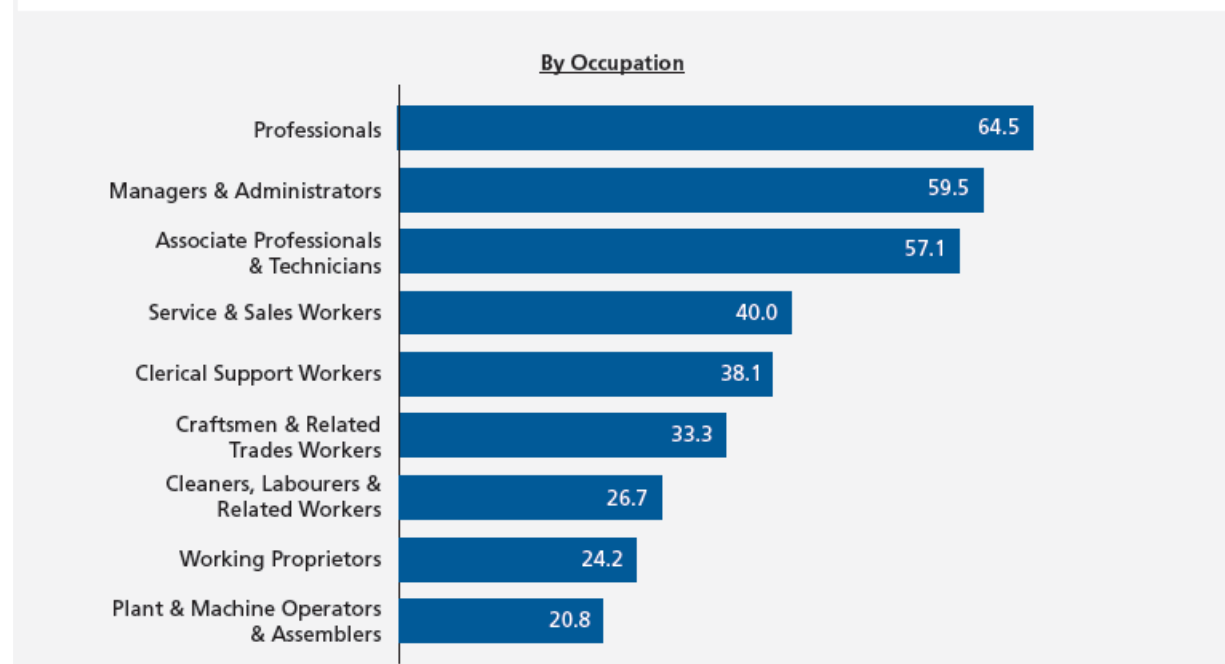
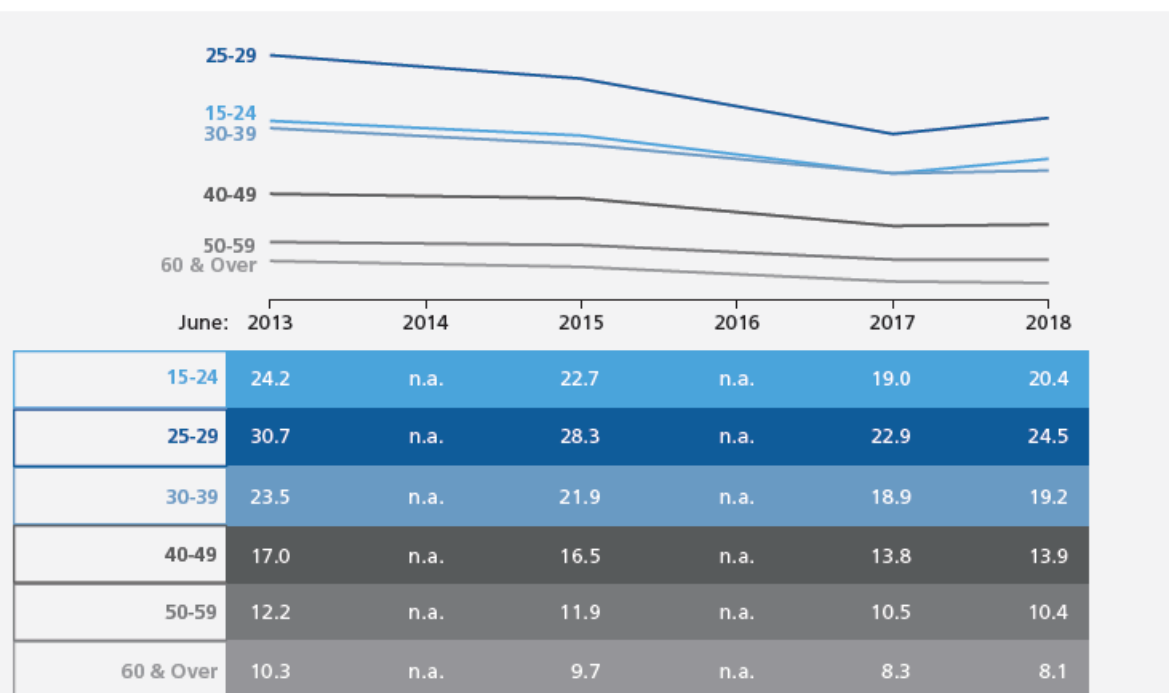**Job Mobility and Tenure**

Reflects the job openings and recruitments and the movement of residents between jobs. Shows the age of residents who changed their jobs as well. Also displays job movement across industries. Across industries, information & communications and professional services had the largest increase in proportion of workers who had switched jobs in the last two years.

## Proportion of employed residents who had changed jobs in the last 2 years by age
Per Cent



| June: | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|-------|------|------|------|------|------|------|
| 15-24 | 24.2 | n.a. | 22.7 | n.a. | 19.0 | 20.4 |
| 25-29 | 30.7 | n.a. | 28.3 | n.a. | 22.9 | 24.5 |
| 30-39 | 23.5 | n.a. | 21.9 | n.a. | 18.9 | 19.2 |
| 40-49 | 17.0 | n.a. | 16.5 | n.a. | 13.8 | 13.9 |
| 50-59 | 12.2 | n.a. | 11.9 | n.a. | 10.5 | 10.4 |
| 60 & Over | 10.3 | n.a. | 9.7 | n.a. | 8.3 | 8.1 |

Source: Comprehensive Labour Force Survey, Manpower Research & Statistics Department, MOM

Notes: (1) Data exclude full-time National Servicemen.
(2) n.a. – Not available as data on job change was not collected in these years.

**Development of Sectoral Manpower Plans**

WDA co-ordinates the delivery of Sectoral Manpower Plans (SMPs) under SkillsFuture. SMPs are produced by tripartite bodies that have a variety of stakeholders ranging from employers, professional bodies, trade associations, unions, regulatory bodies (if applicable) and state agencies. SMPs are five-year-cycle manpower and skills plans for each key sector targeting industry growth and productivity improvement. However, plans may vary a great deal from each other because the development issues relevant to each sector may differ substantially. Hence, in some sectors, "manpower-lean" working may be critical, while others may focus on skills retention, creating attractive career pathways, improving job quality, greater use of technology or flexible working and so on.

To get a sense of how SMPs may impact on skills utilisation, we illustrate two contrasting examples of SMPs. While SMPs differ from sector to sector, most of them focus on the supply of skills. This particular pattern reflects the fact that the reality of workforce development policy is more at home with the supply side approach because it is relatively easy to develop and supply education and training, and it is rather difficult to influence companies' internal work processes that may lead to improvement in skills utilisation.

Job vacancy rates is an important measure of labour market gaps and offers insights on the changes in labour demand, helping job seekers and employers make more informed decisions. Singapore uses the **Job Vacancy Rate** to capture information on unfilled posts for which employers are actively recruiting employees. The job vacancy rate provides the percentage of labour demand that is unfilled, i.e. the number of job vacancies divided by the total demand for labour. **Job Vacancy to Unemployed Ratio** relates the job openings to job seekers available. It is obtained by taking the ratio of job vacancies to the number of unemployed persons. Singapore releases an annual report on Job Vacancies that provides comprehensive vacancy information on detailed occupations, industry, qualifications and working experience required as well as vacancies unfilled for extended periods and those employers also report hard to fill vacancies for local residents.

## 5.2 Examining Education and Training linkages and usage in skills development

Singapore's higher education (or 'post-secondary') system currently comprises a range of educational institutions that cater to a broad array of students. These include

- Public-funded ('autonomous') universities
- Polytechnics
- Vocational training institutes
- Private educational institutions for the arts
- Other government-affiliated educational institutions

Aside from these institutions, Singapore's higher education landscape also includes private educational institutions and foreign universities offering a range of post-secondary qualifications (Martinez-Fernandez & Paul, 2009).

How is information about skills requirements translated into the supply of skills? The EDB and the Singapore Work Development Agency (WDA) takes information about skills requirements and translates the into the supply of skill by applying the following strategies: an expansion of pre-employment training, upgrading the skills of the existing workforce, and attracting foreign manpower from overseas. Under this process the Ministry of Manpower (MoM) will initially assess whether an identified skill shortage can be met through pre-employment training. This involves working with the EDB and the Ministry of Education to identify what subject areas need to be increased, by how much and at what level. In addition, students are made aware of the potential employment opportunities of different programmes, with each university having to provide information about the employment outcomes and wages of their graduates (Martinez-Fernandez & Paul, 2009).

Launched in 2016, Singapore's Skills Future initiative aims to identify, invest in and supply the skills needed for inclusive economic development. Skills Future is a major cross-ministry national program for lifelong learning and skills training (Loke & Gopinathan, 2017). Skills Future has been described as a " national movement"(Loke & Gopinathan, 2017, p. 221). Skills Future can best be described as:

> "At the core of SkillsFuture is a programme between government, employers, employees and training providers for instilling 'skills mastery' among Singaporeans from their schooling years to retirement, involving tools such as monetary credits and fostering employer recognition of such training programmes."(Loke & Gopinathan, 2017, p. 221)

One of the motivating rationales of the national initiative being that of a training system which moves away from qualifications towards a modular system in which people can choose the training components which most align with their needs as well as those of industry in which they are currently employed or plan to be employed in. The program's intent is to make every student and worker the leader of their own learning path, where they are free to choose the type of training, and formulate and realise their own career goals; whether that means pivoting to a new industry or gaining specific hard or soft skills. Alternatively, employers are provided the skills modules and they choose the units of training they want their staff to receive and then they approach a training provider who then draws up learning plans based on those units.

Skills Future leverages a Skills Frameworks programme to enable informed decision-making by students, employees, employers and educators. This is gradually rolled out sector-by-sector. It provides up-to-date information on employment, career pathways, occupations, job roles, existing and emerging skills, as well as relevant education and training programmes. A list of training programs that address skills gaps in each sector and role are included on the framework website. The Skills Framework has been primarily developed for the Singaporean workforce with the objectives to build deep, relevant and resilient skills in the workforce, enhance business competitiveness and support employment and employability. It is designed to support individuals with making well-informed choices in education, training and their careers. At the same time, it aids the development of an integrated high-quality system of education and training that responds to constantly evolving needs. The Framework aims to create a common skills language for individuals, employers and training providers. This further helps to facilitate skills recognition and support the design of training programmes for skills and career development.

Skills Framework for Financial Services:

**SKILLS FRAMEWORK FOR FINANCIAL SERVICES**

BACK TO   SECTOR CAREER PATHWAYS   RETAIL BANKING   INSURANCE

INTRODUCTION

HOW TO USE THE TOOL

MAIN VIEW

**TRACKS**

SALES, AFTER SALES, DISTRIBUTION AND RELATIONSHIP MANAGEMENT

TRADING AND EXECUTION

PRODUCT SOLUTIONING AND MANAGEMENT

OPERATIONS

DIGITAL AND DATA ANALYTICS

RISK, COMPLIANCE AND LEGAL

TECHNICAL SKILLS & COMPETENCIES

GENERIC SKILLS & COMPETENCIES

ACKNOWLEDGEMENTS

Jointly developed by

SKILLS future SG

WSG

IBF

### CUSTOMER SERVICE OFFICER/ BANK TELLER

**Job Description**

The Customer Service Officer/Bank Teller supports handling all customer enquiries or directing them to the relevant parties. He/She also reports any issues and feedback from customers to ensure the organisation maintains a high service standard. He performs administrative duties such as processing of documents and changes arising from customers' requests or enquiries. He communicates with other business units to ensure that service related issues are handled or escalated when required.

The Customer Service Officer/Bank Teller occasionally works on the weekends and after office hours in an office environment. He is patient in nature to handle all queries calmly and clearly. He communicates effectively and have good etiquette when engaging customers. He is proactive and eager to learn.

**Critical Work Function and Key Tasks** — View details

**Programme Listing** — View details

*Click on any of the Skills and Competencies to view a detailed description*

| Technical Skills & Competencies | Proficiency Level | Generic Skills & Competencies (Top 5) | Proficiency Level |
|---|---|---|---|
| Customer Experience Management | 3 | Service Orientation | Intermediate |
| Ethical Culture | 3 | Interpersonal Skills | Basic |
| Information Technology Application Support and Monitoring | 3 | Problem Solving | Basic |
| Quality Assurance | 3 | Decision Making | Basic |
| Service Challenges | 3 | Communication | Basic |
| Stakeholder Management | 3 | | |
| Standard Operating Procedures Development | 3 | | |

Specific to Insurance #

| | |
|---|---|
| Business Process Re-Engineering # | 3 |

The training programmes listed in the Skills Framework are provided based on alignment to the knowledge and abilities underpinning the skills and competencies required for the occupation in question. As the knowledge, abilities, skills and competencies of a given occupation are validated with employers and key stakeholders, programmes that are aligned to the Framework will have a higher probability of aligning to the needs of industry.

