Combining quantitative and qualitative methods in forecasting qualified labour demand in the South African accommodation industry

R Minnaar

25959468

ORCID ID 0000 00002 5566 3587

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Promoter: Prof A Saayman

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"What you get by achieving your goals is not as important as what you become

by achieving your goals" ~ Henry David Thoreau

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ABSTRACT

Worldwide, skills shortages in the labour market have become more pronounced over the past several years. This has led to a vast gap in talent which has devastating impacts in especially the service industries, such as the accommodation industry, which are widely known to be more heavily reliant on human interaction that other industries. The accommodation industry is also an under-skilled industry, with employment structures that are ill equipped to deal with the diverse skills needed to be successfully employed and to climb the succession ladder in this industry.

South Africa is becoming a popular tourist destination. The industry is growing and tourism is therefore becoming a major contributor to economic growth and employment of employees with varying skill levels in the country. This study aims to forecast the demand for various job levels and the qualifications required to meet this growing demand in the accommodation industry in South Africa – a key component of the tourism offering. The research question addressed in this study was "*What is the demand for labour with different levels of education in the accommodation sector of South Africa over the next 5 years?"*

This study uses a combination of qualitative and quantitative research methods. Due to variations in demand and supply of employees in the hospitality industry, data is scarce and mostly qualitative in nature. For the quantitative part of the research, data from Statistics South Africa (Stats SA), Culture Arts Tourism Hospitality and Sport Sector Education and Training Authority (CATHSSETA), as well as labour and other sectoral data from Quantec are used.

Quantitative forecasting results are based on time series forecasting methods, the bottom-up coefficient approach and the top-down approach to manpower planning. The time-series forecasts and the bottom-up approach deliver comparable results, while the top-down approach gives inflated labour demand figures.

Three scenarios based on these forecasts were presented to role players of the financial and human resources departments of the largest and most influential accommodation groups in South Africa for qualitative adjustment. After the adjustments made by the experts, the results of this study indicate that the demand for highly skilled labour for the managerial category is higher than the other highly skilled categories, and that these occupations require a minimum of a diploma or degree. For the skilled labour category, the demand is highest in the service and sales workers category, for which certificates and diplomas are seen as minimum requirements.

The important contributions of this study towards the industry, are that educational institutions are able to better prepare graduates for the accommodation industry, ensuring that the graduates meet the demands of the industry in terms of qualifications and skills. In terms of policy recommendations, the accommodation industry could develop industry specific policies to deal with the challenges around the negative image of the accommodation industry in terms of long hours, unskilled work, and low wages. In terms of research recommendations, the bottom-up approach and the time-series methods provide comparable results and can be utilised for labour forecasting in other industries also.

Word Count: 501

Keywords: Labour demand, Accommodation industry, Forecasting

ABBREVIATIONS

ABET	Adult Basic Education Training
AIC	Akaike
AI	Artificial Intelligence
AIDS	Almost Ideal Demand System
ANN	Artificial Neural Network
APE	Absolute percentage error
AR	Autoregressive Models
ARDL	Autoregressive Distributed Lag
ARMA	Autoregressive Moving Average
ARIMA	Autoregressive Integrated Moving Average
B&B	Bed and Breakfast
BSM	Basic Structural Model
BVAR	Bayesian VAR
CATHSSETA	Culture Arts Tourism Hospitality and Sport Sector Education and Training Authority
CDM	Clean Development Mechanism
CLRM	Classic Linear Regression Model
CPI	Consumer Price Index
DES	Double Exponential Smoothing
DHET	Department of Higher Education and Training
ECM	Error Correction Model
FET	Further Education and Training colleges
GA	Generic Algorithms
GDP	Gross Domestic Product
HR	Human Resources
HSRC	Human Sciences Research Council
ILO	International Labour Organisation
JSE	Johannesburg Stock Exchange
LMIP	Labour Market Intelligence Partnership
LSI	Informal labour
LSF	Formal labour
LSHS	Highly skilled

