Towards the Establishment of a Credible Institutional Mechanism for Skills Planning within CHIETA:

Defining the CHIETA's Focus in terms of Occupations.

Compiled by:
Johan Erasmus
Jurie van Zyl
© June 2014

Executive Summary

Introduction

Skills development is concerned with the process of ensuring that workers have the necessary skills to undertake their jobs (Karmel, 2011:7). According to Wilson (2009:14-15), the most commonly used methods to define and measure skills are occupation and qualification.

Key to the process described in IT Aware's document entitled *Introduction to Skillogical Process* and the *White Paper for Post-school Education and Training* is SETAs' ability to define its focus in terms of occupations. These key or focus occupations form the unit of analysis for interaction with both the supply and demand stakeholders related to a specific sector.

This report emphasises those activities (and resulting outputs) undertook to define the CHIETA's focus in terms of occupations as an important step towards the establishment of a credible institutional mechanism for skills planning within CHIETA. It is suggested that this report (*Defining the CHIETA's Focus in terms of Occupations*) should be read in conjunction with several datasets and related reports and documents that were developed and submitted through the course of the project. Some of these reports and datasets are highlighted and incorporated into this report and copies are attached as Addendums.

2013 WSP Mapping Review

The source data received from participating CHIETA employers – during the 2013 WSP/ATR submission cycle – was analysed to identify inconsistencies with regard to the mapping of workplace job titles to occupations on the OFO. A secondary aim with the source data analysis was to use the results to confirm CHIETA focus occupations, in the development of a *Business Unit Matrix* and to refine and update the *Occupational Profile Dictionary* and the *Qualification Matrix*.

Pertinent observations made from the job title-to-OFO mapping review of the source data received from participating CHIETA employers during the 2013 WSP/ATR submission cycle is summarised into four brought categories, namely: inconsiderate and inconsistent mapping, OFO gaps and generic mapping challenges. Some of these challenges are Sub-sector specific, while other mapping challenges are experienced across all CHIETA Sub-sectors. The report highlights examples of incorrect mapping in the four categories together with the steps taken to resolve job title-to-OFO mapping challenges.

Comparison 2013 vs 2014 WSP Source Data Submissions

A basic comparative analysis of the 2013 vs 2014 WSP/ATR source data submissions shows an actual increase of 32 companies that have submitted WSP/ATR source data for the 2014 cycle as opposed to 2013. There was a decline in only one of the nine Sub-sectors, namely Base Chemicals, which can be ascribed partially to the reallocation of certain companies to appropriate Sub-sectors.

The value of the mapping review reports was confirmed by the fact that those SDFs that have consulted the mapping review reports on job title-to-Major OFO group occupations did indeed implement some of the recommendations made in these reports. This became evident on two levels, namely:

- The uptake of the new OFO Occupations mentioned in the mapping review reports, and
- SDFs reconsidered the link between equity level and occupations by the remapping of semi- and unskilled workers to appropriate occupational groups on the OFO.

CHIETA Business Unit Analysis

A value chain approach was followed to develop a framework containing the business units that were identified as being typical to the chemical manufacturing sector. The framework was used to create a *CHIETA Business Unit Matrix*. The job title-to-OFO mapping review of WSP/ATR source data submitted in 2013 were then used to populate the matrix to summarise and analyse the jobs reported on in the 2013 WSP/ATR submissions.

It is believed the *CHIETA Business Unit Matrix* will assist in the proper referencing of jobs to the correct occupation which should have a positive impact on skills development planning processes. The matrix could assist specific sub-sectors to define specific outputs per business unit for a specific occupation, thus informing the supply – demand analysis.

The matrix was used to inform the validation of CHIETA focus occupations and had been discussed with and demonstrated to experts of the various Sub-sectors and at scheduled Chamber meetings. The value of the Business Unit Matrix was acknowledged by participants to the Chamber meetings but concern was expressed with regard to the future usage of the matrix.

The *CHIETA Business Unit Matrix* developed and populated with WSP/ATR source data submitted in 2013 were repopulated with cleaned 2014 WSP/ATR source data (i.e. after employers were moved to correct sub-sectors and job title-to-OFO mapping was reviewed).

Occupation Profiling

Occupations remain the most common means of describing skills required by employees in the workplace (Wilson, 2009:15). The Skillogical process helps to introduce well defined job profiles that inform performance assessment and related development plans; advertisements for new appointments; and career paths. An occupation profile is generated by doing research on what the tasks, knowledge, professional registration criteria, skills, expected qualifications and progression pathway are for a specific occupation and then to validate the research findings with industry representatives.[1]

Covering 54 occupations, the CHIETA has developed its first *Occupational Dictionary* in 2012. The CHIETA has extended its commitment in wanting to understand its constituency by defining output and related qualification profiles for a further 87 occupations. Now covering 141 focus occupations, the *CHIETA Occupation Handbook* is the first of its kind in the sector.

CHIETA Qualification Matrix

The Qualification Matrix submitted in August 2013 has been expanded to include the additional occupations defined in the Profile Dictionary. Content now also include Registered Qualifications and Learnerships. Inputs received from the CHIETA ETQA has caused an additional 45 occupations and related learning being added to the Matrix, making it a valuable springboard for all referencing and reporting reports and tools.

Suggestions/Implications for Future Usage and Maintenance of Business Unit and Qualification Matrixes

The points highlighted below provide suggestions and implications for future usage and maintenance of the mapping review reports, and of the business unit and qualification matrixes:

[1] Please refer to *Step 4: Profile Occupations and Link to Source Data* in *Introduction to Skillogical Process* for an overview of the process and methodology implemented by IT Aware to occupational profiles.

Job Title-to-OFO Mapping:

- The CHIETA has to ensure that all companies (all SDFs) obtain and consult the job title-to-OFO mapping review reports.
- The 2014 WSP/ATR source data submissions were cleaned (i.e. companies were moved to correct sub-sectors and job title-to-OFO mapping was reviewed by IT Aware) before it was handed over to the CHIETA in June 2014 in MS Excel format. The CHIETA has to withdraw the data per company and release the data to allow individual companies to interrogate the recommendations and comments made with regard to the remapping or clarification of job titles.
- The CHIETA should consider the following themes for the development of informative packages and/or for capacity building workshops directed at specific target groups:
  - Using the OFO and IT Aware's mapping utility.
  - Value of source data for skills panning.
  - Job title naming conventions.
  - Standardisation of Chemicals sector specific job titles for similar jobs.
  - The link between qualification or equity level, professional registration or licence to practice requirements and an occupation.
  - Avoiding non-related occupations.

Occupation Handbook

Finalising profiles on focus occupations in the Chemicals sector is an iterative process which will require participation and commitment from industry for the refinement of its quality and quantity. All sector stakeholders should be afforded the opportunity to provide input and comment on this product.

Business Unit Matrix:

- The identified business units, their relation to especially the CHIETA focus occupations filtered per sub-sector should become the springboard for all future chamber deliberations on labour market supply and demand.
- It is suggested that the Technology Development and Operations: Manufacturing and Production business unit clusters are the primary focus of the CHIETA Chambers for the allocation of resources to ensure future human capital.
- The CHIETA should update the Business Unit Matrix on an annual basis as soon as the WSP/ATR source data submissions are cleaned (i.e. after employers were moved to correct sub-sectors and job title-to-OFO mapping was reviewed).
- With regard to using the Business Unit Matrix as a tool to determine and analyse year-to-year shifts, it has to be emphasised that this can only be done if data is selected of only those companies that have submitted WSP/ATR source data in each consecutive year.
- Business Units identified per occupation should be used to inform developmental pathways.

Qualification Matrix:

- The Matrix should be used to quality assure all learning referencing. Lookup values used by stakeholders should stem from the matrix and targets identified should either inform the matrix or be informed by it.

Contents

Introduction/Background **1**
Layout of the Rest of the Report *2*
2013 WSP Mapping Review **3**
Job Title-to-OFO Occupation Mapping Review per Occupation *4*
Job Title-to-OFO Occupation Mapping Review per Sub-sector *5*
Excel Analysis Spreadsheet report per Sub-sector 6
Mapping Review Matrix per Sub-sector 7
Outcome/Steps/Decisions Taken as a Result of Mapping Review and Consultation *9*
Inconsiderate Mapping 9
Inconsistent Mapping 10
OFO Gaps 10
Generic Mapping Challenges 12
Comparison 2013 vs 2014 WSP Source Data Submissions **13**
Changes in Company Participation *13*
Changes in Job Title-to-OFO Mapping *14*
CHIETA Business Unit Analysis **15**
CHIETA Business Unit Matrix 2014 ..... *17*
Occupation Profiling **19**
CHIETA Qualification Matrix **20**
Suggestions/Implications for Future Usage and Maintenance of Business Unit and Qualification Matrixes **21**
Job Title-to-OFO Mapping *21*
Business Unit Matrix *23*
Qualification Matrix *23*
References **24**
Addendums **26**
Addendum A: Occupation Mapping Review Report per Major OFO Occupation Group *26*
Addendum B: Occupation Mapping Review Report per Sub-sector *26*
Addendum C: CHIETA Business Unit Analysis Background Documents *26*
Addendum D: CHIETA Qualification Matrix *26*

Introduction/Background

Skills development is concerned with the process of ensuring that workers have the necessary skills to undertake their jobs (Karmel, 2011:7).

The introductory paragraph to *Chapter 8 Linking Education and the Workplace* of the *White Paper for Post-school Education and Training*, approved by Cabinet on 20 November 2013, defines the Sectoral Education and Training Authorities' (SETAs) role as follows:

> *These institutions were intended to **plan for skills development**, to radically expand the training available in workplaces – especially for previously disadvantaged people, including blacks, women and the disabled – and to improve the quality of formal education and training aimed at preparing learners for work. Sector Education and Training Authorities were created, as was a National Skills Fund (NSF) and a National Skills Authority (NSA). The SETAs are key institutions in the effort to bridge education and work. They are stakeholder bodies established in terms of the Skills Development Act (No. 97 of 1997).*

The Chemical Industries Education and Training Authority (CHIETA) contracted IT Aware in 2011 to assist in the establishment of a credible institutional mechanism for skills planning within CHIETA that will impact on the delivery of all 8 the NSDS III goals. This process facilitated by IT Aware is described in a document *Introduction to Skillogical Process*. Key to the process described in IT Aware's document and the White Paper is the CHIETA's ability to define its scope in terms of occupations that are considered to be critical, and closely related (CORE) to the Chemical Sector. These CORE or focus occupations form the unit of analysis for interaction with both the supply and demand stakeholders related to a specific sector. According to Wilson (2009:14-15), the most commonly used methods to define and measure skills are occupation and qualification.