The Skills Framework is co-created by the government and the industry with key stakeholders such as, employers, industry associations, unions, professional bodies, and education and training providers. The Skills Framework provides key information collated by a range of stakeholders on sector and employment, career pathways, occupations/job roles, as well as existing and emerging skills required for the occupations/job roles. Care is taken to describe skills within occupations. Each skill is carefully analysed and written to capture both occupational/job and personal domains of the skill for holistic development. Similar to occupations or job role description, skill descriptions provide an overall introduction to the skills by summarising the performance expectations of the skills. The Framework site also provides a list of training programmes for skills upgrading and mastery. The below diagram illustrates how the Skills Framework caters for a wide range of workers: from those entering the labour force to those already working and seeking to upskill and/or transition to another occupation or even industry.
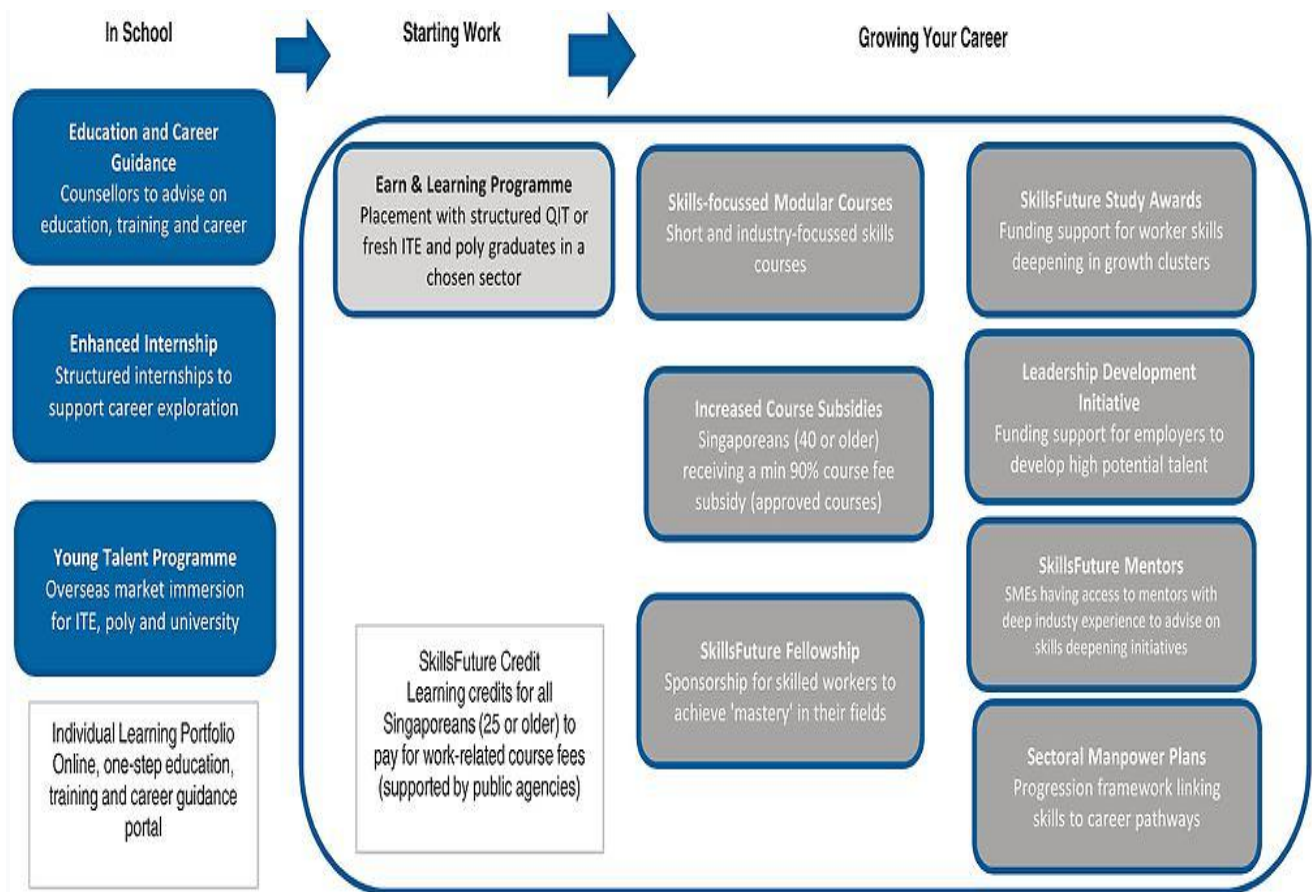
*Source:* Adapted from

www.mom.gov.sg/employment-practices/skills-training-and-development/skillsfuture

## 5.3 Skills Utilisation Model

Skills development of the labour force requires an enabling environment so that the provision of skills is balanced with the provision of opportunities to use these skills. Therefore, skills development should be integrated with employment opportunities as well as career progression and transition — for both the formal and informal private sector as well as public sector. In particular, international comparison and benchmarking in developing an enabling environment for skills utilisation is of critical importance. It is essential to examine the interaction between country approaches to skills development and country approaches to skills utilisation. Past experience across countries suggest that training alone will, in most cases, not result in positive development outcomes (Palmer, 2007). International co-operation in skills development needs to be situated within a wider co-operation framework that is supportive to the utilisation of skills (Palmer, 2007).

## 5.4 Conclusion

This chapter has provided an analysis of the Singapore occupational classification system from the perspective of the labour market and skills planning and provision. It has illustrated that Singapore has a relatively unique skills system—especially when compared to South Africa. The system utilised in Singapore to match skills supply and demand exhibits high levels of co-ordination and co-operation between government departments as well as other role players and stakeholders.

The system is also to an extent relatively simple and streamlined with institutions working closely together but with each institution having clear roles, responsibilities and areas of specialisation. The final section will distil from the case studies presented lessons, in terms of occupational classification systems and skills planning, which could be of value to the South African PSET system. It should however be borne in mind that the contexts of South Africa and Singapore, especially in terms of labour market composition and dynamics, are substantively different. It does not however follow from this that there are no lesson to be learnt from Singapore by South Africa but merely that these lessons should be tempered with a contextually embedded understanding of national economic, labour market and education dynamics.

# 6. An Analysis of the South African System: Implications for Skills Planning

The OFO is the fundamental requirement for skills planning at all levels in South Africa. At a national level, the occupations in high demand is central to determining skills planning requirements. At a sectoral level, occupational shortages are central to skills planning. DHET (2017) reflects that institutions such as the SETAs use the OFO for undertaking skills planning within their specific segment of the labour market. It is the DHET's key tool for identifying, reporting and monitoring skills demand and supply in the South African labour market. The purpose of the Organising Framework for Occupations is to establish a common language for talking about occupations. In terms of skills development, it enables labour market dialogue for talking about skills demand and supply (DHET, 2017).

The OFO adds value to skills development planning and implementation purposes in that it:

- provides a common language when talking about occupations;
- captures jobs in the form of occupations; and
- groups occupations into successively broader categories and hierarchical levels based on similarity of tasks, skills and knowledge.

Skills planning undertaken by SETAs at a sectoral level involves firstly an analysis and identification of labour market skills demand; secondly an analysis of the supply of skilled labour from the PSET system and lastly an analysis of the demand and supply to determine the shortages and gaps referred to as skills mismatch. Thus, skills planning provides insights about the labour market intelligence and provides signals to the education and training system. This chapter interrogates how occupations are used in determining the demand and supply of labour and the measurement of skill mismatches in South Africa.

Before proceeding to a more granular analysis of the South African skills planning and provision system it is necessary to highlight the substantial differences between the South African and Singaporean labour markets.

Whereas youth unemployment in Singapore is negligible in South Africa youth unemployment is a staggering 56% (Anter, 2020). In South Africa there is also a strong correlation between level of educational attainment and unemployment. 55.9% of the unemployed in South Africa did not finish high school whereas, in sharp contrast, only 1.9% of those with university degrees are unemployed (Stoddard, 2020). Furthermore the apartheid legacy of gender and racial disparities and inequalities in the labour market persist (Jaga, Arabandi, Bagraim & Mdlongwa, 2018). All of these dynamics should be borne in mind when examining the Singapore system in order to generate recommendations as these forces, to a significant extent, determine the applicability and relevance of insights and recommendations.

## 6.1 Use of Occupations in South Africa for labour market intelligence

The demand for skills, is the demand for the skills embodied in the workers that are hired. Skills are required by employers to enable workers to do the jobs that employers wish them to do, and are required by workers to enable them to do the jobs that employers require. The demand for skills can therefore be defined as the demand for skilled labour, and can also be referred to as employer demand or labour market demand. It is articulated by the number and type of jobs available in the economy. Labour market or employer demand for skills is represented by the overall numbers of people employed, the total jobs in the economy. These can then be divided into sectoral, and especially occupational, employment and its change over time to see the level and changes (growth and decline) in skills required as represented by the jobs made available. The changing composition of employment enables the changing composition of skills demand to be directly observed.

Estimates of skills demand involve analysis of four inter-related areas; namely the state of the economy, the profile of the labour force, current demand, and future demand (DHET, 2019). The analysis of the economy includes economic performance, savings and investments, export

growth and diversification, and the related impact on employment and unemployment levels. Analysis of the labour force is based on race, gender, age, and level of education, with special reference given to youth unemployment. The analysis of current skills demand focuses on sectoral growth and the age profile of workers within the given sector, occupational changes and changes of skills within an occupation. In addition, an analysis of the occupations in high demand, skills needed to support government growth initiatives, and perceptions of employers of skill needs has been included.

There are at least four major benefits that the OFO directly adds to skills planning. These benefits are highlighted below:

- **Provide information for Sector Skills Plans**

It is a requirement for SETAs to use the OFO in the submission of their 5 Year Sector Skills Plans and Annual Updates. Critical and scarce skills are addressed in the SSPs and it is necessary to track skills scarcity on the basis of demand, i.e. how many people are needed to fill jobs and occupations for work and sector operational and productive performance is essential. Tracking how the scarcity is manifested in a sub-sector, sector and across sectors is essential to inform strategies to reduce the scarcity and attain equilibrium in the labour market between demand and supply.

- **Assist with the identification of critical and scarce skills**

The Scarce and Critical Skills reporting format has enabled the identification and annual publication by the DHET of a national scarce and critical skills list. This List has also informed the identification of scarce and priority skills targets. Employers can use the information to broaden the indicators and drivers of scarce skills that they take into account when developing the annual WSPs. Research done at SETA level has identified a number of common drivers and strategies to address scarcity:

  o *Drivers*: Equity considerations, movement out of the sector, retirement
  o *Indicators*: High vacancy rates, high replacement rates
  o *Strategies*: Bursaries, learnerships, apprenticeships, skills programmes, and College engagement

- **Identification of common skills development needs**

Information at occupational level assist SETAs to identify common skills development needs and interventions. Struggling employers benefit from such initiatives especially when interventions are rolled out from the SETA targeting occupational qualifications.

- **Use of information by the employers**

The OFO provides clear definitions and descriptions of jobs as well as the skills needed for an employee to perform optimally. This in turn informs the compilation of WSPs. The OFO further assists employers to communicate with each other in a common language during the rolling out of WSPs. Employers, especially those in rural areas, can then assist each other in the sharing of service providers for education and training programmes.

DHET 2019 SSP Development Guidelines is a guideline document issues to SETAs for the development of sector skills pans. The following questions relating to occupations must be answered by the SETAs in the development of the SSPs:

- What broad occupational groups within the sector do people belong to?
- What occupations are HARD-TO-FILL VACANCIES? (It takes longer than 12 months to fill the position)
- How many of these occupations are HTFVs?
- Why are these occupations hard-to-fill? Reasons (are they skills-related HTFVs or non-skills related HTFVs?)
- What are the SKILLS GAPS in your sector at major and occupational levels?
- What is the extent of occupational supply in the sector?
- What methods (including consultative process) did the SETA employ in identifying occupations in the Sectoral Priority Occupations? (Highlight the main findings that informed the Sectoral Priority Occupations?)
- What informed the interventions indicated in the SETA Sectoral Priority Occupations?
- What are the envisaged outcomes from the identified interventions?
- What informed the quantities indicated in the SETA Sectoral Priority Occupations?
- Is the SETA Sectoral Priority Occupations ranked, in order of priority? If so, what informed the ranking of occupations indicated in the SETA Sectoral Priority Occupations?

## 6.2 Examining Education and Training linkages and usage in skills development

The supply of skills is most often measured in terms of qualifications acquired and numbers trained. The Education and Training linkages relating to skill supply fall under the responsibility of the PSET system. According to the White Paper on PSET, the TVET Colleges, the CET Colleges, Universities, Universities of Technologies and the three Quality Councils are responsible for implementing mechanisms to address skills supply. Skills levels make it possible to compare the skill level of an occupation with the required educational level on the NQF.