LSS	Skilled
LSSEMI	Semi-skilled
MA	Moving Averages Model
MAD	Mean Absolute Deviation
MAPE	Mean Absolute Percentage Error
MESE	Meetings, Exhibitions and Special Events
MSE	Mean Squared Error
MTSF	Medium-Term Strategic Framework
NCV	National Certificate Vocational
NDP	National Development Plan
NDT	National Department of Tourism
NQF	National Qualifications Framework
NSDS	National Skills Development Strategy
NTSS	National Tourism Sector Strategy
OFO	Organising Framework of Occupations
OLS	Ordinary Least Squares
OSS	Operational Support Staff
PB	Percentage Best
QC	Quality Councils
QCTC	Quality Council for Trades and Occupations
RMSE	Relative Mean Squared Error
RMSPE	Relative Mean Squared Percentage Error
RPL	Recognition of Prior Learning
RS	Rough Set
RV	Rental Van
SAM	Social Accounting Matrix
SAQA	South African Qualifications Authority
SARIMA	Seasonal Autoregressive Moving Average
SAT	South African Tourism
SEM	Single Exponential Model
SES	Single Exponential Smoothing
SETA	Sector Education and Training Authority
SIC	Standard Industrial Classification
SMME	Small, Medium and Micro-sized Enterprises

Stats SA	Statistics South Africa
STSM	Structural Time Series Model
SVM	Support Vector Model
TGCSA	Tourism Grading Council of South Africa
THETA	The Tourism, Hospitality and Sports Education and Training Authority
TSA	Tourism Satellite Account
TVET	Technical and Vocational Education and Training colleges (new term for Further Education and Training colleges since 2014)
UMALUSI	Council for Quality Assurance in General and Further Education and Training
VAR	Vector Autoregressive Models
VECM	Vector Error Correction Model
WTTC	World Travel and Tourism Council

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CHAPTER ONE

INTRODUCTION TO THE RESEARCH PROBLEM AND BACKGROUND

1.1 INTRODUCTION

Globally, the significance of tourism in the generation of employment and income cannot be ignored. Statistics from the World Travel and Tourism Council (WTTC, 2016) for the year 2015 indicate the importance of tourism in these areas. During 2015, tourism accounted for 108 million direct employment[1], and travel and tourism generated 9.8% of the global Gross Domestic Product (GDP) (WTTC, 2016). In this regard, the WTTC (2016) made use of the Oxford Economic Global Industry Model to project that the contribution of the travel and tourism industry to the global GDP will grow at a rate of 4% on average, per year for the next decade.

Adding indirect employment[2] to the above figure, it is estimated that globally, 284 million people were employed in 2015 in tourism related jobs (WTTC, 2016). This equates to 1 in 11 jobs in the world being related to the travel and tourism industry. Thus, with tourism expected to grow steadily, employment is also set to grow at an average rate of 1.8% per annum over the next ten-year period (WTTC, 2013a). In fact, it is estimated that travel and tourism will support 370 million new jobs globally by 2026, which is equal to 1 in 9 jobs in the world (WTTC, 2016). These figures indicate extensive growth in the industry, so that more people will be employed as a result of this growth. Although these new jobs will require varied skill sets and will differ from country to country, the WTTC (2013b: 4) is concerned that the industry is already missing out on recruiting the best available talent.

The global picture is also applicable to South Africa, which has a tourism industry that is targeted at contributing significantly to creating jobs and the generation of income. According to the South African government, tourism as a fast-growing global industry, can play a role in economic growth as well as in eliminating poverty (Stats SA, 2014c). In 2015 tourism contributed 9% of the total GDP to South Africa's

[1] Direct employment can be defined as companies whose employees are in contact with tourists or provide the tourist experience, such as hotels, restaurants, etc. (Tian, Mak & Leung, 2011: 6).

[2] Indirect employment can be defined as the activities that support the processes of direct employment, such as aircraft manufacturers, restaurant suppliers, etc., who create indirect employment (Tian *et al.,* 2011:6)

economy, with a total of 8.9 million non-residents' arrivals, totalling inbound tourism expenditure at R249.7 billion (Stats SA, 2016). For domestic tourism in South Africa in 2015, local travellers contributed 56.4% to the total tourism spending (Stats SA, 2016). The total number of travellers in South Africa is projected to reach 17.6 million by 2018, which is a 3.8% annual increase from 2013 (PricewaterhouseCoopers (PwC), 2014: 19).