This report emphasises those activities (and resulting outputs) undertook to define the CHIETA's focus in terms of occupations as an important step towards the establishment of a credible institutional mechanism for skills planning within CHIETA. It is suggested that this report (*Defining the CHIETA's Focus in terms of Occupations*) should be read in conjunction with the following datasets developed, and related reports and documents drafted and submitted by IT Aware[2] to the CHIETA:

- *Introduction to Skillogical Process*
- *Chemical Sector Occupational Profile Dictionary 2012*
- *Guide: Mandatory Grant (WSP/ATR) and Discretionary Grant (Pivotal & Non-Pivotal) Application Year 13* and the *OFO Guide*
- 2013 CHIETA Qualification Matrix (MS Excel)
- *CHIETA Qualification Matrix* (Introduction document)
- *Occupational Profiling Discussion 16 August 2013* (MS Power Point Presentation)
- 2013 CHIETA Business Unit Matrix (MS Excel)
- *Chamber Feedback on CHIETA Business Unit Analysis*
- 2013 WSP Mapping Review reports:
  - Generic observations and summary report on Major Occupational groups on the OFO

[2] These datasets and related reports and documents were submitted through the course of the project – some of which are highlighted and incorporated into this report and copies of which are attached.

  - 8 reports, covering every focus occupation in each of the Major Occupational groups on the OFO
  - MS Excel reports per Sub-sector across Unit groups on the OFO, and
  - MS Word Mapping Review Matrix per Sub-sector
- *2014 CHIETA Occupational Profile Dictionary (Based on CHIETA Focus Occupations)*

Layout of the Rest of the Report

The report is organised as follows:

- Section 2 describes the undertaking of a review of the job title-to-OFO mapping contained in the WSP/ATR source data submitted for the 2013 financial year. This section provides an overview of the reports that were generated and introduces some of the actions taken as a result of the mapping review exercise.
- Section 3 presents a brief comparison of 2013 vs 2014 WSP/ATR source data submissions. This section is a basic qualitative comparison of the two year's submissions.
- Section 4 provides a short introduction to the *CHIETA Occupation Handbook*.
- Section 5 describes the conceptualisation of a framework to represent business units that are typical to the chemical manufacturing sector. This framework was used as a point of departure to develop a *CHIETA Business Unit Matrix*.
- Section 6 is an elaboration of the document submitted to CHIETA that introduced the *CHIETA Qualification Matrix*. The Matrix submitted in 2013 has been expanded to relate to identified CHIETA specific occupations, qualifications, trades and learnerships.
- The report concludes with suggestions and implications for future usage and maintenance of the mapping review reports, and of the business unit and qualification matrixes.

2013 WSP Mapping Review

The process of developing and putting in place an efficient system for the identification and anticipation of skill needs requires availability of 'hard data' as the most important input (Cedefop, 2008:10). The availability of information on employment by occupation gives us insight into the skills that employers' need (Holt, Sawicki & Sloan, 2010:44). In addition to changes in overall occupational employment levels it is important to consider replacement demand arising from retirements, net migration; movement into other occupations and in-service mortality (Wilson, 2008:8). Information on age and gender structure is required because many of the flows; especially retirements and mortality, are age and gender specific.

The first step in the Skillogical©IT Aware process is to collect source data for skills planning. 'Hard' data, 'raw' data or 'source' data is data that has not been processed for use. Source data is all information found in original records or in a database such as a payroll or a 'house list' of all the workers in an organisation. It is possible to aggregate source data, but data collected from the outset at an aggregated level cannot be disaggregated. The process IT Aware assists employers with is to ensure their posts and employee information is structured and categorised in such a way that analysis and reporting on the data is simplified. The primary outcome of the process is to entrench human capital development best practices.

An important aspect in the collection of source data is the use of standardised systems of classification [see Step 2 in the Skillogical process in Erasmus & Van Zyl (2012:8-13)]. According to Wilson (2009:8), a standard system of classifying economic activity and employment (occupation and qualification) is essential to any systematic attempt to assess changing skill needs. Systems of classification help ensure comparability and consistency by grouping like information and through a hierarchical structure allowing the data to be presented at different levels of aggregation (Woods & O'Leary, 2006:53). Analysts and statisticians have identified industry (or sector), occupation and qualification as key dimensions. Examples of systems of classification implemented by IT Aware in the three dimensions (industry, occupation and qualification) are highlighted below:

- **Classification by Sector** – The Skillogical process requires from employers to map their economic activities to SIC Subgroups (5-digit codes). The *Standard Industrial Classification of all Economic Activities* (SIC) is used in South Africa for the classification of establishments according to kind of economic activity, and provides a standardised framework for the collection, tabulation, analysis and presentation of statistical data on establishments (Stats SA, 1993).
- **Classification by Occupation** – It is expected of employers to map all the posts/job titles on their payroll/house list, to occupations on the Organising Framework for Occupations (OFO), when they submit source data by means of the Skillogical process. The Department of Higher Education and Training uses the OFO as a tool for identifying, reporting and monitoring skills demand and supply in the South African labour market (DHET, 2012).
- **Classification by Qualification** – Two main cross classification variables: levels of education and fields of education can be used to collect, analyse and report education statistics (UNESCO, 2011:3). It is expected of employers to state the highest level of education obtained by each employee, when they submit source data by means of the Skillogical process. It is also expected of employers to indicate fields of education when they report on completed or planned training interventions.

In order to be considered for and claim Mandatory and Discretionary Grant money, levy-paying organisations within the Chemical Industries must submit an ATR and WSP to the CHIETA using the prescribed format and by a predetermined date. Guiding documents have been developed to assist Skills Development Facilitators (SDF) to complete the WSP-ATR submission to the CHIETA for the relevant financial year. See for example *Guide: Mandatory Grant (WSP/ATR) and Discretionary Grant (Pivotal & Non-Pivotal) Application Year 13* and the *OFO Guide* – the latter providing detail on linking organisation data to the Organising Framework for Occupations (OFO). These guides were introduced at CHIETA Regional Skills Forum meetings and SDF capacity building workshops and made available on CHIETAs website through the following link http://www.chieta.org.za.

The source data received from participating CHIETA employers – and that was captured during the 2013 WSP/ATR submission cycle – was analysed mainly to identify inconsistencies with regard to the mapping of workplace job titles to occupations on the OFO. Although a selective approach was followed (i.e. focussing on focus or CORE occupations –see discussion below), obvious incorrect mapping was also addressed (e.g. *Managers* mapped to *Senior Government Officials* and *Operators* mapped to *Special Forces Operators*).

A secondary aim with the source data analysis was to use the results to confirm CHIETA focus occupations, in the development of a *Business Unit Matrix* (see the section below entitled *CHIETA Business Unit Analysis*) and to refine and update the *CHIETA Qualification Matrix* tabled in July 2013 (see section below) as well as the *Occupational Profile Dictionary*.

The review of WSP/ATR source data submitted in 2013 resulted in several MS Word and MS Excel reports. The mapping review reports can be divided in two categories, namely:

1. Reports per Occupational group on the OFO, and
2. Reports per Sub-sector.

The following sections provide an overview of the reports that were completed and submitted in each of the two categories.

Job Title-to-OFO Occupation Mapping Review per Occupation

IT Aware has developed a mapping utility that assists organisations to accurately map their posts or jobs to the alternative or specialisation titles and occupations on the OFO. This utility also forms the basis for the accurate base data required for WSPs and ATRs. The search utility can be used to identify the occupations in an organisation.

Several Occupations are considered to be critical, and closely related (CORE) to the Chemical Sector. The mapping of Job Titles for the purposes of 2013 WSP/ATR submissions to "CORE" Occupations on the OFO were analysed in terms of job title usage (i.e. in the occupation, across sub-sectors and equity level statuses).

A summary report for each occupation per Major Occupational Group was prepared, submitted to CHIETA and placed on the Website in February 2014. The purpose of these Mapping Overview reports was to draw attention to the most pertinent Job Title-to-OFO Occupation challenges observed. This was done in the hope that SDFs will use the information to avoid similar or correct previous mapping mistakes in their preparation for the 2014 WSP/ATR submission cycle which was scheduled to close on the 30th April 2014.

The points below provide a concise description of the mapping review reports:

- **CHIETA Job Title-to-OFO Occupation Mapping Overview**
  This is a short quick reference report covering "generic" mapping observations as well as a one paragraph mapping observation summary statement for every focus occupation in each of the eight Major Occupational groups on the OFO.
- **Major OFO Occupational Group Reports**
  These are eight reports covering every focus occupation in each of the Major Occupational groups on the OFO. The reporting structure per focus occupation is as follows:
  - **Job Title Usage** – providing an indication of how many workers were mapped to the Occupation, a graph depicting the distribution of workers mapped to the Occupation across the nine CHIETA Subsectors and a graph showing the Equity Level status of workers mapped to the Occupation.
  - **Mapping Principle** – highlighting the fact that employees mapped to a specific occupation should be responsible for the outputs defined in broad terms in the descriptor for that occupation as found on the OFO. The descriptor is provided and where applicable, the reader is informed to carefully consider the tasks listed in the unit group detail available in the popup screen of the mapping utility developed by IT Aware. These OFO tasks are further expanded for those occupations already defined in the *CHIETA Profile Dictionary*.
  - **Mapping Review Considerations** – providing observations based on an analysis of the number of workers mapped to the Occupation, the Subsector and Equity Level distribution and the job titles mapped to the Occupation.
    Example:
    The example below is an excerpt on *Sales and Marketing Managers* and *Sales Managers* from the *Major Group 1 Mapping Review* report:
    "The mapping of workers mapped to 122101 Sales and Marketing Manager and to 122102 Sales Manager should be reviewed and confirmed or considered for remapping. Only a quarter of these workers are "senior or top" managers. This could be ascribed to the fact that many "professionals" with "Product"; "Brand"; "Category" and "Account" plus "Manager" in their Job Titles were mapped to 122101 Sales and Marketing Manager or to 122102 Sales Manager. These workers could have been mapped to 243102 Marketing Research Accounts Manager / Key Account Manager / Market Research Analyst or to 243103 Brand Manager / Marketing Practitioner."