Whilst the TVET, CET, OUT and Universities adopt a theoretical route to education, the Occupational Learning System recommends a method to skills development that emphasizes job-focused and occupationally-directed learning. CESM is a Higher Education Subject Classification System that works in a similar way as the OFO. There are 20 Educational Fields (denoted by two digits), each subdivided into a number of sub-fields (a total of 239 denoted by four digits), each subdivided into subjects (denoted by six digits). In order to assist in career guidance all Unit Groups (four digits) were linked to the most appropriate CESM code at two (2) digits (where the overlap is too big) or four (4) digits. This can direct learners and Career Councillors in obtaining more information on the underpinning knowledge areas for groups of occupations.

The Occupational Qualifications Framework provides guidelines for the development of occupationally directed curricula that meet the job-related skills requirements for occupations in the OFO. Certificates and qualifications are developed relative to the occupational groups contained in the OFO. The curriculum for these qualifications are developed relative to the occupation descriptors and tasks as defined in the OFO. The intention of the occupationally-directed learning approach was to move away from the generic nature of learning fields towards particular skills development requirements for certain occupations. The Occupational Learning System (OLS) is the responsibility of the Quality Council for Trade and Occupations (QCTO). The successful application of the OLS requires a clear framework of occupations. In

this regard, the OFO is essential to categorise jobs in all economic and service sectors with clear associated descriptors and tasks within each occupational grouping (DHET, 2017).



**Reproduced from the DHET OFO 2017**

The QCTO is responsible for the development and quality assurance of fit-for-purpose occupational qualifications and unit standards as required by the labour market for work and employment purposes. The purpose of occupational qualifications is the improvement of occupation-specific knowledge, skills and competencies that could contribute to increased productivity and employment rates. It is also important to acknowledge that not all occupations have a direct link to a qualification. While there is value in aligning qualifications to occupations, it is not a one-to-one relationship and should therefore be given a fair amount of latitude. Occupations in the OFO are defined by what employees actually *do* and not by their *qualifications.*

Skills mismatch refers to a condition whereby the skills and education of the existing workforce does not match the needs of firms/industries. It is the gap between the supply and demand for skills of the existing or new workforce. Skills imbalances are measured by two key sets of indicators; namely skill needs indicators and mismatch indicators. Skill needs indicators consist of shortage or surplus of occupations and shortage or surplus of skill, while mismatch indicators consist of qualification and field-of-study mismatch.

The following trends are some of the analysis that can be carried out using occupations in the analysis.

One of the labour market demand measurements is to understand the way in which demand is impacting the occupational structure of the labour market, and what types of skills are needed. It depicts longer term structural shifts in occupations. This analysis shows how occupations are changing over a longer time period. It is useful to depict occupational shifts.

**Table 14: Changes in the occupational structure of the employed labour force between 2014 and 2016**

| Main occupation (OFO 1-digit) | 2014 | 2016 | Absolute change | Percentage change | Relative employment shift |
|---|---|---|---|---|---|
| Managers | 1 331 000 | 1 356 000 | 25 000 | 1,9 | 0,5 |
| Professional | 842 000 | 866 000 | 24 000 | 2,9 | 0,7 |
| Technician | 1 552 000 | 1 470 000 | -82 000 | -5,3 | -1,3 |
| Clerk | 1 653 000 | 1 642 000 | -11 000 | -0,7 | -0,2 |
| Sales and services | 2 326 000 | 2 481 000 | 155 000 | 6,7 | 1,6 |
| Skilled agriculture | 76 000 | 68 000 | -8 000 | -10,5 | -2,5 |
| Craft and related trade | 1 813 000 | 1 927 000 | 114 000 | 6,3 | 1,5 |
| Plant and machine operator | 1 277 000 | 1 284 000 | 7 000 | 0,5 | 0,1 |
| Elementary | 3 295 000 | 3 681 000 | 386 000 | 11,7 | 2,8 |
| Domestic worker | 981 000 | 1 005 000 | 24 000 | 2,4 | 0,6 |
| **Total** | **15 146 000** | **15 780 000** | **634 000** | **4,2** | |

Source: StatsSA Labour Market Dynamics in South Africa, 2016

The Employed by Sector and Occupation data shows the number of Employed by Sector for Each Occupational Major Group. Linking occupations to skills level, this analysis provides an indication of low, medium and high skills utilised in the different industries.

**Figure 40: : Employed population by main industry sector and occupation (000s), 2017**



| | Agriculture, hunting, forestry and fishing | Mining and quarrying | Manufacturing | Electricity, gas and water supply | Construction | Wholesale and retail trade | Transport, storage and communication | Financial intermediation, insurance, real estate and business services | Community, social and personal services | Private households |
|---|---|---|---|---|---|---|---|---|---|---|
| Elementary occupation | 635 | 119 | 327 | 9 | 336 | 943 | 114 | 375 | 624 | 1,285 |
| Plant and machine operators and assemblers | 60 | 113 | 445 | 25 | 61 | 90 | 412 | 49 | 59 | 1 |
| Skilled agricultural, forestry, fishery, craft and related trades workers | 80 | 118 | 461 | 35 | 805 | 370 | 40 | 85 | 36 | 0 |
| Service workers and shop and market sales workers | 14 | 3 | 41 | 2 | 5 | 931 | 32 | 606 | 870 | 18 |
| Clerks | 13 | 22 | 147 | 21 | 48 | 467 | 140 | 380 | 493 | 0 |
| Technical and associate professionals | 8 | 18 | 129 | 25 | 30 | 87 | 63 | 345 | 748 | 0 |
| Professionals | 1 | 18 | 49 | 16 | 12 | 20 | 17 | 256 | 526 | 0 |
| Legislators, senior officials and managers | 31 | 24 | 182 | 16 | 116 | 340 | 158 | 306 | 252 | 0 |

*Source: Quarterly Labour Force Survey, StatsSA (2018)*

Changes in the educational levels of occupational groups. Significant trends in the labour market can be observed by examining differences in educational levels between occupational groupings over a selected period. Substantial changes in labour market trends can be observed by analysing differences in educational levels between occupational groupings over the selected period.

**Figure 42: Occupational structure and educational skill level in 2017**
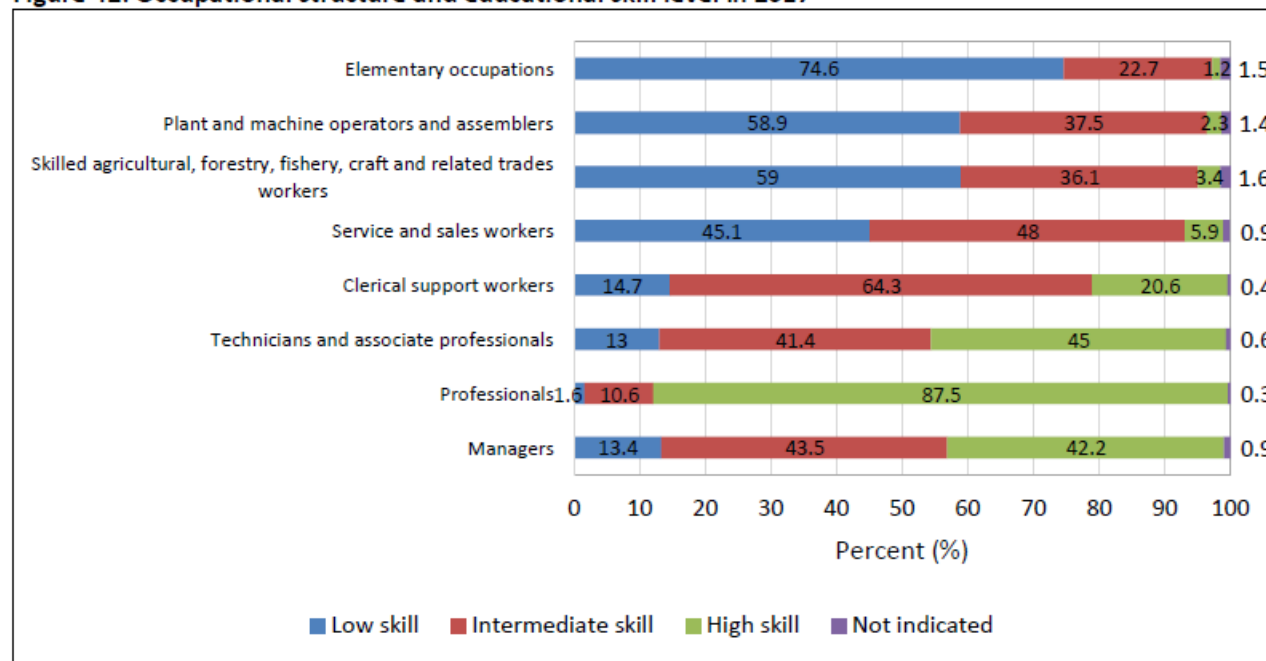


Source: DHET calculations based on Quarterly Labour Force Surveys, StatsSA (2017)

Occupational shortages and surpluses shows for each major occupational group the share of employment that is in shortage occupations (occupations with a positive occupational shortage index), and the intensity of shortages and surpluses across all occupations in that group (value of the occupational shortage index for occupations in shortage or surplus respectively). The share of employment in shortage occupations shows the ratio of jobs that are in shortage and surplus, the intensity of shortages or surpluses provides an idea of how strong such shortages and surpluses are. In some occupational groups, several jobs might be in shortage, but the

**Figure 44: Shortages (+) and surpluses (-) per occupational group, 2016[77]**
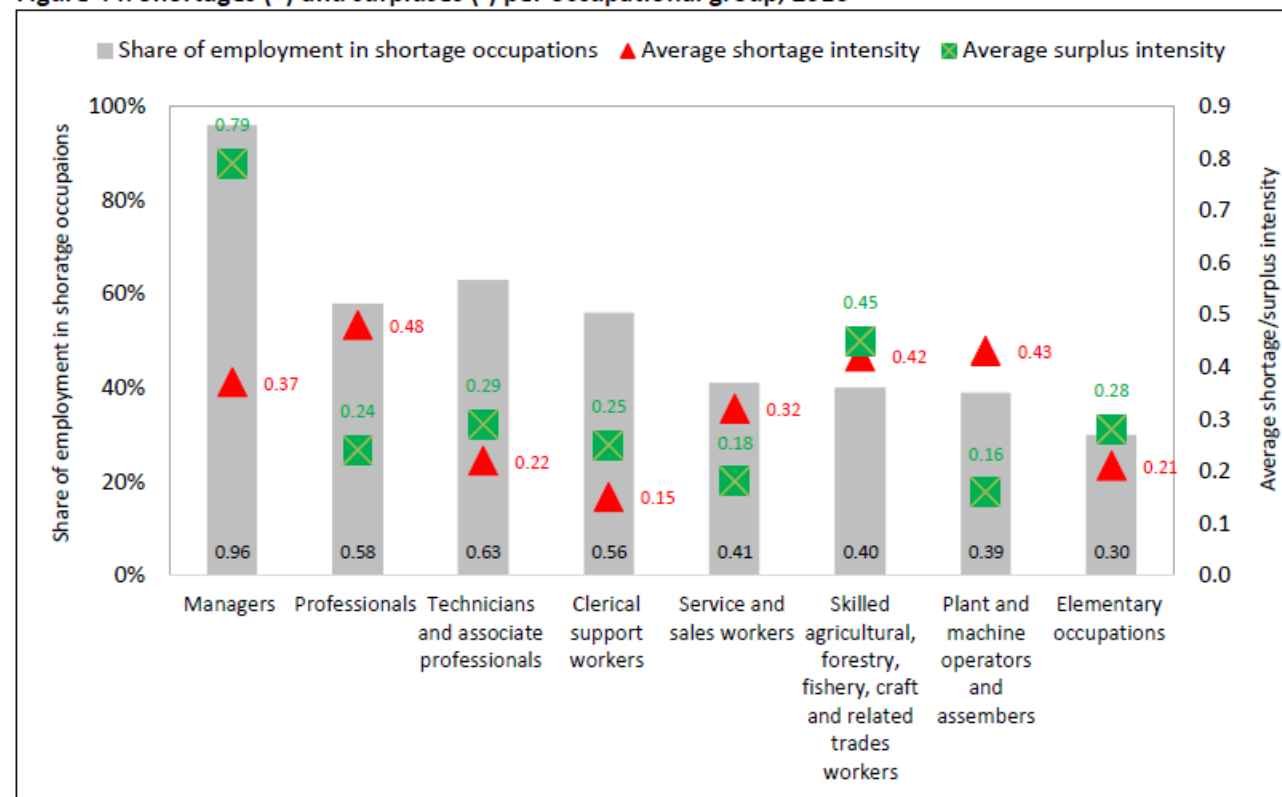


*Source: OECD Skills for Jobs database (2018)*

| | |
|---|---|
| intensity of the shortages might be small. In other occupational groups, a few jobs might be in shortage while the shortages are very intensive. | |

The main purpose in developing a Sector Skills Plan is to determine skills gaps and occupational shortages.  Skills gaps refers to skills deficiencies in employees or lack of specific competencies by employees to undertake job tasks successfully to required industry standards. The term "top up skills" also refers to skills gaps. It usually requires a short training intervention. Skills gaps may arise due to lack of training, new job tasks, technological changes, or new production processes; to list but a few. Skills gaps need to be addressed. For example, a medical specialist (occupation) may require training in robotics (skills gap) to conduct surgery, or bank manager (occupation) may require training in customer care (skills gap) to manage clients effectively.

Occupational shortages occur when the demand for workers in specific occupations exceed the supply of workers who are qualified, available and willing to work  and refers to excess demand for workers in specific occupations. The strongest indicator or unit to measure occupational shortages is Hard-To-Fill Vacancies. A Hard-To-Fill Vacancy is a vacancy (occupation) that an employer was unable to fill within 12 months, or it took longer than 12 months for the employer to find a suitably qualified and experienced candidate.