The growth in the South African tourism industry is regarded as a high priority for the government. In the Accelerated and Shared Growth Initiative for South Africa (Stats SA, 2014c), tourism is identified as one of the two sectors that will receive special priority. Due to the expected growth in the industry, tourism is also identified as one of the six job drivers of the national economy in the 2010 New Growth Path Economic Strategy. According to the Tourism Sector Skills Strategy (2015-2020), its outcome is to create 225 000 additional jobs through tourism and contribute half a trillion rands to the country's GDP by the year 2020 (Stats SA, 2014c).

The role of tourism in the creation of direct and indirect job opportunities is regarded as a major opportunity for the South African tourism and hospitality industry. In 2015, 711 746 people were directly engaged in producing goods and services purchased by visitors. Tourism therefore accounted for 4.5% of the total employment in the country in that year (Stats SA, 2016: 40), with 170 701 persons employed in the accommodation sector (Stats SA, 2016: 40). This indicates a steady increase in the employment rate from 4.4% in 2014. According to Stats SA (2016), in 2015, one in 22 employees in South Africa worked in the tourism industry, which represents 4.5% of the total workforce, and therefore surpasses the mining sector as an employer.

Although strides have been made in the promotion of South Africa's tourism industry, the country still faces major challenges regarding employment, poverty, economic growth and job creation. The current shortage of skilled employees in the tourism industry is seen as a barrier to growth in the region (CATHSSETA, 2013a: 47). While unemployment is a large source of concern, providing qualified employees to meet the demands of the job market is becoming increasingly important. It is therefore necessary to be able to identify the tourism jobs that will be on high demand in the future, as well as their requisite qualifications. Since accommodation is a key

component of tourists' spending, it seems logical to focus on it, in an analysis of the demand for labour due to tourism.

The focus of this chapter turns to an analysis of the literature that provides the background to the study. This study will focus on forecasting the demand for labour, with varying degrees of qualifications in all aspect of accommodation in the hospitality industry, using a combination of statistical and judgemental forecasting methods.

1.2 BACKGROUND TO THE STUDY

The following section describes the nature of the accommodation sector and provides a discussion of the skills in the accommodation sector.

1.2.1 ACCOMMODATION SECTOR

According to Stats SA (2014b: 4), the United Nations World Tourism Organisation defines tourism as the activities of persons who travel to and stay in places outside their routine environment (for leisure, business or other purposes) for less than one year. The tourism sub-sectors are therefore based on the main consumptions by tourists, which are (Human Sciences Research Council (HSRC), 2008: 16):

- Air transportation
- Ground transportation
- Accommodation
- Food and beverage facilities and services
- Recreation and entertainment
- Activities and attractions
- Tour/nature or site guides

Accommodation may include campsites, self-catering accommodation, hotels (one- to five-star hotels) and game lodges.

Stats SA makes use of the System of National Accounts (SNA) to group organisations together that are engaged in similar economic activities (Stats SA, 2012: 14). For purposes of this study, the definition of accommodation provided by Stats SA (2012: 4) will be adopted. Therefore the accommodation industry comprises of hotels, motels and inns; caravan parks and camping sites; guest houses and guest farms; and other accommodation. Other accommodation, according to Stats SA (2012: 15), includes conference centres, which are not part of a hotel but that have accommodation units; as well as holiday resorts where facilities and equipment are provided for self-catering purposes.

The Tourism Grading Council of South Africa (TGCSA; 2013) defines formal accommodation, which can be for full or limited service, as a hotel or lodge. A hotel refers to formal accommodation with full or limited services offered, a minimum of four rooms and offers a reception area. A lodge also provides full or limited service, but is located in natural surroundings (beyond a garden) and does not offer any animals. Guest accommodation includes bed and breakfasts (B&Bs), guest houses and country houses. Self-catering accommodation, which may be exclusive or shared, refers to units within a multi-complex and villas, and may even be free-standing residences, some of which may have limited communal facilities and amenities. Caravan and camping accommodation refers to a facility where guests provide their own accommodation, such as a tent, rental van (RV) or caravan, that provides ablution and toilet facilities. Meetings, Exhibitions and Special Events (MESE) Venues include facilities used for meetings and may be separated from food service areas.