Job Title-to-OFO Occupation Mapping Review per Sub-sector

The source data received from participating CHIETA employers during the 2013 WSP/ATR submission cycle was split into separate MS Excel workbooks for each of the nine CHIETA Sub-sectors. The Sub-sector data was then analysed to identify inconsistencies with regard to the mapping of workplace job titles to occupations on the OFO.

The review of WSP/ATR source data per Sub-sector resulted in several MS Excel and MS Word reports. These reports can be divided in two categories, namely:

1. MS Excel reports per Sub-sector across Major Occupational groups on the OFO, and
2. MS Word Mapping Review Matrix per Sub-sector.

The following sections provide an overview of the reports that were completed and submitted in each of the two categories.

Excel Analysis Spreadsheet report per Sub-sector

Each of the nine Sub-Sector Analysis reports in MS Excel consists of at least 10 spreadsheets, conveying three types of information, namely:

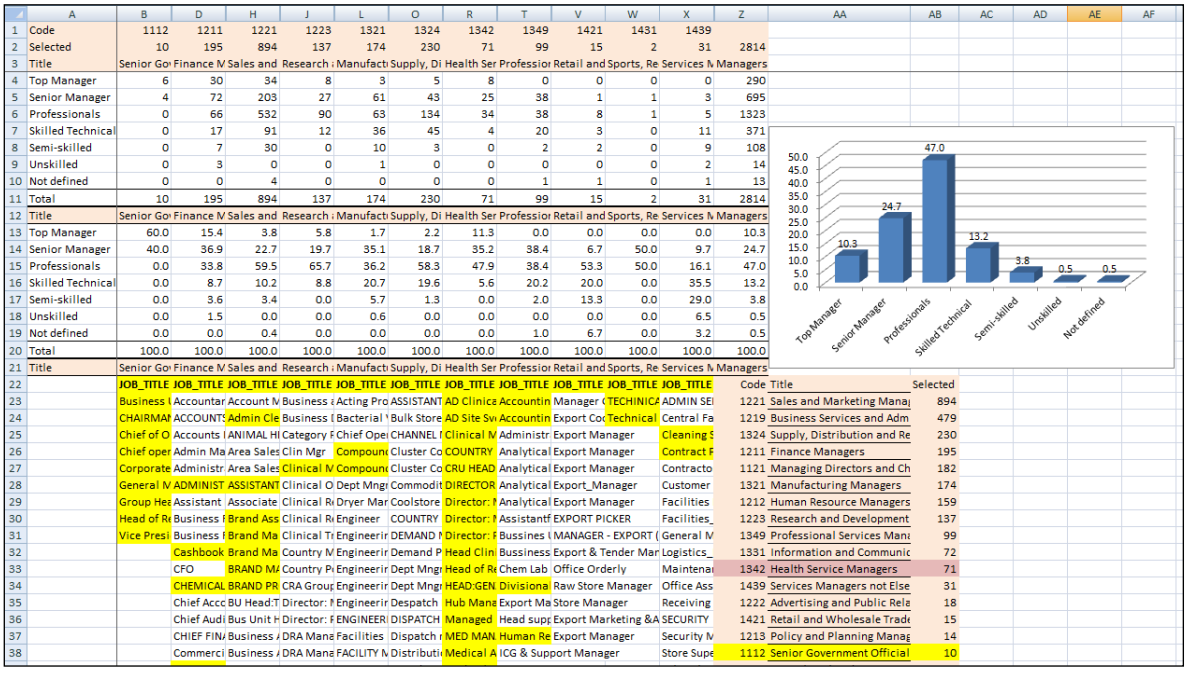
1. Summary spreadsheet – providing a quick overview of the number of companies (in the Sub-sector) that have submitted WSP/ATR source data, a table showing the distribution of employees across the eight Major Occupational groups on the OFO, a table showing the Equity Level status reported for these employees and a list of the names of the organisations (in the Sub-sector) that have submitted WSP/ATR source data.

   Example: Summary Spreadsheet

OFO Major Group Title	**Workers**	**%**		Number of Companies	97	
Managers	2814	13.2		Job Titles mapped	96	
Professionals	5674	26.7		Not Mapped	1	
Technicians and Associates	3654	17.2				
Clerical Support Workers	2221	10.4		**Equity level status**	**Workers**	**%**
Service and Sales Workers	213	1.0		Top management	321	1.5
Craft and Trades Workers	402	1.9		Senior management	840	3.9
Operators and Assemblers	3173	14.9		Professionally qualified	3661	16.9
Elementary Occupations	3115	14.6		Skilled technical	6622	30.6
Sub Total	**21266**	**100**		Semi-skilled	6187	28.6
Not Mapped	249			Unskilled	3446	15.9
Learners	148			Not defined	586	2.7
Total	**21663**			**Total** (OFO mapped workers)	**21663**	**100**

2. Unit Group mapping across the eight Major Occupational groups on the OFO – a spreadsheet each for the eight Major Occupational groups on the OFO provides an overview of the number of workers, their equity level status and their job titles mapped to the OFO at the Unit Group (four digit) level. A graph summarises the equity level status of workers that were mapped to Managerial Occupations on the OFO. The spreadsheet also provides a summary table showing the demand for a specific group of skills sorted in a descending order from the highest to the lowest number of workers mapped to a Unit Group on the OFO.

   Example: Major Occupational Group Spreadsheet



	A	B	D	H	J	L	O	R	T	V	W	X	Z
1	Code	1112	1211	1221	1223	1321	1324	1342	1349	1421	1431	1439	
2	Selected	10	195	894	137	174	230	71	99	15	2	31	2814
3	Title	Senior Go	Finance M	Sales and	Research	Manufacti	Supply, Di	Health Ser	Professior	Retail and	Sports, Re	Services N	Managers
4	Top Manager	6	30	34	8	3	5	8	0	0	0	0	290
5	Senior Manager	4	72	203	27	61	43	25	38	1	1	3	695
6	Professionals	0	66	532	90	63	134	34	38	8	1	5	1323
7	Skilled Technical	0	17	91	12	36	45	4	20	3	0	11	371
8	Semi-skilled	0	7	30	0	10	3	0	2	2	0	9	108
9	Unskilled	0	3	0	0	1	0	0	0	0	0	2	14
10	Not defined	0	0	4	0	0	0	0	1	1	0	1	13
11	Total	10	195	894	137	174	230	71	99	15	2	31	2814
12	Title	Senior Go	Finance M	Sales and	Research	Manufacti	Supply, Di	Health Ser	Professior	Retail and	Sports, Re	Services N	Managers
13	Top Manager	60.0	15.4	3.8	5.8	1.7	2.2	11.3	0.0	0.0	0.0	0.0	10.3
14	Senior Manager	40.0	36.9	22.7	19.7	35.1	18.7	35.2	38.4	6.7	50.0	9.7	24.7
15	Professionals	0.0	33.8	59.5	65.7	36.2	58.3	47.9	38.4	53.3	50.0	16.1	47.0
16	Skilled Technical	0.0	8.7	10.2	8.8	20.7	19.6	5.6	20.2	20.0	0.0	35.5	13.2
17	Semi-skilled	0.0	3.6	3.4	0.0	5.7	1.3	0.0	2.0	13.3	0.0	29.0	3.8
18	Unskilled	0.0	1.5	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	6.5	0.5
19	Not defined	0.0	0.0	0.4	0.0	0.0	0.0	0.0	1.0	6.7	0.0	3.2	0.5
20	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
21	Title	Senior Go	Finance M	Sales and	Research	Manufacti	Supply, Di	Health Ser	Professior	Retail and	Sports, Re	Services N	Managers
22		JOB_TITLE	JOB_TITLE	JOB_TITLE	JOB_TITLE	JOB_TITLE	JOB_TITLE	JOB_TITLE	JOB_TITLE	JOB_TITLE	JOB_TITLE	JOB_TITLE	
23		Business I	Accountar	Account M	Business A	Acting Pro	ASSISTANT	AD Clinica	Accountin	Manager (	TECHNICA	ADMIN SEI	
24		CHAIRMAI	ACCOUNTS	Admin Cle	Business I	Bacterial \	Bulk Store	AD Site Sv	Accountin	Export Co	Technical	Central Fa	
25		Chief of O	Accounts I	ANIMAL HI	Category F	Chief Ope	CHANNEL I	Clinical M	Administr	Export Manager		Cleaning S	
26		Chief oper	Admin Ma	Area Sales	Clin Mgr	Compound	Cluster Co	COUNTRY	Analytical	Export Manager		Contract F	
27		Corporate	Administr	Area Sales	Clinical M	Compound	Cluster Co	CRU HEAD	Analytical	Export Manager		Contracto	
28		General M	ADMINIST	ASSISTANT	Clinical O	Dept Mngr	Commodit	DIRECTOR	Analytical	Export_Manager		Customer	
29		Group Hea	Assistant	Associate	Clinical R	Dryer Mar	Coolstore	Director: I	Analytical	Export Manager		Facilities	
30		Head of R	Business I	Brand Ass	Clinical R	Engineer	COUNTRY	Director: I	Assistant	EXPORT PICKER		Facilities_	
31		Vice Presi	Business I	Brand Ma	Clinical Te	Engineerir	DEMAND I	Director: I	Bussines I	MANAGER - EXPORT (		General M	
32			Cashbook	Brand Ma	Country M	Engineerir	Demand P	Head Clini	Bussiness	Export & Tender Mar		Logistics_	
33			CFO	BRAND MA	Country Pl	Engineerir	Dept Mngr	Head of Re	Chem Lab	Office Orderly		Maintenar	
34			CHEMICAL	BRAND PR	CRA Group	Engineerir	Dept Mngr	HEAD:GEN	Divisiona	Raw Store Manager		Office Ass	
35			Chief Accc	BU Head:T	Director: I	Engineerir	Despatch	Hub Mana	Export Ma	Store Manager		Receiving	
36			Chief Audi	Bus Unit H	Director: I	ENGINEERI	DISPATCH	Managed	Head supp	Export Marketing & A		SECURITY	
37			CHIEF FIN/	Business /	DRA Mana	Facilities	Dispatch r	MED MAN	Human Re	Export Manager		Security M	
38			Commerci	Business /	DRA Mana	FACILITY M	Distributi	Medical A	ICG & Support Manager			Store Supe	

Code	Title	Selected
1221	Sales and Marketing Manag	894
1219	Business Services and Adm	479
1324	Supply, Distribution and Re	230
1211	Finance Managers	195
1121	Managing Directors and Ch	182
1321	Manufacturing Managers	174
1212	Human Resource Managers	159
1223	Research and Development	137
1349	Professional Services Mana	99
1331	Information and Communic	72
1342	Health Service Managers	71
1439	Services Managers not Else	31
1222	Advertising and Public Rela	18
1421	Retail and Wholesale Trade	15
1213	Policy and Planning Manag	14
1112	Senior Government Official	10

3. Not mapped report – a spreadsheet providing an overview of the total number of workers that were not mapped to the OFO, their job titles and the companies they work for.