Hard to fill vacancy data is used to determine occupational shortages in each sector. Occupational shortage occurs when there is a shortage of workers to fill existing job vacancies, while surplus arises when there is an excess of workers available for existing job vacancies. DHET aggregates this data and uses other data to determine Occupations in High Demand. The occupations on the list are grouped in three levels of demand, namely, those that are at the highest level of demand, and those at higher and high levels of demand. All the occupations in the list are in high demand, however, there is some variation among them in terms of the degree and extent of demand. The public should note that the occupations are ordered by their OFO codes and are not in order of priority. This means that the Occupations on top of the list (in a group) are not in any way higher in demand as compared to those at the bottom of the list (Reddy, 2018).  The National Occupations in demand List is used by the PSET system to prioritise education and training needs.

Cörvers et al (2005) explain the relationship between education and changes in occupational structures and the labour market.  They state that:

- new education programmes emerge and disappear in the labour market, following the changes in occupational structures.

- levels and types of education programmes that are demanded change within occupations. Technological and organisational developments change the occupational structures of economic sectors, resulting in different education programmes being required in those sectors

- the content of occupations may change in such a way that different types of education enter the scene for those who take those occupations.

- workers with educational backgrounds of whom there is a surplus, try to find work in occupations in which workers are employed with educational backgrounds of which there is a shortage.

- in the case of surpluses in occupations for the higher educated, there may be a flight into occupations at lower levels, at the expense of the lower educated already working there.

## 6.4 Conclusion

Occupations as described and listed in the Organising Framework for Occupations is the central tenet on which skills planning is conducted in South Africa. An analysis of labour market demand is measured in terms of occupations. However, supply is measured using the Higher Education Subject Classification System except where occupational qualifications are involved. Skills mismatches are also measured using occupations and skills as key indicators. The most important measurement is the annual published DHET Occupations in High Demand List.

# 7. Recommendations to improve the South African occupational classification system

## 7.1 Introduction

This section will present the key findings and recommendations of the report. It will also present a conclusion to the report as a whole. In the conclusion it will be illustrated how this research has illustrated, that despite substantive contextual differences, South Africa's use of its occupational classification system, and especially how it is utilised in terms of skills planning and provision by the PSET system, stands to benefit from a closer examination of international best practice such as that of Singapore.

## 7.2 Key findings

Singapore and South Africa have both developed their occupational classification system from the ISCO-08 international classification system. However, there are similarities and differences in their country specific systems. It would seem that the SSOC is more frequently and substantively updated than the OFO.

Both the SSOC and the OFO use the broad definitions of terms as defined in ISCO -08. In addition, they both adhere to the skills level and skill specialisation alignment as reflected in ISCO-08. At a broad analysis, the occupational descriptors provided in each group are almost similar.

The SA-OFO places much emphasis on environmental issues and have developed "green occupations" and "green skills" to reflect current and future demand in the labour market for these occupations.

SSOC used type of work performed as the basis of the development of its structure and not jobs. The SA OFO system uses mapping of jobs to occupations, more specifically job titles as the basis of development for its structure.

Both systems use a five-grouping structure as shown below.

|  | SSOC 2015/2018 | OFO 2017 |
|---|---|---|
| Major groups | 10 | 8 |
| Sub-Major Groups | 43 | 39 |
| Minor groups | 144 | 125 |
| Unit Groups | 420 | 440 |
| Occupations | 1 202 | 1 507 |

## 7.3 Recommendations

- The electronic tool that has been developed will assist employers with mapping from job to occupation in the interim but ultimately **mapping to the OFO is a technical exercise and should not be the responsibility of employers** (various reasons for this as has been found in OFO research conducted by Wits REAL).

- **Ideally DoL and/or StatsSA should be responsible for collecting, collating and analysing occupational data (per sector and then for the whole economy) on an annual or bi-annual basis** directly from households and/or employers with SETAs assisting or providing access to employees/employers. Employers are not well-equipped to deal with the OFO.

- **There is a need for a single agreed upon occupational classification system in South Africa**. StatsSA occupational codes too broad and generic and will fail to capture many

occupations. Resources need to be allocated to one system resulting in less duplication and waste of resources.

- **It is recommended that the OFO to be transferred to the Department of Labour (DoL) or the Department of Economic Development with statistical and technical oversight provided by Statistics South Africa (StatsSA).** Higher levels of communication, co-operation and co-ordination between DHET, DoL and StatsSA. Collaboration which is nonetheless grounded in expertise is required. Occupations: Labour and SETAs, Education and Training: DHET and Data: StatsSA.

- **Much more extensive occupational data collection and analysis work, needs to take place, where a wide range of stakeholders are engaged with, before proceeding to education and training planning and interventions** based on occupational data collected by DoL. As per the Singapore skills Framework model.

- **Overall higher levels of co-ordination and co-operation between government departments are required but with one single department being responsible for collecting occupational data.** An OFO unit staffed by or assisted by Stats SA labour market experts is required. This unit/department will then have ultimate authority (and adequate budget and high-level support) in order to focus solely on gathering, analysing and distributing occupational data across the system. The OFO unit (whether located in DHET or DoL) will be the "central agency" (Kraak, 2011) for the OFO and occupational data in South Africa.

- **There is a need to identify and develop which categories of occupational information are needed in order to determine education and training needs;** whether this be detailed experience requirements, technical tasks or transversal skills (such as communication and team work). Furthermore there is a need to add new and/or emergent occupations to the OFO as the world of work changes.

- In order to achieve **higher levels of co-ordination and co-operation between government departments, otherwise known as " horizontal co-ordination"** (Kraak, 2011), with the ultimate goal of improving the South African occupational classification system and how it's utilised for skills planning, the following is required:
  - More informal co-ordination. An over reliance on rigid systems and procedures leads to a Bureaucratic logic where expansive, critical and rapid engagement with issues gets stifled. A more responsive and dynamic occupational classification system will require individuals and teams to work across formal boundaries.
  - An interdepartmental committee (Kraak, 2011) for the OFO needs to be established.
  - An OFO working group or task team needs to be established by the Department of Higher Education and Training. This is to ensure that clarity is obtained on a complex issue with serious and far reaching ramifications in the PSET system.

- Considering the severe social, economic and environmental consequences of not supplying the skills which the country and economy require (especially for unemployed youth who receive education and training which does not increase their likelihood for employment) **it is recommended that during the during the first two years a coordinating and planning unit for occupational data and skills planning is established in the office of the president.**

- **In order to achieve the above it is recommended that adequate financial resources and political energy be concentrated on developing a high-quality bureaucracy (**Kraak, 2011) as regards the South African occupational classification system as well as its application in terms of skills planning and provision. These individuals need to be encouraged (and officially empowered), in their mission to improve the quality, detail and reliability of occupational data in South Africa, to cross conventional boundaries between government departments.

## 7.4 Conclusions

This report commenced with an analysis of the ISCO-08 International Occupation Classification system that falls under the control of the International Labour Organisation as both the South African and Singaporean occupational classification systems originated from ISCO-08.

It then proceeded to provide a technical micro level analysis and comparison of both occupational classification systems. This analysis revealed that despite certain differences the two systems were broadly structurally similar.

The technical analysis was followed by an examination where a wider lens which examined how these systems are utilised in terms of skills planning and provision. It was then illustrated that there were major differences between the two countries in terms of: how occupational data is generated and how it is utilised. It was found that the Singaporean model of occupational data collection was much more centralised, rigorously controlled yet involving the participation of multiple government departments. It also entailed more direct data collection methods—i.e. collecting occupational and labour market related data directly from households. In terms of utilisation of occupational data in Singapore there was not a direct and immediate movement from occupational data to education and training planning and provision. Extensive additional data related to a set of occupations within an industry, such as industry contextual information, technical skills and competencies, generic skills and competencies, a generic job description, critical work function and key tasks and education and training programmes, are collected and then made available to all relevant stakeholders and role-players.

The South African system of occupational data collection was found to be much more complex and fragmented across an intricate system with a plethora of PSET policies offering strategic direction and guidance. Occupational data is collected from employers who submit annual workplace skills plans (WSPs) to their relevant sector education and training authorities (SETAs). Employers, with minimal guidance and assistance from the SETAs, are required to translate from specific jobs to the broader informational category of occupation using the OFO.

There are a total of 21 SETAs in South Africa. The SETAs then aggregate, analyse, present and act (in the form of wide range of supply side education and training interventions) on the occupational data ( translated from job to 6 digit occupation) provided by employers in their sector. The occupational data is then provided to the Department of Higher Education and Training (DHET), as well as other organisations such as the Quality Council for Trades and Occupations (QCTO), which utilises the data to develop or initiate suitable education and training interventions. It was found that there was a system wide tendency and logic which is indicative of a direct, and potentially problematic, linear movement from occupation (the demand side) to education and training (the supply side).

In summary it was found that although the two countries are substantially different in terms of their economies, labour markets and skills systems there is much to be learnt from the Singaporean model of skills planning and provision. Especially in terms of the need in South Arica to invest much more substantively in generating more rigorous and expansive occupational data that works with but moves beyond the OFO. If the South African system is committed to better linking skills demand with skills supply, and wants to use occupation as the lynchpin between the two domains, then a more co-ordinated , centrally controlled ( but with multiple stakeholders and role-players actively involved) and in-depth occupational data collection and generation process and system is required before proceeding to education and training interventions.

It could easily be argued that Singapore is a relatively small, highly educated and developed country in Asia and that South Africa, which has a complex and difficult history, a larger and more complex labour market and an economy which is still developing, can learn little from a country so far removed from its reality— far removed in terms of labour market dynamics, education and training and much else. This line of reasoning is to an extent legitimate and any comparison or international benchmarking which is not contextually aware and grounded is potentially of little value.

It could also be argued that because of South Africa's range of historical and present challenges — from racial and gender inequalities to the continuing struggle to overcome the legacy of a deeply unequal education system—the stakes are even higher than in Singapore to develop and run highly efficient systems. Considering the urgency of issues such as our

youth unemployment rate, combined with our limited financial and other resources, the price of failure is immense. Our occupational classification system, and the ensuing skills planning and provision arising from the occupational data generated thereby, needs to provide the data the PSET system needs to ensure that, with as little wastage as possible and despite the challenges, that our country is equipped with the knowledge and skills to overcome social, economic, environmental and political challenges. Investing in re-thinking and developing our occupational classification system, and skills planning and provision more broadly, is one critical component of such an undertaking.

# References

Anter, Z.D. (2020). Young and unemployed in SA: What's being done, what's working, and what's still a barrier. Fin24 Analysis. Retrieved from https://www.fin24.com/Opinion/analysis-young-and-unemployed-in-sa-whats-being-done-whats-working-and-whats-still-a-barrier-20200218

Cohen, L. E. (2013). Assembling jobs: A model of how tasks are bundled into and across jobs. Organization Science, 24(2), 432–454.

Cörvers, F. & Hans, H. (2005). Forecasting the labour market by occupation and education: Some key issues.

DHET. (2017) Guidelines: Organising Framework for Occupations (OFO): 2017. Department of Higher Education and Training. Pretoria.

DHET. (2017). Planning with a Purpose: The Use of Labour Market Intelligence for Skills Planning in South Africa. Department of Higher Education and Training. Pretoria.

DHET. (2019). Skills Supply and Demand in South Africa Report. Department of Higher Education and Training. Pretoria.

DHET. (2019) Updated Sector Skills Plans Framework Guidelines. Department of Higher Education and Training. Pretoria.

Grant, A. M., Berg, J. M., & Cable, D. M. (2014). Job titles as identity badges: How self -reflective titles can reduce emotional exhaustion. Academy of Management Journal, 57(4), 1201–1225.

Hodson, R., & Sullivan, T. A. (2012). The social organization of work. Belmont, CA: Wadsworth, Cengage Learning.

ILO. (2012). International Standard Classification of Occupations Structure, group definitions and correspondence tables for ISCO-08: Volume 1 https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf

Jaga, A., Arabandi, B., Bagraim, J., & Mdlongwa, S. (2018). Doing the 'gender dance': Black women professionals negotiating gender, race, work and family in post-apartheid South Africa. *Community, Work & Family*, *21*(4), 429-444.

Kraak, A. (2011). Horizontal Coordination, Government Performance and National Planning: The Possibilities and Limits of the South African State. *Politikon*, *38*(3), 343–365. https://doi.org/10.1080/02589346.2011.623834

Kuruvilla, S., Erickson, C., & Hwang, A. (2001). An assessment of the Singapore skills development system: Does it constitute a viable model for other developing nations? Retrieved [insert date] from Cornell University, ILR School site: http://digitalcommons.ilr.cornell.edu/articles/214/

Loke, H.-Y., & Gopinathan, S. (2017). The Policy and Politics of the Cohort Participation Rate in Universities. *International Journal of Chinese Education*, *5*(2), 209–225. https://doi.org/10.1163/22125868-12340068

Ministry of Manpower. (2019). *Labour Market Report 2019 Republic of Singapore* (p. 78). Manpower Research and Statistics Department. https://stats.mom.gov.sg/Pages/Labour-Market-Report-4Q-2019.aspx

Palmer, R. (2007), "Skills Development Policies and International Co-operation in East and Southeast Asia", *Debates in Skills Development: Skills Development Policies and International Co-operation in East and Southeast Asia,* Working Group for International Co-operation in Skills Development, Hong Kong, China.