According to a study by Stats SA (2012: 7) on the South African accommodation industry, the total income derived from the category ‘services rendered’ in the accommodation industry in 2012 was R29 770 million. Of the services rendered, the largest category was accommodation, which amounted to R15 249 million or 51% of total services rendered. Employment in the accommodation industry was also shown to have increased by 4.4% since 2009 (Stats SA, 2012: 6), with 73% of the workers being employed in hotels, motels and inns; 7% at guest farms and guest houses; and the remaining 20% in other types of accommodation.

According to PwC (2014: 15), the overall spending on accommodation in all categories increased by 14% in 2013 to R17.3 billion in 2014. The occupancy rate increased to 52.6%, which is the highest average since 2007. The report anticipates that occupancy rates will increase up to 58.4% in 2018, as demand is growing faster than supply (PwC, 2014: 16). The assumption is that the hospitality industry in South Africa will continue to grow in the years to follow, leading to an increase in jobs and a demand for certain qualifications.

According to a study of Prodigy-Grant Thornton's Tourism and Sport Skills Audit (2007), it is estimated that a total of 28 000 hospitality enterprises[3], 6 200 travel and tourism enterprises[4] as well as 3 500 conservation and tourist guiding enterprises exist in South Africa. The hospitality industry is dominated by 74.4% semi-skilled and unskilled workers. The most difficult vacancies to fill are management, followed by waitrons and chefs.

1.2.2 SKILLS IN THE ACCOMMODATION SECTOR

Lowitt (2006: 7) states that when it comes to future growth forecasts for the tourism industry in the country, the most important statistics to consider is the ratio of how many jobs are created for a certain number of tourists that visit South Africa. The ratio, as stated by Lowitt (2006: 7), is one new job for every 12 tourists more than the previous year. She further states that the tourism industry loses more jobs when the demand declines than it gains jobs when there is increased demand (Lowitt, 2006: 8). This is due to the decline in service levels without any new employment being created, despite an increase in the demand for accommodation. The level of tourism grading of the accommodation is a vital consideration, as it may determine the ratio of employees to guests. Lowitt (2006: 7) states that: *"In 2000, THETA[5] found that in the hospitality sector in South Africa, the average for unskilled and semi-skilled employees was higher than the industry average of 50%, while travel services have a higher percentage of skilled workers and very few unskilled employees (7%)"*.

[3] Hospitality enterprises include both formal and informal hospitality enterprises, with 28 000 employers and 290 000 employees.
[4] Tourism enterprises include both formal and informal travel and tourism services, with 6 200 employers and 28 000 employees.
[5] THETA is the abbreviation for The Tourism, Hospitality and Sports Education and Training Authority

According to the Culture, Arts, Tourism, Hospitality and Sport Sector Education and Training Authority (CATHSSETA) (2013a: 67), the *"skill level of an occupation is related to the competent performance of tasks associated with an occupation"*, and is therefore regarded as an attribute of the occupation. The skill level of an occupation is usually determined by reviewing what is required to competently perform a set of tasks, and can be measured by the amount of formal education and training required, the amount of on-the-job training as well as previous experience related to the occupation. Gursoy, Rahman and Swanger (2012: 41) state that for graduates to increase their employability, they need to perfect their skills and competencies to best meet the industry's needs.

Research by Bowen and Ford (2004: 396) and Dawson, Abbott and Shoemaker (2011: 290) has shown that hospitality employees need to have different skills from employees who sell goods, as hospitality employees are selling services, and need to be "on stage" constantly. The industry is different from other industries due to the intangibility of the service being delivered. In the service industry, because staff interact directly with customers, the staffing strategies are different (Bowen & Ford, 2004: 395). Research by Gursoy *et al.* (2012: 34) suggests that customer service can be enhanced by selecting employees who have certain characteristics or attributes that relate both to generic skills and hospitality-specific skills. Employing staff who possess these specific attributes may be directly related to the success of an organisation, and according to Dawson *et al.* (2011: 290), recruiting and retaining such employees should be a high priority. This way the staff shortages in the industry are addressed.