Example: Workers Not Mapped Spreadsheet

249 Workers not mapped					
Company AAA (SA)(Pty)Ltd.			**Company BBB Pty Ltd**		
8 Workers out of 121 Workers:			241 Workers:		
1	Commercial Contracts Administr		19	Medical Representative	
4	Customer Service Administrator		12	Senior Medical Rep	
1	Materials Controller		10	Account Manager	
2	Technical Service Administrato		10	Dedicated Customer Services Co	
			↓	↓ ↓ ↓	

Mapping Review Matrix per Sub-sector

The purpose of the Sub-sector mapping review matrixes is two-fold, namely:

1. Guide Stakeholder / Sub-sector expert discussions, and to
2. Guide Sub-sector Chamber feedback.

The Sub-sector mapping review matrix reports provide – in a more accessible format (i.e. MS Word) – an overview of the incorrect mappings and inconstancies identified as a result of the analysis of source data received from participating CHIETA employers during the 2013 WSP/ATR submission cycle.

Each Sub-sector mapping review matrix report contains a list of OFO Occupations for which the job title-to-OFO mapping either needed to be confirmed or clarified with Sub-sector representatives or experts. It has to be noted that this list of OFO Occupations include more occupations than the identified focus occupations.

The review matrix itself contains four columns as shown in the example in Table 1 below. In cases where only a few job titles mapped to a specific OFO Occupation had to be discussed, these job titles and the companies in which they are used are listed in the matrix.

It has to be emphasised that the matrixes containing the names of companies were released to the CHIETA only and discussed at Chamber meetings. Some of the Chambers felt that the reports can be released to SDFs as is (with companies names), while other Chambers strongly opposed such a notion. In the case of the latter, CHIETA administrative personnel first deleted other company names; before they released the matrix report to a specific company's SDF

The usage of OFO Occupations not applicable or unrelated to the Sub-sector or the Chemical Sector as a whole was highlighted and an appeal made to users of the matrix to remap these job titles to applicable OFO Occupations. See for example the job titles mapped to *Head of Department (Senior Government Manager)* in Table 1 below.

In cases where a large number of job titles mapped to a specific OFO Occupation had to be confirmed or reviewed, these job titles were listed in a separate table, stating the company, equity level (where applicable), job title and number of workers employed in the job. A mapping principle or guideline was given in the matrix (see the example of *Company Director* in Table 1) and then all job titles were listed in a separate table at the end of the matrix (see example in Table 2 below).

Table 1: Example – Mapping Review Matrix Structure

OFO Code	OFO Title	Confirm/Clarify	Action/Comments
111207	Head of Department (Senior Government Manager)	**Please remap 16 workers:** ▪ Company 1 ▪ Brand Ambassado ▪ Bu Head: Dermat ▪ Country DivHead ▪ Head Acc Pay ▪ Head Fin Contr ▪ Head of Departmen (x3) ▪ Head Prod SupSA ▪ Head Sub Sahara ▪ Head&Sen Rep ▪ Company 2 ▪ Chief operating officer ▪ Company 3 ▪ Mechanical Superintendent ▪ Company 4 ▪ dispatch administrator	
112101	Company Director Director (Enterprise / Organisation) Chief Executive Officer (CEO) Executive Director Managing Director	This is for top management position responsible for overall company governance and responsible for overseeing the activities of an entire company. The CEO usually also holds a position on the board of directors. CFO and COO report to CEO. The word director/executive in job titles might confuse this mapping. See Table 1 for reconsideration of 72 workers to Occupations relevant to function, e.g.: "Financial Director"; "Supply Chain Director"; "Country Manager"; etc.	
	Clarify role of "Validation" workers		
241104	Audit and Assurance Manager	▪ Company 1 ▪ Validations Manager	Sub-sector expert indicated that "Validation" workers are Industrial Pharmacists. However, mapping of different levels (i.e. Manager, Officer and Assistant) still need to be discussed.
242102	Organisation and Methods Analyst	Clarify/confirm 12 "Validation" workers: ▪ Company 2 ▪ PROJECTS&VALIDATION MANAGER ▪ Company 3 ▪ QA Validation Officer ▪ Validation Assistant (2 workers) ▪ Company 4 ▪ Method Validation Assistant ▪ Method Validation Analyst (4 workers)	
242202	Policy Analyst Systems Advisory Officer Evaluations	Clarify/confirm 13 "Validation" workers: ▪ Company 4 ▪ VALIDATION ASSISTANT (3 workers) ▪ VALIDATION LEADER (2 workers) ▪ VALIDATION OFFICER ▪ Company 1 ▪ Process Validation/Documentation Co	
242207	Compliance Officer	Clarify/confirm 24 "Validation" workers: ▪ Company 1 ▪ Validation Coordinator (2 workers) ▪ Company 5 ▪ Validation Analyst ▪ Validation Officer (10 workers) ▪ Validation Technologist (6 workers)	
		Confirm Job Titles mapped to Compliance Officer in Table 14	
242208	Risk Compliance Manager	Clarify/confirm 24 "Validation" workers: ▪ Company 7 ▪ Validations Manager	

Table 2: Example – Table: Job Titles Mapped to Specific Occupation [CEO (OFO Code 112101)]

ORGANISATION_NAME	JOB_TITLE	Workers	Correct Yes/No?
Company 1	CHIEF OPERATING OFFICER	2	
Company 2	Commercial Director	1	
Company 3	Country Manager	2	
Company 4	Deputy Director	1	
Company 5	Director	2	
Company 7	Director Human Resources	1	
Company 8	Engineering Director	1	
Company 9	FINANCE DIRECTOR	1	

Instances where the mapping had to be clarified or discussed with Sub-sector experts or representatives were highlighted (in a different colour) . For example, the mapping of similar job titles to different OFO Occupations (across Sub-sectors, within a Sub-sector and sometimes by the same company) – see Table 1 above.

Outcome/Steps/Decisions Taken as a Result of Mapping Review and Consultation

From the overview of reports discussed above, it is clear that several pertinent observations can be made from the information contained in the Occupational and Sub-Sector analysis reports. These observations made from the job title-to-OFO mapping review of the source data received from participating CHIETA employers during the 2013 WSP/ATR submission cycle can be summarised into four brought categories, namely:

- Inconsiderate mapping
- Inconsistent mapping
- OFO gaps
- Generic mapping challenges

In the paragraphs that follow, examples of incorrect mapping in these four categories will be highlighted together with the steps taken to resolve job title-to-OFO mapping challenges. It will be seen that some of these challenges are Sub-sector specific, while other mapping challenges are experienced across all CHIETA Sub-sectors.

Inconsiderate Mapping

The points listed below provide examples of inconsiderate mapping practices and illustrate the resulting effects thereof on skills planning.

- Ignorance for the link between qualification or equity level, professional registration or licence to practice requirements and an occupation, resulting in "upward/promotional" mapping. From comparisons made between Equity level status and OFO mapping it is clear that the reported Equity Level status of workers replicates a typical pyramidal organisational structure (i.e. a few Top Managers at the top with a large number of semi- and unskilled workers at the bottom). However, after mapping, the pyramid is turned upside down, with double the number of managers and professionals at the top of the structure.

Equity level status	Workers	%		OFO Major Group Title	Workers	%
Top management	321	1.5		Managers	**2814**	13.2
Senior management	**840**	3.9		Professionals	**5674**	26.7
Professionally qualified	**3661**	16.9		Technicians and Associates	**3654**	17.2
Skilled technical	**6622**	30.6		Clerical Support Workers	**2221**	10.4
Semi-skilled and Unskilled	**9633**	44.47		Service and Sales Workers	**213**	1.0
Not defined	586	2.7		Craft and Trades Workers	**402**	1.9
Total (OFO mapped workers)	**21663**	**100**		Operators and Assemblers	**3173**	14.9
				Elementary Occupations	**3115**	14.6
				Sub Total	**21266**	**100**

- Usage/acceptance of occupation titles unique to specific sectors, but unrelated to this sector, for example private companies mapping their employees to Public Service occupations such as Senior Government Officials or Special Forces Operators. Or companies that are not involved at all in mining accepting *Team Leader (Mining)* on the OFO when mapping *Shift Foreman* or *Shift Supervisor*.
- Indiscriminate acceptance of keyword search results in the mapping utility, without consideration for correctness or for similarity of tasks/outputs which are described at the unit group level of the OFO (detail that is available in the popup screen of the mapping search utility). For example: *Administration Manager* (job title) mapped to *Financial Administration Manager* instead of *Administrative Services Manager* on the OFO.

- Obvious incorrect mapping, for example *Chemical Production Machine Operator* mapped to *Financial Manager*.

Inconsistent Mapping

The points listed below provide examples of inconsistent mapping practices and examples of how discussions with industry experts (or industry as a whole) may resolve some of these challenges.

- The mapping of similar job titles to different OFO Occupations (across Sub-sectors, within a Sub-sector and sometimes by the same company), for example:
  - Job titles containing "*Validation"* (i.e. *Manager / Officer / Analyst / Technologist / Technician / Assistant*) were inconsistently mapped to seven different Occupations on the OFO – see example in Table 1 above.

    During discussions with Pharmaceuticals Sub-sector experts it was indicated that "Validation" workers are *Industrial Pharmacists*. However, mapping of different levels (i.e. Manager, Officer or Assistant) still need to be clarified and discussed to establish job title-to-OFO occupation mapping guidelines for SDFs.
  - Job titles containing "*Laboratory"* (i.e. *Analyst / Technician / Assistant*) were mapped across different Major Occupation groups on the OFO, including Professionals; Clerical Support Workers; Plant and Machine Operators and Assemblers and Elementary Occupations.