Reddy, V., Rogan, M., Mncwango, B. & Chabane, S. (2018). Occupations in high demand in South Africa: a technical report. *(Commissioned by the Department of Higher Education and Training (DHET), Labour Market Intelligence Partnership (LMIP) project).*

Singapore Department of Statistics. (2018). Singapore Standard Occupational Classification 2015: Version 2018 (SSOC: 2015). Department of Statistics: Ministry of Trade and Industry.

Skills Future. (n.d.). *SkillsFuture—AboutSkillsFuture*. Retrieved March 15, 2020, from https://www.skillsfuture.sg/AboutSkillsFuture

Statistics South Africa. (2012). South African Standard Classification of Occupations (SASCO). Stats SA

Stoddard, E. (2020). SA's shocking unemployment rate remains unchanged. Business Maverick. Retrieved from https://www.dailymaverick.co.za/article/2020-02-11-sas-shocking-unemployment-rate-remains-unchanged/

Sung, J., Ng, M. C. M., Loke, F., & Ramos, C. (2013). The nature of employability skills: Empirical evidence from Singapore: The nature of employability skills. *International Journal of Training and Development*, *17*(3), 176–193. https://doi.org/10.1111/ijtd.12008

Sung, J., Ng, M. C. M., Loke, F., & Ramos, C. (2013). The nature of employability skills: Empirical evidence from Singapore: The nature of employability skills. *International Journal of Training and Development*, *17*(3), 176–193. https://doi.org/10.1111/ijtd.12008

Thangavelu, S. M. (2017). Labour Market Integration with the World: Case of Singapore. *Journal of Economic Integration*, *32*(3), 723–758. https://doi.org/10.11130/jei.2017.32.3.723

Tijdens K.G. & Kaandorp C.S. (2018), Validating occupational coding indexes for use in multi-country surveys. *Survey Insights: Methods from the Field.* Retrieved from https://surveyinsights.org/?p=10422

Tijdens, K & Kaandorp, C. (2019). Validation of ISCO-08 codes, with explanatory note. 10.13140/ RG.2.2.12034.22723.

# Annexure 1: A Sample of Banking Occupations Analysed for the Technical Review of South African OFO

| |
|---|
| **Title of Occupation: General Accountant**<br><br>**Code: 2017-241101** |
| **1.Functional Review** |
| 1.1 Does the occupation have a six-digit code? (Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specializations listed for the occupation? (Y/N) |
| Yes |
| 1.4 Are there alternate titles for the occupation? (Y/N) |
| Yes |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? (Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |

- Preparing tax returns, advising on taxation problems and contesting disputed claims before tax officials

- Advising on, planning and installing budgetary, accounts controlling and other accounting policies and systems

- Conducting financial investigations in such matters as suspected fraud, insolvency and bankruptcy

- Auditing accounts and bookkeeping records

- Preparing and certifying financial statements for presentation to management, shareholders and statutory or other bodies

2.3 Which tasks are not specialised and not specific to the unit group?

- Preparing or reporting on profit forecasts and budgets

- Conducting investigations and advising management on financial aspects of productivity, stockholdings, sales, new products, etc

- Devising and controlling a system to determine unit cost of products and services

2.4 Which tasks are job-orientated (work being done)?

- Preparing tax returns, advising on taxation problems and contesting disputed claims before tax officials

- Advising on, planning and installing budgetary, accounts controlling and other accounting policies and systems

- Conducting financial investigations in such matters as suspected fraud, insolvency and bankruptcy

- Auditing accounts and bookkeeping records

- Preparing and certifying financial statements for presentation to management, shareholders and statutory or other bodies

- Preparing or reporting on profit forecasts and budgets

- Conducting investigations and advising management on financial aspects of productivity, stockholdings, sales, new products, etc

| |
|---|
| 2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work) |
| - Devising and controlling a system to determine unit cost of products and services |

| |
|---|
| **Title of Occupation: Actuary** |
| **Code: 2017-212101** |
| **1.Functional Review** |
| 1.1 Does the occupation have a six-digit code? (Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |

| |
|---|
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| Yes |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| No |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? (Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Advising on or applying mathematical principles, models and techniques to a wide range of tasks in the fields of engineering, natural, social or life sciences</li><li>Conducting logical analyzes of management problems, especially in terms of input-output effectiveness, and formulating mathematical models of each problem usually for programming and solution by computer</li><li>Designing and putting into operation pension schemes and life, health, social and other types of insurance systems</li><li>Evaluating, processing, analyzing, and interpreting statistical data and preparing them for publication</li><li>Advising on or applying various data collection methods and statistical methods and techniques, and determining reliability of findings, especially in such fields as business or medicine as well as in other areas of natural, social or life sciences</li><li>Planning and organizing surveys and other statistical collections, and designing questionnaires</li><li>Applying mathematics, statistics, probability and risk theory to assess potential financial impacts of future events</li></ul> |

| |
|---|
| • Studying, improving and developing mathematical, actuarial and statistical theories and techniques |
| • Preparing scientific papers and reports; supervising the work of mathematical, actuarial and statistical assistants and statistical clerks |
| • Supervising the work of mathematical, actuarial and statistical assistants and statistical clerks |

| 2.3 Which tasks are not specialised and not specific to the unit group? |
|---|
| • N/A |

| 2.4 Which tasks are job-orientated (work being done)? |
|---|
| • Advising on or applying various data collection methods and statistical methods and techniques, and determining reliability of findings, especially in such fields as business or medicine as well as in other areas of natural, social or life sciences |
| • Applying mathematics, statistics, probability and risk theory to assess potential financial impacts of future events |

| 2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work) |
|---|
| • Advising on or applying mathematical principles, models and techniques to a wide range of tasks in the fields of engineering, natural, social or life sciences |
| • Conducting logical analyzes of management problems, especially in terms of input-output effectiveness, and formulating mathematical models of each problem usually for programming and solution by computer |
| • Designing and putting into operation pension schemes and life, health, social and other types of insurance systems |
| • Evaluating, processing, analyzing, and interpreting statistical data and preparing them for publication |
| • Planning and organizing surveys and other statistical collections, and designing questionnaires |

- Studying, improving and developing mathematical, actuarial and statistical theories and techniques

- Preparing scientific papers and reports; supervising the work of mathematical, actuarial and statistical assistants and statistical clerks

- Supervising the work of mathematical, actuarial and statistical assistants and statistical clerks

| |
|---|
| **Title of Occupation: Bank Manager** |
| **Code: 2017-134601** |
| **1.Functional Review** |
| 1.1 Does the occupation have a six-digit code? (Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? (Y/N) |
| No |
| 1.4 Are there alternate titles for the occupation? (Y/N) |
| No |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? (Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |

- Conducting financial investigations

- Overseeing the flow of cash and financial instruments, and the preparation of financial and regulatory reports

- Monitoring credit extension decisions

- Approving or rejecting, or coordinating the approval or rejection of, lines of credit commercial, real estate and personal loans

- Providing advice and assistance to customers on their financial and insurance needs and with matters such as changes in law that may affect customers

- Examining, evaluating and processing loan and insurance applications

**2.3 Which tasks are not specialised and not specific to the unit group?**

- Overseeing the selection, training and performance of staff

- Coordinating cooperation with other branches of the company

- Establishing and maintaining relationships with individual and business customers

- Managing budgets, controlling expenditure and ensuring the efficient use of resources

- Planning, directing and coordinating the activities of staff in the branch

**2.4 Which tasks are job-orientated (work being done)?**

- Conducting financial investigations

- Overseeing the flow of cash and financial instruments, and the preparation of financial and regulatory reports

- Examining, evaluating and processing loan and insurance applications

- Managing budgets, controlling expenditure and ensuring the efficient use of resources

**2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work)**

- Monitoring credit extension decisions

- Overseeing the selection, training and performance of staff

- Approving or rejecting, or coordinating the approval or rejection of, lines of credit commercial, real estate and personal loans

- Coordinating cooperation with other branches of the company

- Providing advice and assistance to customers on their financial and insurance needs and with matters such as changes in law that may affect customers

- Establishing and maintaining relationships with individual and business customers

- Planning, directing and coordinating the activities of staff in the branch

---

Title of Occupation: Bank Teller

Code: 2017-421101

**1.Functional Review**

1.1 Does the occupation have a six-digit code? (Y/N)

Yes

1.2 Is the purpose of the occupation stated? (Y/N)

Yes

1.3 Are there specialisations listed for the occupation? (Y/N)

Yes

1.4 Are there alternate titles for the occupation? (Y/N)

No

**2. Analysis of Tasks at Unit Level**

2.1 Are there tasks at unit level? (Y/N)

| |
|---|
| Yes |

| |
|---|
| 2.2 Which tasks are specialised and specific to the unit group? |

- Receiving mail, selling postage stamps and conducting other post office counter business such as bill payments, money transfers and related business

- Crediting and debiting clients' accounts

- Changing money from one currency to another, as requested by clients

- Process customer cash deposits and withdrawals, cheques, transfers, bills, credit card payments, money orders, certified cheques and other related banking transactions

| |
|---|
| 2.3 Which tasks are not specialised and not specific to the unit group? |

- Paying bills and making money transfers on clients' behalf

- Making records of all transactions and reconciling them with cash balance

| |
|---|
| 2.4 Which tasks are job-orientated (work being done)? |

- Receiving mail, selling postage stamps and conducting other post office counter business such as bill payments, money transfers and related business

- Changing money from one currency to another, as requested by clients

- Process customer cash deposits and withdrawals, cheques, transfers, bills, credit card payments, money orders, certified cheques and other related banking transactions

- Paying bills and making money transfers on clients' behalf

| |
|---|
| 2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work) |

- Crediting and debiting clients' accounts

- Making records of all transactions and reconciling them with cash balance

| |
|---|
| **Title of Occupation: Computer Network Technician** |
| **Code: 2017-351301** |
| |
| **1.Functional Review** |
| 1.1 Does the occupation have a six-digit code? (Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| Yes |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| No |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? (Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |

- Operating, maintaining and troubleshooting network systems
- Assisting users with network and data communications problems
- Operating and maintaining data communications systems other than networks
- Performing start up and close down as well as backup and disaster recovery operations for computer networks

**2.3 Which tasks are not specialised and not specific to the unit group?**

- Installing computer hardware, network software, operating system software and applications software
- Identifying areas needing upgraded equipment and software

**2.4 Which tasks are job-orientated (work being done)?**

- Operating and maintaining data communications systems other than networks
- Operating, maintaining and troubleshooting network systems

- Installing computer hardware, network software, operating system software and applications software
- Identifying areas needing upgraded equipment and software

**2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work)**

- Performing start up and close down as well as backup and disaster recovery operations for computer networks
- Assisting users with network and data communications problems

**Title of Occupation: Database Designer and Administrator**

**Code: 2017-252101**

| |
|---|
| **1.Functional Review** |
| 1.1 Does the occupation have a six-digit code? (Y/N) |
| YES |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| YES |
| 1.3 Are there specialisations listed for the occupation? (Y/N) |
| YES |
| 1.4 Are there alternate titles for the occupation? (Y/N) |
| YES |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? (Y/N) |
| YES |
| 2.2 Which tasks are specialised and specific to the unit group? |
| • Developing and implementing data administration policy, documentation, standards and models<br>• Designing and developing database architecture, data structures, tables, dictionaries and naming conventions for information systems projects |

| |
|---|
| • Designing, constructing, modifying, integrating, implementing and testing database management systems |
| • Developing policies and procedures for database access and usage and for the backup and recovery of data |
| • Conducting research and providing advice on the selection, application and implementation of database management tools |

| 2.3 Which tasks are not specialised and not specific to the unit group? |
|---|

| |
|---|
| • Performing the operational establishment and preventive maintenance of backups, recovery procedures, and enforcing security and integrity controls |

| 2.4 Which tasks are job-orientated (work being done)? |
|---|

| |
|---|
| • Developing and implementing data administration policy, documentation, standards and models |
| • Developing policies and procedures for database access and usage and for the backup and recovery of data |
| • Performing the operational establishment and preventive maintenance of backups, recovery procedures, and enforcing security and integrity controls |

| 2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work) |
|---|

| |
|---|
| • Designing and developing database architecture, data structures, tables, dictionaries and naming conventions for information systems projects |
| • Designing, constructing, modifying, integrating, implementing and testing database management systems |
| • Conducting research and providing advice on the selection, application and implementation of database management tools |

| |
|---|
| **Title of Occupation: Digital Artist** |
| **Code: 2017-216601** |
| **1.Functional Review** |
| 1.1 Does the occupation have a six-digit code? (Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? (Y/N) |
| Yes |
| 1.4 Are there alternate titles for the occupation? (Y/N) |
| Yes |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? (Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |

- Supervising or carrying out production in the chosen media

- Selecting, specifying or recommending functional and aesthetic materials and media for publication, delivery or display

- Designing complex graphics and animation to satisfy functional, aesthetic and creative requirements of the design brief

- Creating two-dimensional and three-dimensional images depicting objects in motion or illustrating a process, using computer animation or modelling programs

2.3 Which tasks are not specialised and not specific to the unit group?

- Detailing and documenting the selected design for production

- Negotiating design solutions with clients, management, sales and production staff

- Determining the objectives and constraints of the design brief by consulting with clients and stakeholders

- Formulating design concepts for the subject to be communicated

- Selecting, specifying or recommending functional and aesthetic materials and media for publication, delivery or display

- Preparing sketches, diagrams, illustrations and layouts to communicate design concepts