Lashley and Rowson's 2002 study on skills shortages in the Manchester tourism sector, as cited in Lashley (2009: 347), points out three types of skill sets or jobs required by the tourism sector, namely: (i) specialist jobs, (ii) low-skilled and poorly paid jobs, and (iii) technically skilled jobs. In general, the more a job requires an employee to make decisions without a supervisor, the more formal training is needed for such an employee (Lashley, 2009: 350). The size of the organisation also impacts the demand for skilled and unskilled labour. Smaller organisations seem to have challenges when it comes to the skills that they require (Lashley, 2009: 350).

According to Payne and Keep (2003), as cited in Lashley (2009: 343), there should be a paradigm shift from employers towards creating a greater demand for skilled employees. This is because of the too many policies by governments that focus only on the supply of employees and not on the long-term retention of employees in their organisations. Gleeson and Keep (2004: 46) confirm this by stating that too many employers generate profits with low-skilled employees and end up regarding them as easily replaceable. Lashley (2009: 346) points out that as consumers increasingly favour customised products, there is a need for the "up-skilling" or "re-skilling" of employees. The practice of "multi-skilling" through cross-training is also seen as a trend in the service sector.

In contradiction with Gleeson and Keep (2004: 46), Lashley (2009: 345) states that the standardisation of service sector jobs has led to jobs that require little training or skill, which is termed as "de-skilling". According to Lashley (2009: 345), employers have taken to using this practice, as they are able to recruit from a large labour market that is also low-cost. Employers seem to favour low-skilled workers and look for the "soft skills" when recruiting unskilled employees (Lashley, 2009: 246). For many employers, where there are low barriers to entry, low wages, minimal training and high levels of staff turnover, they prefer to employ the unskilled (Lashley, 2009: 350).

Matic and Agusaj's (2012:20) study on Croatia's hospitality industry focused on two areas, namely the skills and competencies that are most important for entry-level hospitality positions, and the areas in which the gaps between the organisational needs, compared to what the labour market offers, are most significant. The outcomes of the study indicated that, overall, the Croatian hospitality industry is able to find employees that it requires the most. On the skills and competencies required, the top three findings were that students need more technological training and cross-cultural competence, that training in specific hospitality areas should be changed and students should focus on a core set of skills and competencies that would create a better "all-round" graduate for the industry (Matic & Agusaj, 2012: 25). For the industry, one of the findings is that only 53% of respondents felt that they could find qualified applications for positions in their organisations. Respondents also indicated that the Croatian tourism and hospitality programmes do not satisfactorily prepare graduates for jobs within the industry (58% indicated that it was not adequate).

Even in a study about hospitality graduates in India, Kavita and Sharma (2011: 34) mentioned that the Indian labour market fluctuates between the skills shortage and a large number of graduates who do not find employment. The reason is that graduates lack the appropriate skills required by the industry. Students are not well-prepared for the industry and therefore lack the competencies and behaviours demanded by the industry. In their study *Tourism Education Futures 2010-2030: Building Capacity to Lead*, Sheldon, Fesenmaier, Woeber, Cooper and Antonioli (2008), sought out the employee skills that would be required in the hospitality industry in the future. The results of their surveys and discussions amongst 45 senior hospitality educators, as well as industry experts, resulted in four important focus areas for the future, namely, destination stewardship skills, political and ethical skills, enhanced human resource skills and dynamic business skills. Sheldon *et al.* (2008: 63) also mention that key jobs in 2015 may not even have existed in 2000, and much of the information taught to hospitality students may become redundant by the time they graduate.

The challenge may not only be to recruit the correct employees who possess the correct skills and attributes and are prepared for the demands of the industry, but also to ensure that the South African higher education is able to cope with the demands of the industry, by supplying capacity for students to be trained in these disciplines. Tourism-related courses and programmes (including Hospitality Management) are already offered at 13 higher education institutions (HSRC, 2008: 54). Barron (2008: 734), in an investigation on the supply of future talent for the hospitality industry, states that the difficulty in recruiting and retaining hospitality employees is worsened by the recent trend in demographics that has led to a reduction in entrants to the overall labour supply in developed nations. In other words, the labour pool is shrinking consistently. The so-called “Generation Y” seems to have created its own challenges for the hospitality industry. These are employees born between the years 1979 and 1994. Their attitudes, behaviour, expectations and motivations, among other things, have resulted in shifts in the human resources practices of many industries.