    More than half of all "Laboratory Analyst/Technician/Assistant" workers in Base Chemicals, Speciality Chemicals and in the Fast Moving Consumer Goods Sub-sector that were mapped to Chemistry Technician (OFO Code 311101) were reported to be semi- and unskilled workers.

    During discussions with Speciality Sub-sector experts it was suggested that CHIETA (i.e. industry as a whole) should "come up with a way forward": that is to find an industry wide solution to guide job title-to-OFO occupation mapping with regard to laboratory workers.

OFO Gaps

It has to be acknowledged that in some instances, SDFs are unable to relate jobs to the OFO due to a lack of suitable occupations on the OFO that represent the industry processes. The points listed below provide examples of such instances and actions taken to resolve these problems.

- **Quality management, assurance or control related workers**: The fact that less than half (44%) of all the workers that were mapped to *Quality Systems Manager* on the OFO are "Managers" or "Professionals" in terms of Equity level status suggested a gap in the OFO. This gap was confirmed during discussions with Sub-sector experts. As a result, two new Occupation titles related to manufacturing was added to the OFO, namely:
  - 132106 Manufacturing Quality Manager, *who plans, organises, directs, controls and coordinates the performance of the quality management system, produce data and report on performance, measuring against set standards in the manufacturing industry*, and
  - 684305 Quality Examiner (Manufactured Products), who *conducts in-line and/or end-line quality inspections on manufactured products*.
- **Pharmacist Assistant:** Another example of the disjuncture between the OFO, the workplace – and in this instance regulatory bodies – are Pharmacist Assistants:

- **The OFO:** *Pharmacist Assistant* is an alternative title under *Retail Pharmacist* (code 226203) on the OFO (i.e. a Professional worker).
- **The workplace:** SDFs representing companies in the Pharmaceuticals and Fast Moving Consumer Goods Sub-sectors have mapped 133 workers to code 226203 *Pharmacist Assistant* on the OFO. It has to be noted that only four (a mere 3%) of these workers have a professionally qualified equity level status.
- **The South African Pharmacy Council** (SAPC) is the regulator established in terms of the Pharmacy Act (No 53 of 1974) to regulate pharmacists, pharmacy support personnel and pharmacy premises in South Africa. The Pharmacy Act provides regulations relating to the registration of different categories of pharmacy support personnel. The SAPC classify *Pharmacist's assistant* and *Pharmacist technician* as "support personnel".

From the above listed points it is clear that *Pharmacist Assistant* is incorrectly placed on the OFO. However, according to participants to Chamber meetings, this anomaly can only be resolved through collaboration between the CHIETA (i.e. the Pharmaceuticals and Fast Moving Consumer Goods Sub-sectors), the Health and Welfare Sector Educational Training Authority (HWSETA), the SAPC and the Department of Higher Education and Training (DHET).

- **Medical Practitioners (Doctors):** The need for Medical Doctors in the pharmaceutical industry is a growing trend, but the role of Medical Doctors in the pharmaceutical industry is not generally well understood (Stonier, 2011).

  This notion became apparent from the inconsistent mapping of job titles such as Medical Advisor; Medical Scientific Liaison; and Regulatory Affairs Pharmacist to OFO Occupations such as General Practitioner (GP); Public Health Physician or Medical Superintendent.

  Two Occupations were added to the OFO which can be used to map some of the workers in the Pharmaceuticals and Fast Moving Consumer Goods Sub-sectors that were mapped to 134201 Medical Superintendent, to 221101 General Practitioner (GP) or to 221103 Public Health Physician in the 2013 WSP/ATR source data submission cycle:
  - 213111 Pharmaceutical Physician: *Advises commercial executives on medical and legal matters associated with the development of new treatments, established pharmaceutical products, marketing campaigns, and areas of unmet medical need. Conducts and oversees research dealing with the understanding of human diseases and the improvement of human health*.
  - 242213 Regulatory Affairs Officer: *Compiles and prepares scientific reports for submission to regulatory authorities and assists in obtaining government approval for drugs, medical devices, veterinary products, cosmetics, and foods*.
- **Intellectual Property Technical Advisor**: Note that "Intellectual Property Advisor" is an alternative title for 261901 Adjudicator on the OFO. Adjudicators are Legal Professionals who *hear, study and settle cases by using judicial procedures*.

  From vacancy adverts and job descriptions it became clear that Intellectual Property related workers (in the manufacturing industry) are not Legal Professionals. They are qualified Scientists (e.g. Chemists) or Engineers (e.g. Industrial or Chemical Engineers) that provide professional intelligence and policy research, advisory and administrative services with regard to intellectual property rights, trademarks and patent registration. As a result a new Occupation title related to the above stated outputs was added to the OFO, namely:

  - 242214 Intellectual Property Special Advisor / Intellectual Property Technical Advisor who *integrates expert technology appreciation and IP management principles to develop and execute Intellectual Property protocols and strategies that enable technology and business objectives*.

- **Fragrance Evaluator or Flavourist**: Specifically required by the Fast Moving Consumer Goods Sub-sector, this is a new addition to the OFO – 311104 Fragrance Evaluator or Flavourist *evaluates neat fragrance oils and flavour additives for production processes*.

Generic Mapping Challenges

Some of the challenges SDFs have to grapple with in their job title-to-OFO occupation mapping originate in the company/employer, the first of which relates to the practice of assigning a title to a job:

- Indiscriminate proliferation of combinations of Job Titles used by employers and the inconsistent use and capturing of these Job Titles on personnel management information data bases, for example:
  - Different spelling and differing use of uppercase and lowercase letters for the same Job Title.
  - The inconsistent use of spaces or punctuation marks (semicolon and dash or hyphen), for the same Job Title, for example: Job Title vs Job Title
Job–Title vs Job – Title
Job: Title vs Job : Title.
  - The use of abbreviations in some titles (e.g. Snr Technician) but not in others (e.g. Senior Technician).
  - The swap over of words in the Job Title, for example Chemical Technician vs Technician: Chemical.
- Non-descriptive Job Titles in payroll/house list (i.e. no specialisation or function included in the title) such as Analyst, Engineer, Artisan, Technician, Section Head, Supervisor, Inspector, Controller, Operator, Trainee or Candidate.

During discussions with Sub-sector experts and at Chamber meetings it became apparent that inconsiderate and inconsistent mapping are exacerbated by the following employer related factors:

- In some instances SDFs that are contracted or commissioned to complete WSP/ATR source data submissions do not have knowledge of the company or industry which result in ill-informed job title-to-OFO mapping decisions.
- Delaying WSP/ATR source data submission preparation to the last minute, leaving the SDF with little or no time to make enquiries with regard to non-descriptive job titles or to confirm or question qualifications/equity level status and job title relations.
- A last minute WSP/ATR source data submission does not allow the person who is responsible for "signing off" the submission to check or validate the job title-to OFO mapping.

Comparison 2013 vs 2014 WSP Source Data Submissions

A basic comparative analysis of the 2013 vs 2014 WSP/ATR source data submissions show shifts on two levels, namely:

1. Changes in company participation, and
2. Changes in job title-to-OFO mapping.

The observed shifts in participation and OFO mapping are highlighted in the paragraphs below.

Changes in Company Participation

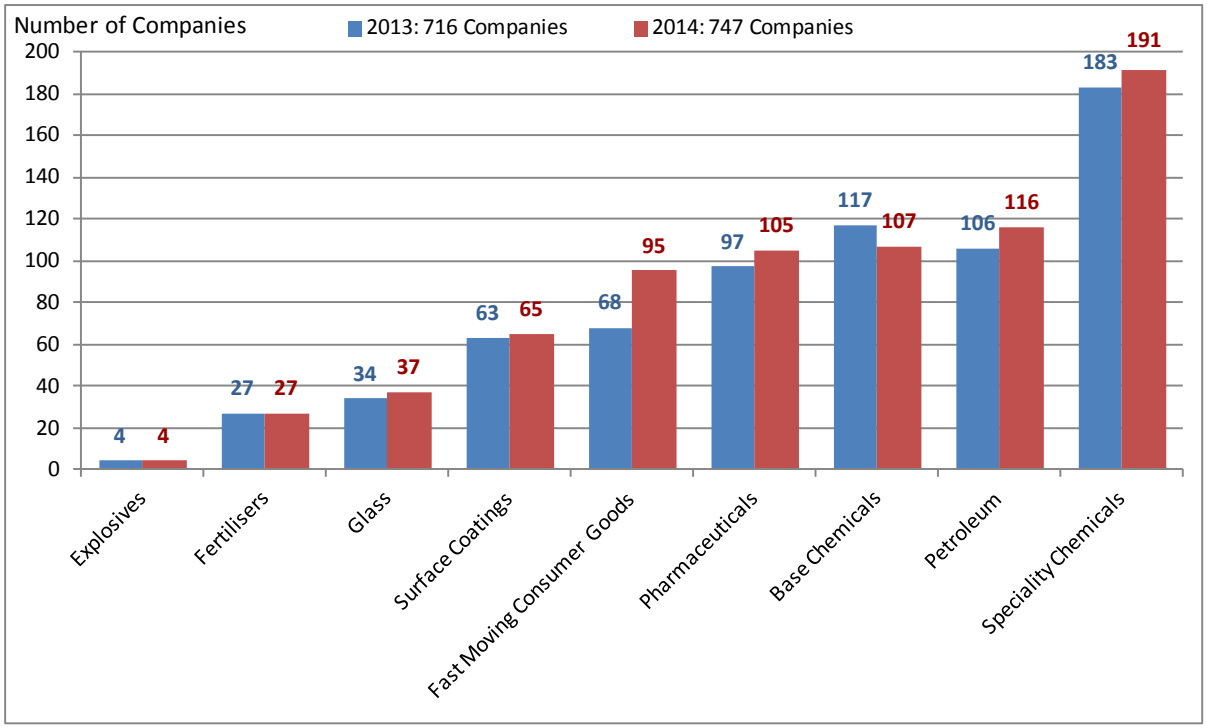
There was an actual increase of 32 companies that have submitted WSP/ATR source data for the 2014 cycle as opposed to 2013:

- 81 companies submitted in 2013, but not in 2014.
- 636 companies submitted in 2013 and in 2014.
- 113 companies submitted in 2014, but not in 2013.

Figure 1 below shows a decline in only one of the nine Sub-sectors, namely Base Chemicals. The lower number of companies in the Base Chemicals Sub-sector can be ascribed partially to the reallocation of certain companies to appropriate Sub-sectors.