2.4 Which tasks are job-orientated (work being done)?

- Designing complex graphics and animation to satisfy functional, aesthetic and creative requirements of the design brief

- Creating two-dimensional and three-dimensional images depicting objects in motion or illustrating a process, using computer animation or modelling programs

- Detailing and documenting the selected design for production

- Preparing sketches, diagrams, illustrations and layouts to communicate design concepts

| 2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work) |
|---|
| <ul><li>Supervising or carrying out production in the chosen media</li><li>Selecting, specifying or recommending functional and aesthetic materials and media for publication, delivery or display</li><li>Determining the objectives and constraints of the design brief by consulting with clients and stakeholders.</li></ul> |

| **Title of Occupation: Finance Manager** |
|---|
| **Code: 2017-121101** |
| **1.Functional Review** |
| 1.1 Does the occupation have a six-digit code? (Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? (Y/N) |
| Yes |
| 1.4 Are there alternate titles for the occupation? (Y/N) |

| |
|---|
| No |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? (Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Establishing and managing budgets, controlling expenditure and ensuring the efficient use of resources</li><li>Assessing the financial situation of the enterprise or organization, preparing budgets and overseeing financial operations</li><li>Consulting with the chief executive and with managers of other departments or sections</li><li>Planning, directing and coordinating the financial operations of an enterprise or organization</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| <ul><li>Establishing and directing operational and administrative procedures</li><li>Planning and directing daily operations</li><li>Overseeing the selection, training and performance of staff</li><li>Representing the enterprise or organization in dealings with outside bodies</li></ul> |
| 2.4 Which tasks are job-orientated (work being done)? |
| <ul><li>Establishing and directing operational and administrative procedures</li><li>Establishing and managing budgets, controlling expenditure and ensuring the efficient use of resources</li><li>Assessing the financial situation of the enterprise or organization, preparing budgets and overseeing financial operations</li></ul> |

| |
|---|
| • Planning, directing and coordinating the financial operations of an enterprise or organization |
| 2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work) |
| • Planning and directing daily operations <br> • Overseeing the selection, training and performance of staff <br> • Consulting with the chief executive and with managers of other departments or sections <br> • Representing the enterprise or organization in dealings with outside bodies |

| |
|---|
| **Title of Occupation: Financial Investment Advisor** <br><br> **Code: 2017-241301** |
| **1.Functional Review** |
| 1.1 Does the occupation have a six-digit code? (Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? (Y/N) |
| Yes |
| 1.4 Are there alternate titles for the occupation? (Y/N) |
| No |

| 2.Analysis of Tasks at Unit Level |
|---|
| 2.1 Are there tasks at unit level? (Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Interpreting data affecting investment programs, such as price, yield, stability, future trends in investment risks, and economic influences</li><li>Monitoring economic, industrial, and corporate developments through analysis of information obtained from financial publications and services, investment banking firms, government agencies, trade publications, company sources, and personal interviews</li><li>Recommending investments and investment timing to companies, investment firm staff, or the investing public</li><li>Analyzing financial information to produce forecasts of business, industry, and economic conditions for use in making investment decisions</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| <ul><li>Determining the prices at which securities should be syndicated and offered to the public</li><li>Maintaining knowledge and staying abreast of developments in the fields of industrial technology, business, finance, and economic theory</li><li>Evaluating and comparing the relative quality of various securities in a given industry</li><li>Preparing plans of action for investment based on financial analyses</li><li>Presenting oral and written reports on general economic trends, individual corporations, and entire industries</li></ul> |

| |
|---|
| 2.4 Which tasks are job-orientated (work being done)? |
| <ul><li>Interpreting data affecting investment programs, such as price, yield, stability, future trends in investment risks, and economic influences</li><li>Monitoring economic, industrial, and corporate developments through analysis of information obtained from financial publications and services, investment banking firms, government agencies, trade publications, company sources, and personal interviews</li><li>Recommending investments and investment timing to companies, investment firm staff, or the investing public</li><li>Analyzing financial information to produce forecasts of business, industry, and economic conditions for use in making investment decisions</li><li>Determining the prices at which securities should be syndicated and offered to the public</li><li>Evaluating and comparing the relative quality of various securities in a given industry</li><li>Preparing plans of action for investment based on financial analyses</li><li>Presenting oral and written reports on general economic trends, individual corporations, and entire industries</li></ul> |
| 2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work) |
| <ul><li>Maintaining knowledge and staying abreast of developments in the fields of industrial technology, business, finance, and economic theory.</li></ul> |

---

**Title of Occupation: Business Training Manager**

**Code: 2017-121202**

| |
|---|
| **1.Functional Review** |
| 1.1 Does the occupation have a six-digit code? (Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? (Y/N) |
| Yes |
| 1.4 Are there alternate titles for the occupation? (Y/N) |
| Yes |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? (Y/N) |
| |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Ensuring compliance with standards and legislation relating to employee's rights, health and safety, equal opportunity and related concerns</li><li>Planning, directing and coordinating the personnel and industrial relations activities, policies and practices of an enterprise or organization</li><li>Overseeing safety, health and related programmes and activities</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |

- Establishing and directing operational and administrative procedures

- Establishing and managing budgets, controlling expenditure and ensuring the efficient use of resources

- Planning and organizing procedures for recruitment, training, promotion, transfer and dismissal of staff

- Overseeing the selection, training and performance of staff for the entire enterprise or organization

- Consulting with senior management and with managers of other departments

- Planning and organizing negotiations and procedures for determination of wage structures and level and for consultation with workers on conditions of employment

- Overseeing the development and implementation of management information systems

- Representing the enterprise or organization in dealings with outside bodies

---

**2.4 Which tasks are job-orientated (work being done)?**

- Ensuring compliance with standards and legislation relating to employee's rights, health and safety, equal opportunity and related concerns

- Planning, directing and coordinating the personnel and industrial relations activities, policies and practices of an enterprise or organization

- Overseeing safety, health and related programmes and activities

---

**2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work)**

- Establishing and directing operational and administrative procedures

- Establishing and managing budgets, controlling expenditure and ensuring the efficient use of resources

- Planning and organizing procedures for recruitment, training, promotion, transfer and dismissal of staff,

- Overseeing the selection, training and performance of staff for the entire enterprise or organization
- Consulting with senior management and with managers of other departments
- Planning and organizing negotiations and procedures for determination of wage structures and level and for consultation with workers on conditions of employment
- Overseeing the development and implementation of management information systems
- Representing the enterprise or organization in dealings with outside bodies

| Title of Occupation: ICT Security Specialist |
| --- |
| Code: 2017-252901 |
| 1.Functional Review |
| 1.1 Does the occupation have a six-digit code? (Y/N) |
| YES |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| YES |
| 1.3 Are there specialisations listed for the occupation? (Y/N) |
| YES |
| 1.4 Are there alternate titles for the occupation? (Y/N) |
| NO |

| |
|---|
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? (Y/N) |
| YES |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Encrypting data transmissions and erecting firewalls to conceal confidential information as it is being transmitted and to keep out tainted digital transfers</li><li>Performing risk assessments and executing tests of data processing system to ensure functioning of data processing activities and security measures</li><li>Modifying computer security files to incorporate new software, correct errors, or change individual access status</li><li>Monitoring current reports of computer viruses to determine when to update virus protection systems</li><li>Developing plans to safeguard computer files against accidental or unauthorized modification, destruction, or disclosure and to meet emergency data processing needs</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| <ul><li>Training users and promoting security awareness to ensure system security and to improve server and network efficiency</li><li>Conferring with users to discuss issues such as computer data access needs, security violations, and programming changes</li><li>Monitoring use of data files and regulate access to safeguard information in computer files</li></ul> |
| 2.4 Which tasks are job-orientated (work being done)? |

|  |
| --- |
| <ul><li>Training users and promoting security awareness to ensure system security and to improve server and network efficiency</li><li>Encrypting data transmissions and erecting firewalls to conceal confidential information as it is being transmitted and to keep out tainted digital transfers</li><li>Performing risk assessments and executing tests of data processing system to ensure functioning of data processing activities and security measures</li><li>Modifying computer security files to incorporate new software, correct errors, or change individual access status</li><li>Monitoring current reports of computer viruses to determine when to update virus protection systems</li><li>Monitoring use of data files and regulate access to safeguard information in computer files</li><li>Developing plans to safeguard computer files against accidental or unauthorized modification, destruction, or disclosure and to meet emergency data processing needs</li></ul> |
| 2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work) |
| <ul><li>Conferring with users to discuss issues such as computer data access needs, security violations, and programming changes</li></ul> |

|  |
| --- |
| **Title of Occupation: Investment Analyst**<br><br>**Code: 2017-241201** |
| **1.Functional Review** |
| 1.1 Does the occupation have a six-digit code? (Y/N) |
| Yes |

| |
|---|
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? (Y/N) |
| Yes |
| 1.4 Are there alternate titles for the occupation? (Y/N) |
| No |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? (Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Monitoring investment performance, and reviewing and revising investment plans based on modified needs and changes in markets</li><li>Setting financial objectives, and developing and implementing strategies for achieving the financial objectives</li><li>Interviewing clients to determine financial status and objectives, risk tolerance and other information needed to develop financial plans and investment strategies</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| <ul><li>Recommending and arranging insurance cover for clients</li><li>Arranging to buy and sell stocks and bonds for clients</li><li>Building and maintaining a client base</li></ul> |

| |
|---|
| 2.4 Which tasks are job-orientated (work being done)? |
| <br>- Monitoring investment performance, and reviewing and revising investment plans based on modified needs and changes in markets<br>- Setting financial objectives, and developing and implementing strategies for achieving the financial objectives<br>- Interviewing clients to determine financial status and objectives, risk tolerance and other information needed to develop financial plans and investment strategies<br>- Recommending and arranging insurance cover for clients<br>- Arranging to buy and sell stocks and bonds for clients<br>  |
| 2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work) |
| <br>- Building and maintaining a client base<br>  |

| |
|---|
| **Title of Occupation: Sales and Marketing Manager**<br><br>**Code: 2017-122101** |
| **1.Functional Review** |
| 1.1 Does the occupation have a six-digit code? (Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? (Y/N) |
| Yes |
| 1.4 Are there alternate titles for the occupation? (Y/N) |

| |
|---|
| No |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? (Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Determining price lists, discount and delivery terms, sales promotion budgets, sales methods, special incentives and campaigns</li><li>Establishing and directing operational and administrative procedures related to sales and marketing activities</li><li>Establishing and managing budgets and controlling expenditure to ensure the efficient use of resources</li><li>Planning and organizing special sales and marketing programmes based on sales records and market assessments</li><li>Representing the enterprise or organization at sales and marketing conventions, trade exhibitions and other forums</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| <ul><li>Planning and directing daily operations</li><li>Overseeing the selection, training and performance of staff</li><li>Leading and managing the activities of sales and marketing staff</li></ul> |
| 2.4 Which tasks are job-orientated (work being done)? |
| <ul><li>Determining price lists, discount and delivery terms, sales promotion budgets, sales methods, special incentives and campaigns</li><li>Establishing and directing operational and administrative procedures related to sales and marketing activities</li><li>Establishing and managing budgets and controlling expenditure to ensure the efficient use of resources</li></ul> |

| |
|---|
| • Planning and organizing special sales and marketing programmes based on sales records and market assessments |
| 2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work) |
| • Planning and directing daily operations<br>• Overseeing the selection, training and performance of staff<br>• Leading and managing the activities of sales and marketing staff<br>• Representing the enterprise or organization at sales and marketing conventions, trade exhibitions and other forums |

| |
|---|
| **Title of Occupation: Software Developer**<br><br>**Code: 2017-251201** |
| 1. **Functional Review** |
| 1.1 Does the occupation have a six-digit code? (Y/N) |
| YES |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| YES |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| YES |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| NO |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? (Y/N) |
| YES |

| 2.2 Which tasks are specialised and specific to the unit group? |
|---|
| <ul><li>Directing software programming and development of documentation</li><li>Researching, analyzing and evaluating requirements for software applications and operating systems</li><li>Modifying existing software to correct errors, to adapt it to new hardware or to upgrade interfaces and improve performance</li><li>Consulting with engineering staff to evaluate interface between hardware and software</li><li>Consulting with customers concerning maintenance of software system</li><li>Developing and directing software testing and validation procedures</li><li>Researching, designing, and developing computer software systems</li><li>Assessing, developing, upgrading and documenting maintenance procedures for operating systems, communications environments and applications software</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| N/A |
| 2.4 Which tasks are job-orientated (work being done)? |
| <ul><li>Directing software programming and development of documentation</li><li>Modifying existing software to correct errors, to adapt it to new hardware or to upgrade interfaces and improve performance</li><li>Developing and directing software testing and validation procedures</li><li>Assessing, developing, upgrading and documenting maintenance procedures for operating systems, communications environments and applications software</li></ul> |
| 2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work) |
| <ul><li>Researching, analyzing and evaluating requirements for software applications and operating systems</li></ul> |

- Consulting with engineering staff to evaluate interface between hardware and software
- Consulting with customers concerning maintenance of software system
- Researching, designing, and developing computer software systems