This also coincides with a reduced emphasis on practical skills in the hospitality industry and a concentration on more reflective and theoretical subjects (Barron, 2008: 735). Barron projects that fewer Generation Y students will be deciding on

hospitality as a career, due to the high staff turnover in the industry and the poor conversion rate from student to hospitality manager, on the one hand, and the students' limited commitment, their constant need for praise and feedback and the desire for new challenges, on the other.

Moreover, it may simply not be enough to educate enough students to meet the supply of the industry. Blomme, Van Rheede and Tromp (2009: 6) state that another one of the most important challenges facing the industry is that of retaining highly educated and highly skilled employees. Their research mentions that 70% of graduates from The Hague Hotel School leave the hospitality industry within six years of graduating. This means that a large number of highly skilled and educated employees are leaving the hospitality industry. In a study by Johns and McKechnie (1995) cited in Barron (2008: 732), it was found that the early nineties already saw 50% of hospitality graduates choose careers outside the hospitality industry. The reasons for this are extensive in literature, but Blomme *et al.* (2009: 6) identify that the students' expectations do not match their actual experiences of the industry. Barron (2008: 733) proposes that high turnover can be related to work-family conflicts, poor working conditions, and emotional labour from customer contact.

According to Baum (2008: 725), the tourism and hospitality industries in developed countries seek short-term solutions to recruitment and "stop-gap" strategies to overcome the above-mentioned challenges in the labour market, leading to a decline in the demand for unskilled or low skills workers. Another consideration is that of "external employees" or part-time employees. Hospitality organisations prefer to use external employees because these allow a higher degree of flexibility for the hotels since they can be called at short notice and are ideal for seasonal work (Buonocore, 2010: 378, 379). In a 2007 Taiwanese study, the government reported that in 2006, 94% of the hospitality organisations employed contingent workers, while 97% of employees in the entire Taiwan hospitality service sector were casual employees (Cheng-Hau, Shyh-Jer & Shih-Chien, 2009: 414). Milman (2003), as cited in Cheng-Hau *et al.,* (2009), states that the number of external employees in the services sector in the United States of America (USA) indicated a growth in the service sector in a period of ten years than in any other industry (except finance, insurance and real estate). Baum (2008: 727) concludes that the features of a weak labour market result in many hospitality and tourism organisations experiencing challenges in competing

for talent in the open labour market. McIntosh and Steedman (2000: 13) argue, in their research about Europe's Low Skills, that: *"Since, the beginning of the 1990's, the gap between the earnings of high skilled and low skilled workers has widened and in many countries the unemployment rate for people without qualifications is four times higher than for university graduates."*

An article by Saayman and Geldenhuys (2003: 83) highlights the skills required by selected sectors of the tourism industry, concluding that general education as well as business education is rated highly by travel agents, tour operators and tourist guides. Hospitality operations are the only aspect of tourism-specific education that all three groups did not deem important since tourist guides are not actively involved (Saayman & Geldenhuys, 2003: 93). Only the tourist guiding profession preferred a generic course, which covers several general skills that are required by all three sectors. The authors (Saayman & Geldenhuys, 2003: 86) also state that the travel sector prefers to employ high school graduates with basic entry level skills instead of graduates, to provide them with the relevant on-the-job training.

In another study of the skills' expectations of learners versus employers, Zwane (2012: 101) reveals that the tourism, travel and hospitality sub-sectors are in agreement when it comes to the skills requirements. Her study concludes that the expectations of employers are much higher than what the employees can deliver, so that despite several training and education opportunities, graduates are *"still not yet competent in the workplace"* (Zwane, 2012: 101). Zwane recommends that, due to the high investment that organisations such as CATHSSETA have made into education and training programmes, the focus should be on the quality of the qualifications and skills.