Increases can be observed across all other Sub-sectors, accept in the case of the Explosives and Fertilisers Sub-sectors in which the number of companies stayed constant. The largest increase in the number of companies that have submitted WSP/ATR source data occurred in the Fast Moving Consumer Goods Sub-sector.

Figure 1: 2013 vs 2014 WSP Source Data Submissions



Changes in Job Title-to-OFO Mapping

It was mentioned before that a summary mapping review report and mapping review reports for each CHIETA focus occupation per Major Occupational Group were placed on the Website in February 2014. The purpose of these Mapping Overview reports was to draw attention to the most pertinent Job Title-to-OFO Occupation challenges observed. This was done in the hope that SDFs will use the information to avoid similar or correct previous mapping mistakes in their preparation for the 2014 WSP/ATR submission cycle which was scheduled to close on the 30th April 2014.

Only 95 SDFs downloaded the mapping review reports when the electronic cycle for 2014 WSP/ATR source data submissions opened in March 2014. However, it does seem as if those SDFs that have consulted the mapping review reports did indeed implement some of the recommendations made.

This is clearly visible in the uptake of the new OFO Occupations mentioned in the mapping review reports. It should be highlighted that because of the fact that the DHET did not release a 2014 version of the OFO, SDFs could become aware of new Occupations added to the OFO through the mapping review reports only. Table 3 below shows the uptake of Manufacturing Quality Managers by 92 companies.

Table 3: Job Title Mapping to New OFO Occupation 132106 Manufacturing Quality Manager

Sub-sector	Companies	Workers
Base Chemicals	13	22
Explosives	1	6
Fast Moving Consumer Goods	11	38
Fertilisers	0	0
Glass	3	5
Petroleum	2	7
Pharmaceuticals	30	109
Speciality Chemicals	25	39
Surface Coatings	7	15
Total	92	241

Other examples of the usage of new additions to the OFO include the following:

- 23 companies mapped 49 workers to 211302 Manufacture Research Chemist.
- 16 companies mapped 69 workers to 213111 Pharmaceutical Physician.
- 48 companies mapped 339 workers to 242213 Regulatory Affairs Officer.
- 3 companies mapped 6 workers to 242214 Intellectual Property Special Advisor.
- 3 companies mapped 5 workers to 311104 Fragrance Evaluator.
- 15 companies mapped 184 workers to 684305 Quality Examiner (Manufactured Products).

Another example of the influence the mapping review reports had on those SDFs that have consulted the reports is evident in their reconsideration of the link between equity level and an occupation. In 2013 nearly 17% of the workers that were mapped to 211301 Chemist had a semi- or unskilled equity level status. The 2014 WSP/ATR source data submission shows a decline in the number of workers mapped to 211301 Chemist due to the fact that nearly 200 workers were remapped. The result is that only 7% of the 491 workers that were mapped to 211301 Chemist in 2014 have a semi- or unskilled equity level status.

CHIETA Business Unit Analysis

The *CHIETA Qualification Matrix* tabled in July 2013 made mention of using a value chain approach to inform the process of identifying and defining occupations in the sector – see section entitled *Qualification Matrix*, below.

> *A value-chain could be defined as a physical representation of the various processes involved in producing goods (and services), starting with raw materials and ending with the delivered product.*

The value chain concept was described by Michael E. Porter of Harvard Business School in *The Competitive Advantage: Creating and Sustaining Superior Performance* (N.Y.: Free Press, 1985). According to the Porter model, within an organisation there are primary activities that add value, and there are support activities which are generally administrative, such as human resource management and procurement. The primary activities are organised as steps in a sequence or chain, represented on a value chain map. Though the concept of the value chain analysis is vital for the process of identifying the occupations related to the elements of a value chain the sequential nature of the value chain proved to be problematic if applied to the sector, or even the sub-sector. The principles outlined by Porter in defining a value chain was thus used in the analysis of CHIETA related occupations, but the sequencing of the elements were negated.

The following resources were also considered in the identification of at least the business units or value chain elements a Chemical Industry Value Chain should consist of:

Local sources:

- Sector Profile (Chapter 2 in CHIETA SSP)
- HSRC (DTI/CHIETA) 2004 study: *Skills Needs in the Chemical Industries Sector in South Africa*.
- HSRC/DPRU/SWOP (DoL) 2008 study: *South African Chemical Sector Report on Skills Development and the Government's New Economic Policy Priorities*.
- Ozone Business Consulting (Pty) Ltd [O3bcTM] – formerly known as Chemical Marketing and Consulting Services cc / (was involved in both above mentioned studies and previous CHIETA SSP drafting).

International sources:

- *Focus Topics 2012 for the Chemical Industry* (Camelot Management Consultants).
- *Overview of the Chemicals Industry* (Innovest Strategic Value Advisors, 2007).
- The American Chemistry Council http://www.americanchemistry.com
- *On the Value Chain and International Specialization of China's Pharmaceutical Industry* (Zhang, Y., Li, D., Yang, C. & Du, Q., 2009).
- *Value Chain Management in the Chemical Industry. Global Value Chain Planning of Commodities* (Kannegiesser, M. 2008).

The result of the research is a framework containing the business units that were identified as being typical to the chemical manufacturing sector as depicted in Table 4 below. The framework was used to create a *CHIETA Business Unit Matrix* listing OFO Occupations on the X-Axis and the Sub-Sectors and business units on the Y-Axis. The job title-to-OFO mapping review of WSP/ATR source data submitted in 2013 were then used to populate the matrix to summarise and analyse the jobs reported on in the 2013 WSP/ATR submissions.

Table 4: Typical Business Units in the Chemical Manufacturing Sector

Business Unit Clusters	Business Unit
Business Infrastructure	General Management
	Accounting
	Finance
	Strategic Planning
	Governance
	Public Relations
	Administration
	Information and Communications Technology
	Policy
Human Resource Management	Recruiting
	Administration
	Training & Development
	Labour
	Occupational Health and Safety
Technology Development	Research and Development (R&D)
	Improvement and Optimisation
	Intellectual Property
	Decision Support System (Data Warehouse and Business Analysis)
	Environmental Management
	Exploration and Mining
Logistics & Warehousing	Procurement
	Inventory and Stock
	Receiving / Inbound
	Dispatch / Outbound
	Warehouse / Stores
	Transportation and Shipping
Operations: Manufacturing & Production	Materials
	Production Planning and Control
	Quality
	Operations
	Packaging and Storing
	Service and Maintenance
	Waste and Recycling
Marketing, Distribution & Sales	Imports and Exports
	Market Analysis
	Sale and Retail
	Service

The matrix was made available in an MS Excel workbook: *CHIETA Business Unit Analysis*.[3] The matrix had been discussed with experts of the various Sub-sectors and was used to inform the validation of CHIETA focus occupations. The utility of the matrix was also demonstrated and discussed at scheduled Chamber meetings.

The value of the *Business Unit Matrix* was acknowledged by participants to the Chamber meetings but concern was expressed with regard to the future usage of the matrix. Participants insisted that the CHIETA put measures in place for the updating of the matrix with future source data submissions to track shifts in skills needs.

[3] To avoid repetition, the structure and usage of the matrix is explained and illustrated in the next section entitled *CHIETA Business Unit Matrix 2014*.

CHIETA Business Unit Matrix 2014

It is believed the *CHIETA Business Unit Matrix* will assist in the proper referencing of jobs to the correct occupation which should have a positive impact on skills development planning processes. As an example: Specialisations per occupation seemed to be ill defined in the sector (e.g. the role of Medical Practitioners in the chemicals sector). The matrix could assist specific sub-sectors to define specific outputs per business unit for a specific occupation, thus informing the supply – demand analysis.

The *CHIETA Business Unit Matrix* developed and populated with WSP/ATR source data submitted in 2013 were repopulated with cleaned 2014 WSP/ATR source data (i.e. after employers were moved to correct sub-sectors and job title-to-OFO mapping was reviewed).

The screenshot example below will be used to outline the utility and value of the matrix for the chemicals sector in the paragraphs following Figure 2.

Figure 2: Screenshot Example of CHIETA Business Unit Matrix

1				2			3 Logistics & Warehousing						Operations: Manufacturing & Production						5	Marketing, Distribution & Sales			
Focus 2014	Occupation Title	Mapping consideration	OFO Code	Sub-sector 1	Sub-sector 2	Sub-sector 3	Procurement	Inventory & Stock	Receiving; Inbound	Dispatch; Outbound	Warehouse / Stores	Transportation & Shipping	Materials	Production Planning, Control &	Quality	Operations	Packaging & Storing	Maintenance	Waste & Recycling	Import & Exports	Market Analysis	Sale & Retail	Service
	Senior Government Officials	Legisla	1112	0	3	0																	
X	Health and Safety Manager		121206	44	17	196																	
X	Business Services and Administration Managers not		1219	211	127	976								X	X								
X	Quality Systems Manager		121908	15	18	5									X								
X	Sales and Marketing Managers		1221	386	497	631											X				X	X	X
X	Manufacturing Managers	4	1321	414	288	1026							X	X	X	X	X	X	X				
X	Supply, Distribution and Related Managers		1324	161	147	433	X	X	X	X	X	X											
	Health Service Managers	CHIET	1342	34	2	0																	
X	Chemists		2113	26	24	53								X	X								
X	Chemist		211301	19	11	46								X	X								
X	Manufacture Research Chemist		211302	7	13	7									X								
	Town and Traffic Planners	Town a	2164	8	1	3																	
X	Industrial Pharmacist		226202	0	7	0		X	X	X	X	X		X	X								
X	Environmental and Occupational Health and Hygiene		2263	130	29	929									X								
X	Technical and Medical Sales Professionals (Excludin		2433	237	70	220																X	X
	Sales Representative (Educational Products and Ser		243303	0	1	0																	
X	Chemical and Physical Science Technicians		3111	446	260	1035									X								
X	Manufacturing Supervisors		3122	711	472	2085	X	X	X	X	X	X	X	X	X	X	X	X	X				
X	Chemical Processing Plant Controllers		3133	1353	30	3427							X	X	X	X	X		X				
	Customs and Border Inspectors	Regula	3351	1	5	9																	
	Contact Centre Information Clerks		4222	96	21	166																X	X
X	Stock Clerks		4321	493	297	816	X	X	X	X	X	X					X						
	Special Forces Defence Members		5422	10	4	34																	
X	Glaziers		6425	0	180	0							X	X	X	X	X		X				
X	Welders and Flame Cutters		6512	42	1	137												X					
	Printers		6622	4	5	0																	
	Print Finishing and Binding Workers		6623	79	5	0																	
X	Building and Related Electricians		6711	134	63	627												X					
	Mineral and Stone Processing Plant Operators		7112	208	0	73																	
X	Glass and Ceramics Plant Operators		7181	4	0	0																	
	Steam Engine and Boiler Operators		7182	3	3	19																	
X	Packing, Bottling and Labelling Machine Operators		7183	210	1556	41											X						
X	Stationary Plant and Machine Operators not Elsewhe		7189	379	71	79																	
	Integrated Manufacturing Line Machine Setter		718904	0	0	0																	
	Engineering Production Systems Worker		718905	16	0	1																	
X	Bulk Materials Handling Plant Operator		718906	334	66	77																	
	Weighbridge Operator		718907	14	5	1																	

1. The identified focus occupations are shown (with an **X**) on the matrix to indicate in which of the business units they play a role and to also ensure that their output pertaining to the business unit is addressed in profiles and ensuing qualification development processes.