---

**Title of Occupation: Tax Professional**

**Code: 2017-241103**

**1. Functional Review**

1.1 Does the occupation have a six-digit code? (Y/N)

Yes

1.2 Is the purpose of the occupation stated? (Y/N)

Yes

1.3 Are there specialisations listed for the occupation? (Y/N)

Yes

1.4 Are there alternate titles for the occupation? (Y/N)

Yes

**2. Analysis of Tasks at Unit Level**

2.1 Are there tasks at unit level? (Y/N)

| |
|---|
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Preparing tax returns, advising on taxation problems and contesting disputed claims before tax officials</li><li>Advising on, planning and installing budgetary, accounts controlling and other accounting policies and systems</li><li>Conducting financial investigations in such matters as suspected fraud, insolvency and bankruptcy</li><li>Auditing accounts and bookkeeping records</li><li>Preparing and certifying financial statements for presentation to management, shareholders and statutory or other bodies</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| <ul><li>Preparing or reporting on profit forecasts and budgets</li><li>Conducting investigations and advising management on financial aspects of productivity, stockholdings, sales, new products, etc</li><li>Devising and controlling a system to determine unit cost of products and services</li></ul> |
| 2.4 Which tasks are job-orientated (work being done)? |

- Preparing tax returns, advising on taxation problems and contesting disputed claims before tax officials

- Advising on, planning and installing budgetary, accounts controlling and other accounting policies and systems

- Conducting financial investigations in such matters as suspected fraud, insolvency and bankruptcy

- Auditing accounts and bookkeeping records

- Preparing and certifying financial statements for presentation to management, shareholders and statutory or other bodies

- Preparing or reporting on profit forecasts and budgets

- Conducting investigations and advising management on financial aspects of productivity, stockholdings, sales, new products, etc

---

2.5 Which tasks are worker-orientated? (Demands placed on the worker doing the work)

---

- Devising and controlling a system to determine unit cost of products and services

---

## Annexure 2: A Sample of Banking Occupations Analysed for the Technical Review of the Singaporean SSOC

| |
| --- |
| **Title of Occupation:  Bank Manager (branch)** <br><br> **Code: 13460** |
| **1.Functional Review** |
| 1.1 Does the occupation have a five digit code? ( Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| Yes |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |

| |
|---|
| Yes |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? ( Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Planning, directing and coordinating the activities of staff in the branch</li><li>Providing advice and assistance to customers on their financial and insurance needs and with matters such as changes in law that may affect customers</li><li>Examining, evaluating and processing loan and insurance applications</li><li>Monitoring credit extension decisions</li><li>Conducting financial investigations</li><li>Approving or rejecting, or coordinating the approval or rejection of lines of credit commercial, real estate and personal loans</li><li>Coordinating cooperation with other branches of the company</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| <ul><li>Establishing and maintaining relationships with individual and business customers</li><li>Overseeing the flow of cash and financial instruments, and the preparation of financial and regulatory reports</li></ul> |
| 2.4 Which tasks are job-orientated? |
| <ul><li>Planning, directing and coordinating the activities of staff in the branch</li><li>Examining, evaluating and processing loan and insurance applications</li><li>Monitoring credit extension decisions</li><li>Conducting financial investigations</li><li>Coordinating cooperation with other branches of the company</li></ul> |
| 2.5 Which tasks are worker-orientated? |
| <ul><li>Providing advice and assistance to customers on their financial and insurance needs and with matters such as changes in law that may affect customers</li><li>Approving or rejecting, or coordinating the approval or rejection of lines of credit commercial, real estate and personal loans</li><li>Establishing and maintaining relationships with individual and business customers</li><li>Overseeing the flow of cash and financial instruments, and the preparation of financial and regulatory reports</li></ul> |

| 2.6 Any other information provided at unit level? |
|---|
| This unit group includes:<br><br>&bull;    Bank manager<br>&bull;    Insurance services manager<br><br>This unit group excludes:<br><br>&bull;    Finance manager (1211)<br>&bull;    Financial and investment adviser (2412)<br>&bull;    Financial analyst (2413)<br>&bull;    Credit and loans officer (3312)<br>&bull;    Insurance agent (3321) |

| **Title of Occupation: Human Resource Manager**<br><br>**Code : 12121** |
|---|
| **1.Functional Review** |
| 1.1 Does the occupation have a five digit code? ( Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| No |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| Yes |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? ( Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |

- Planning, directing and coordinating the personnel and industrial relations activities, policies and practices of an enterprise or organisation
- Planning and organising procedures for recruitment, training, promotion, determination of wage structures and negotiations about wages, liaison and consultation with workers and related personnel matters
- Overseeing the selection, training and performance of staff for the entire enterprise or organisation

## 2.3 Which tasks are not specialised and not specific to the unit group?

- Establishing and managing budgets, controlling expenditure and ensuring the efficient use of resources
- Establishing and directing operational and administrative procedures
- Consulting with senior management and with managers of other departments
- Representing the enterprise or organisation in dealings with outside bodies
- Overseeing the development and implementation of management information systems
- Ensuring compliance with standards and legislation relating to employees' rights, equal opportunity and related concerns

## 2.4 Which tasks are job-orientated?

- Planning, directing and coordinating the personnel and industrial relations activities, policies and practices of an enterprise or organisation
- Planning and organising procedures for recruitment, training, promotion, determination of wage structures and negotiations about wages, liaison and consultation with workers and related personnel matters
- Consulting with senior management and with managers of other departments
- Representing the enterprise or organisation in dealings with outside bodies
- Ensuring compliance with standards and legislation relating to employees' rights, equal opportunity and related concerns

## 2.5 Which tasks are worker-orientated?

- Overseeing the selection, training and performance of staff for the entire enterprise or organisation
- Establishing and managing budgets, controlling expenditure and ensuring the efficient use of resources
- Establishing and directing operational and administrative procedures
- Overseeing the development and implementation of management information systems

| 2.6 Any other information provided at unit level? |
|---|
| This unit group includes: |
| <ul><li>Human resource manager</li><li>Industrial relations manager</li><li>Personnel manager</li><li>Training manager</li></ul> |

| **Title of Occupation: Sales and Marketing Manager** |
|---|
| **Code: 12211** |
| **1.Functional Review** |
| 1.1 Does the occupation have a five digit code? ( Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| Yes |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| No |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? ( Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Planning and organising special sales and marketing programmes based on sales records and market assessments</li><li>Determining price lists, discount and delivery terms, sales promotion budgets, sales methods, special incentives and campaigns</li><li>Establishing and directing operational and administrative procedures related to sales and marketing activities</li><li>Leading and managing the activities of sales and marketing staff</li></ul> |

- Representing the enterprise or organisation at sales and marketing conventions, and trade exhibitions

**2.3 Which tasks are not specialised and not specific to the unit group?**

- Establishing and managing budgets and controlling expenditure to ensure the efficient use of resources

**2.4 Which tasks are job-orientated?**

- Planning and organising special sales and marketing programmes based on sales records and market assessments
- Representing the enterprise or organisation at sales and marketing conventions, and trade exhibitions
- Determining price lists, discount and delivery terms, sales promotion budgets, sales methods, special incentives and campaigns

**2.5 Which tasks are worker-orientated?**

- Establishing and directing operational and administrative procedures related to sales and marketing activities
- Leading and managing the activities of sales and marketing staff
- Establishing and managing budgets and controlling expenditure to ensure the efficient use of resources

**2.6 Any other information provided at unit level?**

This unit group includes:

- Commercial manager

- Marketing manager

- Sales manager

- Business development manager

| Title of Occupation: Actuary |
| :--- |
| Code: 21213 |
| **1.Functional Review** |
| 1.1 Does the occupation have a five digit code? ( Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| No |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| No |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? ( Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Studying, improving and developing mathematical and actuarial theories and techniques</li><li>Advising on or applying mathematical principles, models and techniques to a wide range of tasks in the fields of engineering, natural, social or life sciences</li><li>Conducting logical analyses of management problems, especially in terms of input-output effectiveness, and formulating mathematical models of each problem usually for programming and solution by computer</li><li>Supervising the work of mathematical, operations research analyst and actuarial assistants</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| <ul><li>Designing and putting into operation pension schemes and life, health, social and other types of insurance systems</li><li>Preparing scientific papers and reports</li></ul> |
| 2.4 Which tasks are job-orientated? |
| <ul><li>Conducting logical analyses of management problems, especially in terms of input-output effectiveness, and formulating mathematical models of each problem usually for programming and solution by computer</li></ul> |

| |
|---|
| • Supervising the work of mathematical, operations research analyst and actuarial assistants<br>• Designing and putting into operation pension schemes and life, health, social and other types of insurance systems |

| 2.5 Which tasks are worker-orientated? |
|---|
| • Studying, improving and developing mathematical and actuarial theories and techniques<br>• Advising on or applying mathematical principles, models and techniques to a wide range of tasks in the fields of engineering, natural, social or life sciences<br>• Preparing scientific papers and reports |

| 2.6 Any other information provided at unit level? |
|---|
| This unit group includes:<br><br>• Actuary<br><br>• Operations research analyst<br><br>• Mathematician<br><br>This unit group excludes:<br><br>• Statistical officer (2123)<br><br>• Statistical clerk (4314)<br><br>• Systems analyst (2511) |


| |
|---|
| **Title of Occupation: Tax Accountant**<br>**Code : 24113** |
| **1.Functional Review** |
| 1.1 Does the occupation have a five digit code? ( Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |

| |
|---|
| No |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| No |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? ( Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Preparing tax returns, advising on taxation problems and contesting disputed claims before tax officials</li><li>Conducting financial investigations in such matters as suspected fraud, insolvency and bankruptcy</li><li>Auditing accounts and bookkeeping records</li><li>Conducting investigations and advising management on financial aspects of productivity, stockholdings, sales, new products, etc.</li><li>Advising on, planning and installing budgetary, accounts controlling and other accounting policies and systems</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| <ul><li>Preparing and certifying financial statements for presentation to management, shareholders and statutory or other bodies</li><li>Preparing or reporting on profit forecasts and budgets</li><li>Devising and controlling a system to determine unit cost of products and services</li></ul> |
| 2.4 Which tasks are job-orientated? |
| <ul><li>Conducting financial investigations in such matters as suspected fraud, insolvency and bankruptcy</li><li>Preparing and certifying financial statements for presentation to management, shareholders and statutory or other bodies</li></ul> |
| 2.5 Which tasks are worker-orientated? |
| <ul><li>Advising on, planning and installing budgetary, accounts controlling and other accounting policies and systems</li><li>Preparing or reporting on profit forecasts and budgets</li><li>Auditing accounts and bookkeeping records</li><li>Preparing tax returns, advising on taxation problems and contesting disputed claims before tax officials</li><li>Conducting investigations and advising management on financial aspects of productivity, stockholdings, sales, new products, etc.</li></ul> |

| |
|---|
| • Devising and controlling a system to determine unit cost of products and services |
| |
| 2.6 Any other information provided at unit level? |
| This unit group includes: <br><br> • Accountant <br> • Auditor <br> • Chartered accountant <br> • Tax accountant <br><br> This unit group excludes: <br><br> • Assistant accountant (3313) <br> • Bookkeeper (4311) |

| |
|---|
| **Title of Occupation: Chartered Accountant** <br> **Code :   24111** |
| **1.Functional Review** |
| 1.1 Does the occupation have a five digit code? ( Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| No |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| Yes |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? ( Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |

- Preparing tax returns, advising on taxation problems and contesting disputed claims before tax officials
- Conducting financial investigations in such matters as suspected fraud, insolvency and bankruptcy
- Auditing accounts and bookkeeping records
- Conducting investigations and advising management on financial aspects of productivity, stockholdings, sales, new products, etc.
- Advising on, planning and installing budgetary, accounts controlling and other accounting policies and systems

## 2.3 Which tasks are not specialised and not specific to the unit group?

- Preparing and certifying financial statements for presentation to management, shareholders and statutory or other bodies
- Preparing or reporting on profit forecasts and budgets
- Devising and controlling a system to determine unit cost of products and services

## 2.4 Which tasks are job-orientated?

- Conducting financial investigations in such matters as suspected fraud, insolvency and bankruptcy
- Preparing and certifying financial statements for presentation to management, shareholders and statutory or other bodies

## 2.5 Which tasks are worker-orientated?

- Advising on, planning and installing budgetary, accounts controlling and other accounting policies and systems
- Preparing or reporting on profit forecasts and budgets
- Auditing accounts and bookkeeping records
- Preparing tax returns, advising on taxation problems and contesting disputed claims before tax officials
- Conducting investigations and advising management on financial aspects of productivity, stockholdings, sales, new products, etc.
- Devising and controlling a system to determine unit cost of products and services

## 2.6 Any other information provided at unit level?

This unit group includes:

- Accountant
- Auditor
- Chartered accountant
- Tax accountant

This unit group excludes:

- Assistant accountant (3313)
- Bookkeeper (4311)

---

**Title of Occupation: Financial/Investment Adviser (e.g. relationship manager)**

**Code : 24120**

| | |
|---|---|
| **1.Functional Review** | |
| 1.1 Does the occupation have a five digit code? ( Y/N) | |
| Yes | |
| 1.2 Is the purpose of the occupation stated? (Y/N) | |
| Yes | |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) | |
| Yes | |
| 1.4 Are there alternate titles for the occupation? ( Y/N) | |
| Yes | |
| **2.Analysis of Tasks at Unit Level** | |
| 2.1 Are there tasks at unit level? ( Y/N) | |
| Yes | |
| 2.2 Which tasks are specialised and specific to the unit group? | |

- Interviewing clients to determine financial status and objectives, risk tolerance and other information needed to develop financial plans and investment strategies
- Setting financial objectives, and developing and implementing strategies for achieving the financial objectives
- Arranging to buy and sell stocks and bonds for clients

- Providing consultancy services to individuals and organisations to advise them on better financial and investments managements

**2.3 Which tasks are not specialised and not specific to the unit group?**

- Building and maintaining a client base
- Monitoring investment performance, and reviewing and revising investment plans based on modified needs and changes in markets

**2.4 Which tasks are job-orientated?**

- Interviewing clients to determine financial status and objectives, risk tolerance and other information needed to develop financial plans and investment strategies
- Arranging to buy and sell stocks and bonds for clients
- Building and maintaining a client base

**2.5 Which tasks are worker-orientated?**

- Providing consultancy services to individuals and organisations to advise them on better financial and investments managements
- Setting financial objectives, and developing and implementing strategies for achieving the financial objectives
- Monitoring investment performance, and reviewing and revising investment plans based on modified needs and changes in markets

**2.6 Any other information provided at unit level?**

This unit group includes:

- Financial investment adviser

- Relationship manager

This unit group excludes:

- Insurance agent (3321)

- Independent financial planner (3321)

| |
|---|
| **Title of Occupation: Investment Broker** |
| **Code : 24141** |
| **1.Functional Review** |
| 1.1 Does the occupation have a five digit code? ( Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| No |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| Yes |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? ( Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| • Informing prospective customers about market conditions and prospects<br>• Advising on and participating in the negotiation of terms for, and organisation of, loans and placement of stocks and bonds in the financial market to raise capital for customers<br>• Recording and transmitting buy and sell orders for securities, stocks, bonds or other financial instruments and for foreign exchange for future or immediate delivery |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| • Analysing market trends for securities, bonds, stocks and other financial instruments, including foreign exchange<br>• Obtaining information about the financial circumstances of customers and companies in which investments may be made |
| 2.4 Which tasks are job-orientated? |
| • Informing prospective customers about market conditions and prospects |

- Recording and transmitting buy and sell orders for securities, stocks, bonds or other financial instruments and for foreign exchange for future or immediate delivery
- Obtaining information about the financial circumstances of customers and companies in which investments may be made

| 2.5 Which tasks are worker-orientated? |
| --- |

- Advising on and participating in the negotiation of terms for, and organisation of, loans and placement of stocks and bonds in the financial market to raise capital for customers
- Analysing market trends for securities, bonds, stocks and other financial instruments, including foreign exchange

| 2.6 Any other information provided at unit level? |
| --- |
| This unit group includes: |

- Securities broker
- Stocks and shares broker
- Foreign exchange dealer/broker
- Money broker
- Investment broker

This unit group excludes:

- Securities clerk (4312)

---

| **Title of Occupation: Enterprise Architect** **Code : 25113** |
| --- |
| **1.Functional Review** |
| 1.1 Does the occupation have a five digit code? ( Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| No |

| |
|---|
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| Yes |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? ( Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Consulting with users to formulate and document requirements and with management to ensure agreement on systems principles</li><li>Identifying and evaluating inefficiencies and recommending optimal business practices, and system functionality and behaviour</li><li>Taking responsibility for deploying functional solutions, such as creating, adopting and implementing system test plans</li><li>Expanding or modifying systems to improve workflow or serve new purposes</li><li>Coordinating and linking the computer systems within an organisation to increase compatibility</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| <ul><li>Identifying and analysing business processes, procedures and work practices</li><li>Developing functional specifications for use by systems developers</li></ul> |
| 2.4 Which tasks are job-orientated? |
| <ul><li>Taking responsibility for deploying functional solutions, such as creating, adopting and implementing system test plans</li><li>Expanding or modifying systems to improve workflow or serve new purposes</li><li>Coordinating and linking the computer systems within an organisation to increase compatibility</li></ul> |
| 2.5 Which tasks are worker-orientated? |
| <ul><li>Consulting with users to formulate and document requirements and with management to ensure agreement on systems principles</li><li>Identifying and evaluating inefficiencies and recommending optimal business practices, and system functionality and behaviour</li><li>Identifying and analysing business processes, procedures and work practices</li><li>Developing functional specifications for use by systems developers</li></ul> |
| 2.6 Any other information provided at unit level? |

This unit group includes:

- Systems designer

- Systems analyst

- Network systems analyst

- IT business analyst

- IT business process consultant

- Enterprise architect

This unit group excludes:

- Systems programmer (2514)

| Title of Occupation: Mobile Applications Developer Code : 25122 |
| --- |
| **1.Functional Review** |
| 1.1 Does the occupation have a five digit code? ( Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| Yes |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| No |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? ( Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |

- Researching, analysing and evaluating requirements for software, web and multimedia applications
- Designing, and developing computer software, web and multimedia systems
- Designing and developing digital animations, imaging, presentations, games, audio and video clips, and Internet applications using multimedia software, tools and utilities, interactive graphics and programming languages
- Assessing, developing, upgrading and documenting maintenance procedures for software, web and multimedia applications
- Assisting in analysing, specifying and developing Internet strategies, web-based methodologies and development plans
- Consulting with customers concerning maintenance of software, web and multimedia systems

**2.3 Which tasks are not specialised and not specific to the unit group?**

- Consulting with engineering staff to evaluate interface between hardware and software
- Developing and directing software testing and validation procedures
- Modifying existing software to correct errors, to adapt it to new hardware or to upgrade interfaces and improve performance
- Directing software programming and development of documentation

**2.4 Which tasks are job-orientated?**

- Consulting with customers concerning maintenance of software, web and multimedia systems
- Consulting with engineering staff to evaluate interface between hardware and software
- Directing software programming and development of documentation

**2.5 Which tasks are worker-orientated?**

- Researching, analysing and evaluating requirements for software, web and multimedia applications
- Designing, and developing computer software, web and multimedia systems
- Designing and developing digital animations, imaging, presentations, games, audio and video clips, and Internet applications using multimedia software, tools and utilities, interactive graphics and programming languages

- Assessing, developing, upgrading and documenting maintenance procedures for software, web and multimedia applications
- Assisting in analysing, specifying and developing Internet strategies, web-based methodologies and development plans
- Developing and directing software testing and validation procedures
- Modifying existing software to correct errors, to adapt it to new hardware or to upgrade interfaces and improve performance

2.6 Any other information provided at unit level?

This unit group includes:

- Software developer
- Web developer
- Multimedia developer
- Games developer
- Mobile applications developer

This unit group excludes:

- Applications programmer (2514)

---

**Title of Occupation: Computer Systems Administrator**
**Code : 25220**

**1.Functional Review**

1.1 Does the occupation have a five digit code? ( Y/N)

Yes

1.2 Is the purpose of the occupation stated? (Y/N)

Yes

1.3 Are there specialisations listed for the occupation? ( Y/N)

Yes

1.4 Are there alternate titles for the occupation? ( Y/N)

Yes

**2.Analysis of Tasks at Unit Level**

2.1 Are there tasks at unit level? ( Y/N)

Yes

| |
|---|
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Maintaining and administering computer networks and related computing environments including computer network, systems software, applications software and all configurations</li><li>Recommending changes to improve systems and network configurations, and determining hardware or software requirements related to such changes</li><li>Diagnosing network and system problems</li><li>Performing data backups and disaster recovery operations</li><li>Operating master consoles to monitor the performance of computer systems and networks, and to coordinate computer network access and use</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| None |
| 2.4 Which tasks are job-orientated? |
| <ul><li>Maintaining and administering computer networks and related computing environments including computer network, systems software, applications software and all configurations</li><li>Performing data backups and disaster recovery</li><li>Operating master consoles to monitor the performance of computer systems and networks, and to coordinate computer network access and use</li></ul> |
| 2.5 Which tasks are worker-orientated? |
| <ul><li>Recommending changes to improve systems and network configurations, and determining hardware or software requirements related to such changes</li><li>Diagnosing network and system problems</li></ul> |
| |
| 2.6 Any other information provided at unit level? |
| This unit group includes:<br><br><ul><li>Computer systems administrator</li><li>Network administrator</li></ul><br>This unit group excludes:<br><br><ul><li>Database administrator (2521)</li><li>Website administrator (3514)</li><li>Network architect (2523)</li></ul> |

| |
|---|
| • Network engineer (2523) |

---

| Title of Occupation: Database Architect<br>Code : 25212 |
|---|
| **1.Functional Review** |
| 1.1 Does the occupation have a five digit code? ( Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| No |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| No |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? ( Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| • Designing and developing database architecture, data structures, tables, dictionaries and naming conventions for information systems projects<br>• Designing, constructing, modifying, integrating, implementing and testing database management systems<br>• Conducting research and providing advice on the selection, application and implementation of database management tools<br>• Developing and implementing data administration policy, documentation, standards and models<br>• Developing policies and procedures for database access and usage and for the backup and recovery of data<br>• Performing the operational establishment and preventive maintenance of backups, recovery procedures, and enforcing security and integrity controls |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| None |

| |
|---|
| 2.4 Which tasks are job-orientated? |
| <br><br>• Developing and implementing data administration policy, documentation, standards and models<br>• Developing policies and procedures for database access and usage and for the backup and recovery of data<br>• Performing the operational establishment and preventive maintenance of backups, recovery procedures, and enforcing security and integrity controls |
| 2.5 Which tasks are worker-orientated? |
| <br>• Designing and developing database architecture, data structures, tables, dictionaries and naming conventions for information systems projects<br>• Designing, constructing, modifying, integrating, implementing and testing database management systems<br>• Conducting research and providing advice on the selection, application and implementation of database management tools<br><br> |
| 2.6 Any other information provided at unit level? |
| This unit group excludes:<br><br>    • Computer systems administrator (2522)<br><br>    • Network administrator (2522)<br><br>    • Website administrator (3514)<br><br> |

| |
|---|
| **Title of Occupation: Banking Compliance Executive**<br>**Code : 33492** |
| **1.Functional Review** |
| 1.1 Does the occupation have a five digit code? ( Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| Yes |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |

| |
|---|
| Yes |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? ( Y/N) |
| No |
| 2.2 Which tasks are specialised and specific to the unit group? |
| N/A |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| N/A |
| 2.4 Which tasks are job-orientated? |
| N/A |
| 2.5 Which tasks are worker-orientated? |
| N/A |
| 2.6 Any other information provided at unit level? |
| This unit group excludes:<br><br>• Computer systems administrator (2522)<br><br>• Network administrator (2522)<br><br>• Website administrator (3514) |

| |
|---|
| **Title of Occupation:  Bank Teller**<br>**Code : 42111** |
| **1.Functional Review** |
| 1.1 Does the occupation have a five digit code? ( Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |

| |
|---|
| No |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| No |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? ( Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| <ul><li>Processing customer cash deposits and withdrawals, cheques, transfers, bills, credit card payments, money orders, certified cheques and other related banking transactions</li><li>Crediting and debiting clients' accounts</li><li>Receiving mail, selling postage stamps and conducting other post office counter business such as bill payments, money transfers and related business</li><li>Changing money from one currency to another, as requested by clients</li></ul> |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| <ul><li>Paying bills and making money transfers on clients' behalf</li><li>Making records of all transactions and reconciling them with cash balance</li></ul> |
| 2.4 Which tasks are job-orientated? |
| <ul><li>Processing customer cash deposits and withdrawals, cheques, transfers, bills, credit card payments, money orders, certified cheques and other related banking transactions</li><li>Receiving mail, selling postage stamps and conducting other post office counter business such as bill payments, money transfers and related business</li><li>Changing money from one currency to another, as requested by clients</li><li>Paying bills and making money transfers on clients' behalf</li></ul> |
| 2.5 Which tasks are worker-orientated? |
| <ul><li>Crediting and debiting clients' accounts</li><li>Making records of all transactions and reconciling them with cash balance</li></ul> |
| 2.6 Any other information provided at unit level? |
| This unit group includes: <ul><li>Bank teller</li><li>Post office counter clerk</li></ul> |

| |
|---|
| • Money changer |
| This unit group excludes: |
| • Store cashier (5230) |

 

| |
|---|
| **Title of Occupation: Bank Operations Clerk**<br>**Code : 43121** |
| **1.Functional Review** |
| 1.1 Does the occupation have a five digit code? ( Y/N) |
| Yes |
| 1.2 Is the purpose of the occupation stated? (Y/N) |
| Yes |
| 1.3 Are there specialisations listed for the occupation? ( Y/N) |
| No |
| 1.4 Are there alternate titles for the occupation? ( Y/N) |
| No |
| **2.Analysis of Tasks at Unit Level** |
| 2.1 Are there tasks at unit level? ( Y/N) |
| Yes |
| 2.2 Which tasks are specialised and specific to the unit group? |
| • Processing insurance enrolments, cancellations, claims transactions, policy changes and payments<br>• Preparing financial documents and calculating interest or brokerage charges and stamp duties payable<br>• Maintaining records of bonds, shares and other securities bought or sold on behalf of clients or employer |
| 2.3 Which tasks are not specialised and not specific to the unit group? |
| • Calculating totals, averages, percentages and other details and presenting them in the required tabular form |
| 2.4 Which tasks are job-orientated? |

- Processing insurance enrolments, cancellations, claims transactions, policy changes and payments
- Maintaining records of bonds, shares and other securities bought or sold on behalf of clients or employer

## 2.5 Which tasks are worker-orientated?

- Calculating totals, averages, percentages and other details and presenting them in the required tabular form
- Preparing financial documents and calculating interest or brokerage charges and stamp duties payable

## 2.6 Any other information provided at unit level?

This unit group includes:

- Bank operations clerk
- Insurance clerk
- Bonds clerk

This unit group excludes:

- Accounts clerk (4311)
- Statistical clerk (4314)