2. The job quantitative analysis of the 2014 WSP/ATR submission is indicated to inform the consideration of the occupation per business unit for the specific Sub-sectors and the CHIETA as a whole.
3. By filtering on the "**X**s" per business unit an indication of the relevant occupations is listed, which could become a vital source of information for career and developmental pathways, as shown in the example below:

Occupation Title	OFO Unit Code	Number of Workers	Business Unit Operations
Manufacturing Managers	1321	2900	**X**
Manufacturing Supervisors	3122	6116	**X**
Chemical Processing Plant Controllers	3133	5725	**X**
Chemical Products Plant and Machine Operators	7131	9016	**X**
Manufacturing Labourers (i.e. Plant Workers)	8329	5373	**X**

4. The matrix is vital to clarify occupation anomalies such as occupation titles unique to specific sectors, but unrelated to the Chemicals sector (e.g. government regulatory occupations being used for reporting purposes). All occupations considered not associated with CHIETA have been highlighted on the matrix, guiding the end user to re-consider their selection as they fall in government related business units, which (in most instances) fall outside the scope of the CHIETA, for example:
   - Senior Government Officials: *Legislators or government officials or functionaries are involved in Public Administration or Government*.
   - Health Service Managers: *CHIETA does not represent institutions that provide clinical and community health care services in hospitals, clinics or public health agencies*.
5. Comments for clarification are made at certain of the business units to guide the allocation of occupations to those business units, for example:
   - Occupational Health and Safety related occupations are driven by the Occupational Health and Safety Act (No. 85 of 1993), is concerned with the health and safety of workers and therefore resides under the *Human Resource Management* business unit; as opposed to
   - Environmental Management related workers that are focussed on the implementation of the National Environmental Management Act (No. 107 of 1998) and therefore clustered under the *Technology Development business* unit.
   - Under *Services and Maintenance*, the matrix user is reminded that these "services" *refer to all production critical elements such as water and electricity supply*, while "maintenance" *refers to equipment and installations that enable the manufacturing of products and related logistic support; this includes the upgrading and installation of new systems*.

Occupation Profiling

Occupations remain the most common means of describing skills required by employees in the workplace (Wilson, 2009:15). Occupations, as organised on the Organising Framework for Occupations (OFO) provide some indication of the expected output that is related to the job the people are appointed in.

The Skillogical process helps to introduce well defined job profiles that inform performance assessment and related development plans; advertisements for new appointments; and career paths. An occupation profile is generated by doing research on what the tasks, knowledge, professional registration criteria, skills, expected qualifications and progression pathway are for a specific occupation and then to validate the research findings with industry representatives.[4]

Occupation profiles provide a standardised framework for describing or informing job and post profiles and form the basis for the measurement of human capital within an organisation.

Covering 54 occupations, the CHIETA has developed its first *Occupational Dictionary* in 2012. The CHIETA has extended its commitment in wanting to understand its constituency by defining output and related qualification profiles for a further 87 occupations. Now covering 141 focus occupations, the *CHIETA Occupation Handbook* is the first of its kind in the sector.

Finalising profiles on focus occupations in the Chemicals sector is an iterative process which will require participation and commitment from industry for the refinement of its quality and quantity. All sector stakeholders should be afforded the opportunity to provide input and comment on this product.

[4] Please refer to *Step 4: Profile Occupations and Link to Source Data* in *Introduction to Skillogical Process* for an overview of the process and methodology implemented by IT Aware to occupational profiles.

CHIETA Qualification Matrix

A skills audit that aimed at (amongst other objectives) testing the validity of the occupation profiles developed and also to obtain industry feedback on matters such as qualifications has been cancelled, making the defining of the content largely dependent on desktop research. Some input was received from industry after distributing the dictionary to stakeholders.

The initial *Qualification Matrix* submitted in August 2013 was expanded with the following information:

- The qualifications for the additional 90 focus occupations, occupations defined in the 2013 dictionary were also expanded, where gaps existed.
- The generic qualification references for occupations were expanded with a list of Learnerships.
- A comprehensive list of Regsitered Qualifications and Learnerships that are linked to the specific occupations were added to the matrix. The identified Learnership titles were also added to the Profile Dictionary.
- Information obtained from the CHIETA's ETQA revealed some dislocation between what were deemed to be Focus Occupations and what are being managed as being part of the CHIETA scope. This dislocation has been catered for by mapping the qualifications and Learnerships to occupations and adding them to the matrix. A column (*Focus?*) makes it possible to filter the 45 occupations identified by means of this addition.
- The list of identified registered qualifications and learnerships were checked to make sure their reference codes are correct. This makes the content of the matrix usable as reference for reports and options in lookup values going forward.
- A column, ETQA_ RERENCED, makes it also possible for the ETQA to identify those Occupations and related qualifications and learnerships that are deemed to be Focus Occupations, but have not been managed by the ETQA before.

These additions to the qualification matrix, with the mentioned filters added, makes it possible to manage the occupations and related learning that falls within the declared scope of the CHIETA.

The newly defined Business Unit Matrix adds another dimension to the management of the learning related to occupations falling within the scope of the CHIETA. Content of Qualifications and Learnerships linked to specific occupations should in future be evaluated in terms of the specific business units linked to the occupation on the Business Unit Matrix. This should go a long way in ensuring Qualifications and Learnerships not only address the outputs defined in the Profile Dictionary, but also the context in which these outputs will have to be delivered in, i.e. specific business units. Learnerships, which are specifically geared toward workplace application, should use the indication of Business Units on the Business Unit Matrix to advise on specific work experience preferred as part of the execution of the learnership contract.

Suggestions/Implications for Future Usage and Maintenance of Business Unit and Qualification Matrixes

The paragraphs below provide suggestions and implications for future usage and maintenance of the mapping review reports, and of the business unit and qualification matrixes.

Job Title-to-OFO Mapping

The value of the mapping review reports was confirmed by the fact that those SDFs that have consulted the mapping review reports on job title-to-Major OFO group occupations did indeed implement some of the recommendations made in these reports. The CHIETA has to ensure that all companies (all SDFs) obtain and consult the job title-to-OFO mapping review reports.

However, the Sub-sector mapping review reports could not be released in time for the 2014 WSP/ATR source data submissions due to the fact that these reports had to be discussed with Sub-sector experts and presented to Chamber meetings. Notably, the Sub-sector mapping review reports cover more occupations than the identified CHIETA focus occupations.

The CHIETA has to release the Sub-sector mapping review reports to all SDF's representing companies in Chambers that have allowed the release of the reports with company names in it. In cases where Chambers disapproved of a universal release of mapping review reports that contains company names, CHIETA personnel have to withdraw company specific mapping references and send it to individual companies or remove the references to Company Names.

The 2014 WSP/ATR source data submissions were cleaned (i.e. companies were moved to correct sub-sectors and job title-to-OFO mapping was reviewed by IT Aware) before it was handed over to the CHIETA in June 2014 in MS Excel format. The CHIETA has to extract the data per company and release the data to allow individual companies to interrogate the recommendations and comments made with regard to the remapping or clarification of job titles.

The CHIETA should consider the themes listed below for the development of informative packages and/or for capacity building workshops directed at specific target groups:

- **Using the OFO and IT Aware's mapping utility**: A concerted effort is needed to train relevant CHIETA personnel, SDFs, and HR managers and practitioners in the structure and use of the OFO and mapping utility. Basic principles such as the significance of the 8 Major Groups in identifying relevant occupations need to be entrenched.
- **Value of source data for skills panning:** Inform top management of companies of value of source data for skills planning, for example:
  - The accuracy with which organisations articulate and relate their structure to the occupations on the OFO is vital for the successful management of skills development within the organisation or within a specific sector.
  - The combination of biographical data, linked to workplace output information and learning required per task and knowledge indicator creates a wealth of information that can be analysed and used for skills planning.
  - The critical usage of the OFO will contribute to the updating and refinement of occupational classification. When a job (title) cannot be related to or found on the OFO or when a new job emerge the CHIETA should facilitate clarification and consensus across

companies in the same Sub-sector and across Sub-sectors before motivations for changes or additions to the OFO are submitted to DHET.

- **Job title naming conventions**: Guide HR Managers and Practitioners with regard to payroll/house list data preparation and cleaning, linking job titles with OFO occupations, avoiding job title proliferation and non-descriptive job titles, avoiding different spelling and differing use of uppercase and lowercase letters for the same job title, and the inconsistent use of spaces or punctuation marks and abbreviations. Motivate HR Managers and Practitioners (and labour) to use the OFO to guide the naming convention for job and post titles. Regulatory forums such as Bargaining Councils should also be assisted to articulate policies and other guidance documentation in terms of occupations.
- **Standardisation of Chemicals sector specific job titles for similar jobs** across companies in the same Sub-sector and across Sub-sectors. For example, discuss what "laboratory", "control", "inspection" or "validation" work entails; which job titles are applicable at what level and develop and agree on guidelines for OFO mapping. This exercise should be conducted at Chamber level to incorporate the views from industry experts as well as labour.
- **The link between qualification or equity level, professional registration or licence to practice requirements and an occupation:** HR Managers, Practitioners and SDFs should be informed with regard to several related principles, for example:
  - The OFO Guidelines published by DHET with the release of every new version of the OFO provides an indication of the relation between skill levels[5] and occupational groups on the OFO. According these guidelines workers at an unskilled equity level (i.e. workers with a primary level of education or with NQF 1 or NQF 2 qualifications) should be mapped to Elementary Occupations on the OFO and maybe to Plant and Machine Operators and Assemblers, but definitely not to Managers, Professionals or to Technicians and Associate Professionals.
  - With regard to occupations that fall in the ambit of a statutory or mandatory professional body it should be a principled practice that only workers who are eligible to register at an engineering professional body as an Engineer should have the job title Engineer in the workplace and therefore be mapped to a Professional occupation at Major Group 2 on the OFO.
  - Similarly, a worker should not hold the job title Pharmacist and mapped to 226202 Industrial Pharmacist on the OFO if that worker is not registered (by law) with the South African Pharmacy Council (SAPC).
  - The National Artisan Moderation Body (NAMB) went through a process of identifying occupations to be listed as "trades". A worker should not be called a Glazier; Metal Machinist; Mechanical Fitter; Electrician and mapped to these occupations on the OFO if the worker does not have the relevant trade certificate (i.e. have past his/her trade test).
- **Avoiding non-related occupations:** The OFO uses similarities in terms of tasks and skills to categorise similar jobs into occupations and to classify these occupations into occupational groups. This result in a structure where certain occupational groups can be identified that are industry specific. SDFs should avoid occupations considered not associated with CHIETA and

[5] In terms of International Standard Classification of Occupations (ISCO) skills levels, the International Standard Classification of Education (ISCED-97), the National Qualifications Framework as well as with the entry, intermediate and advanced levels referred to in the National Skills Development Strategy.

which have been highlighted in Red on the *Business Unit Matrix*. Examples of industry specific occupational groups include the following:

- *Public Sector (government) Occupations*: Legislators and Senior Officials, Professional Services Managers, Town and Traffic Planners, Regulatory Government Associate Professionals or Commissioned and Non-commissioned Armed Forces Officers.
- *Accredited Financial Services Industry* (i.e. Banks and Insurance Companies): Financial and Insurance Services Branch Managers, Credit or Loans Officers, Valuers and Loss Assessors or Tellers, Money (Debt) Collectors and Related Clerks.
- *Entertainment Industry*: Film, Stage and Related Directors and Producers (including Technical Directors) or Broadcasting and Audio-visual Technicians (including Production Assistants).

Business Unit Matrix

The identified business units, their relation to especially the CHIETA focus occupations filtered per sub-sector should become the springboard for all future chamber deliberations on labour market supply and demand. It is suggested that the Technology Development and Operations: Manufacturing and Production business unit clusters are the primary focus of the CHIETA Chambers for the allocation of resources to ensure future human capital.

With regard to maintenance it is suggested that the CHIETA update the *Business Unit Matrix* on an annual basis as soon as the WSP/ATR source data submissions are cleaned (i.e. after employers were moved to correct sub-sectors and job title-to-OFO mapping was reviewed). The cleaned data should be used to determine or confirm usage. Though this quantitative evaluation is not the only indicator of Sector scope it goes a long way at identifying trends.

With regard to using the *Business Unit Matrix* as a tool to determine and analyse year-to-year shifts, it has to be emphasised that this can only be done if data is selected of only those companies that have submitted WSP/ATR source data in each consecutive year.

The identified business units per occupation should be used when defining developmental pathways.

Qualification Matrix

The information contained in the Qualification Matrix should inform all data generation processes. This implies the lookup values for the Discretionary grant System and WSp-ATR templates should feed off the information and reference codes reflected on the Matrix. The referencing of the Qualification Matrix is the only way in ensuring SQMR integrity.

Industry input on Professional Registration and Licences to Practice is required to expand the Qualification Matrix. An exhaustive list of Qualifications (that includes Professional Registrations and Licences to Practices) should be used to update the Funding Window definition of future cycles. This will ensure critical Trades such as Electrician is included as a funded occupation. The Qualification Matrix should also be used to argue decisions on the inclusion or exclusion of critical learning such as Artisan Learnerships in the APP.

References

Cedefop (European Centre for the Development of Vocational Training). 2008. *Systems for anticipation of skill needs in the EU Member States*. Cedefop working paper No 1, October 2008. [O] Available: http://www.cedefop.europa.eu/en/Files/WORKINGPAPER01_OCT2008.PDF Accessed: 25 June 2012.

DHET (Department of Higher Education and Training). 2012. *The Organising Framework for Occupations (OFO) 2012*.

Erasmus, J & Van Zyl, J. 2012. *Identifying Skills Needs in the South African Labour Market. An introduction to IT Aware's Skillogical Process*. IT Aware, Krugersdorp.

Holt, R, Sawicki, S & Sloan, J. 2010. *A Theoretical Review of Skill Shortages and Skill Needs*. UK: UK Commission for Employment and Skills (UKCES). [O] Available: http://www.ukces.org.uk/assets/ukces/docs/publications/evidence-report-20-a-theoretical-review-of-skill-shortages-and-skill-needs.pdf Accessed: 14 June 2012.

Karmel, T. 2011. *The challenge of measurement: statistics for planning human resource development*. The National Centre for Vocational Education Research (NCVER). [O] Available: http://www.ncver.edu.au/publications/2418.html Accessed: 28 September 2011.

Khanmohammadi, S, Hajiha, A & Jassbi, J. 2005. *Individual Job Assignment using the Qualification Matrix*. Proceedings of the 6th WSEAS int. Conf. on EVOLUTIONARY COMPUTING, Lisbon, Portugal, June 16-18, 2005 (pp 146-151).

The Learning Network). 2012. *Integrated Qualifications Framework*. [O] Available:http://www.tln.co.za/merseta/ Accessed: 8 June 2012

MQA (Mining Qualifications Authority). 2010. *MQF Qual Frame Introduction 20100910.pdf* [O] Available: http://www.mqa.org.za/siteimgs/MQF%20Introduction%2020100910.pdf Accessed: 8 June 2012

Rebernik, M & Bradač, B. 2009. *Idea evaluation methods and techniques*. [O] Available: http://www.creative-trainer.eu/fileadmin/template/download/module_idea_evaluation_final.pdf Accessed: 8 June 2012

Stats SA (Statistics South Africa). 1993. *Standard Industrial Classification of all Economic Activities (Fifth Edition)*. [O] Available: http://www.statssa.gov.za/additional_services/sic/preface.htm Accessed: 16 July 2012.

UNESCO (United Nations Educational, Scientific and Cultural Organisation). 2011. *International Standard Classification of Education 2011*. UNESCO Institute for Statistics. [O] Available: http://www.uis.unesco.org/Education/Documents/UNESCO_GC_36C-19_ISCED_EN.pdf

Accessed: 17 July 2012.

Stonier, P. 2013. *An Insight into Careers for Doctors with the UK Pharmaceutical Industry*. AXESS [O] Available: http://www.axess.co.uk/about-us/careers-doctors-uk-pharma-industry/ Accessed: 6 February 2014

The University of Texas at Austin). 2012. *Form a Selection Panel or Develop a Selection Matrix*. [O] Available: http://www.utexas.edu/hr/manager/hiring/form.html Accessed: 8 June 2012

Wayne State University). 2012. *Employee Qualifications Matrix*. [O] Available: http://www.hr.wayne.edu/help/qualifications_matrix/6.0_completing_the_qualification_matrix.htm Accessed: 8 June 2012

Wilson RA. 2008. *UK approaches to Skill Needs Analysis and Forecasting: Lessons for the Czech Republic*. (Contribution to Key activity No 5: Proposal of a system for regular analyses and forecasts of skills needs in the labour market and its use by employment services in the Czech Republic). Institute for Employment Research, University of Warwick, Coventry. [O] Available: http://www2.warwick.ac.uk/fac/soc/ier/publications/2008/czech_republic_revised_final.pdf Accessed: 26 June 2012.

Wilson RA. 2009. *The Extent to Which Employer Data on Employment and Skill Issues in the UK are Fit for Purpose*. (Contributing to the Debate: Assessing the Evidence Base on Skills and Employment in the UK). Paper presented at a workshop organised by UKCES December 9th 2008. [O] Available: http://www.ukces.org.uk/assets/ukces/docs/supporting-docs/lmi-thinkpiece-rob-wilson.pdf Accessed: 26 June 2012.

Woods, JF & O'Leary, CJ. 2006. *Conceptual Framework for an Optimal Labour Market Information System: Final Report.* Upjohn Institute Technical Report No. 07-022. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research. [O] Available: http://research.upjohn.org/up_technicalreports/22. Accessed: 5 June 2012.

Addendums

The following Addendums are attached to this report:

Addendum A: Occupation Mapping Review Report per Major OFO Occupation Group

The mapping of job titles to occupations on the OFO for the purposes of 2013 WSP/ATR submissions were analysed in terms of job title usage (i.e. in the occupation, across sub-sectors and equity level statuses). A summary report for each CHIETA focus occupation per Major Occupational Group was prepared, submitted to CHIETA and placed on the Website in February 2014.

Addendum B: Occupation Mapping Review Report per Sub-sector

The Sub-sector mapping review reports provide an overview of the incorrect mappings and inconstancies identified as a result of the analysis of source data received from participating CHIETA employers during the 2013 WSP/ATR submission cycle. Each Sub-sector mapping review report contains a list of OFO Occupations for which the job title-to-OFO mapping either needed to be confirmed or clarified with Sub-sector representatives or experts. It has to be noted that this list of OFO Occupations include more occupations than the identified CHIETA focus occupations.

Addendum C: CHIETA Business Unit Analysis Background Documents

MS PowerPoint presentation, entitled *Occupational Profiling Discussion 16 August 2013* to introduce and discuss the concept of using an industry value chain as guiding framework for occupational profiling.

MS Word document entitled *Chamber Feedback* that introduces the value chain approach and related research that informed the identification of business units considered as being typical to a chemical manufacturing sector. These business units or elements of a chemical manufacturing value chain were then used to develop a matrix to summarise and analyse the jobs reported on in the 2013 WSP & ATR submissions. The matrix is available as MS Excel document – *CHIETA Business Unit Analysis*.

Addendum D: CHIETA Qualification Matrix

Introduction to and clarification of what is meant by the concept *qualification matrix* and the approach followed to develop the *CHIETA Qualification Matrix* (available in MS Excel).