Raising the skills level in South Africa through education and training has benefits when it comes to employment - not only for the tourism and hospitality industry, but for the economy too. In this regard, 97.3% of the graduates in 2013 were employed in the formal sector, compared to 52.9% of people whose education level was below matric level. The number of unemployed people in South Africa totalled 4.7 million during the second quarter of 2013 – one in every two had not completed matric. Amongst graduates, the unemployment rate was 5.2%, and that of persons with

other tertiary qualifications (diplomas or certificates) was 12.6%, in comparison with 30.3% for those who did not have matric (Stats SA, 2013d).

According to CATHSSETA (2011: 1), the National Qualifications Framework (NQF) Act (Act 67 of 2008) requires that the development and implementation of the NQF must take place within a framework prepared by the South African Qualifications Authority (SAQA). NQF refers to the qualifications framework developed for the classification and registration of qualifications in South Africa, which is one of the first of such frameworks to be designed in the world (CATHSSETA, 2011: i). According to SAQA (2003: 20), the first NQF level, level 1, includes general education and training (grades 0-9, preschool and Adult Basic Education and Training (ABET) levels 1-4). NQF levels 2-4 are further education and training (grades 10-12, short courses, colleges and workplace certificates). NQF levels 5-8 relate to higher education and training, which includes certificates, diplomas, degrees, higher diplomas, master's degrees and doctorates.

CATHSSETA states, in its Tourism and Travel Service Guide for 2013-2016, that in the hospitality industry, general receptionists were in the greatest demand, with ten potential vacancies and 274 current vacancies in 2013 (CATHSSETA, 2013a: 31). This can be attributed to the nature of the shift work and the constant vacancies available at this job level. The educational profile of employees in the sector is as follows: 1% of employees have acquired NQF levels 6, 7 and 8, with a limited number of occupations available in the sector that require such qualifications (middle management); 66% of employees have attained NQF levels 4 and 5, which is required for typical occupations in the sector, such as entry level jobs; 27% of employees have acquired NQF levels 1, 2 and 3; and 6% employees at ABET level (CATHSSETA, 2013: 33). From the above employees, 33% are employed as managers, 11% as professionals, 15% as technical and associate professionals, 21% as clerical support workers and 20% as service and sales workers (CATHSSETA, 2013: 35-40).

1.3 PROBLEM STATEMENT

The tourism industry, despite its various and diversified locations and products, is infamous for its routine work, low productivity, poor wages, low levels of job security, long working hours (and seasonality) as well as limited opportunities for personal

development, as highlighted by Baum (2008: 721, 725), Barron (2008: 731) and Ivanovic and Blazevic (2009: 108). Due to such stereotypes, it is an industry characterised by lower skill levels. Cheng-Hau *et al.* (2009: 414) and Barron (2008: 731, 733), confirm that the human resource function in the hospitality industry is under immense pressure to meet the challenges of the changing business environment, tight labour market, changing customer demands and increasing competition. This has led to a shortage of talented people, while the demand and growth in the hospitality industry is increasing globally (Barron, 2008: 731).

This is true not only for other countries, but also in South Africa. As mentioned earlier, with an increase in occupancy rates in the hospitality industry in South Africa, there is a strain on the current employment levels in the industry (PwC, 2014: 16). In fact, CATHSSETA (2013b: 48) has identified the following scarce and critical shortages already evident in the South African tourism industry: directors, general managers, programme/project managers, small business managers, office/unit managers, accounts clerks, bookkeeping clerks, travel consultants and general clerks.

The main labour market for the tourism industry consists of people who, through education, training and experience, are dedicated to the industry or a particular part of the industry (Ivanovic & Blazevic, 2009: 111). Jobs in the hospitality labour market may include hotel managers, chefs, receptionists, porters and bar staffs. The secondary labour market consists of people who may not be committed to the industry, but have sufficient or the right skills to be employed in the industry. Jobs in this market include students, unskilled workers, secretaries, maintenance staff and accountants (Ivanovic & Blazevic, 2009: 111).

It would be expected that, with many hospitality and tourism courses being offered in South Africa and the prevalent high unemployment rate, the industry would have no challenges in absorbing those with relevant qualifications and skills into the labour market. Unfortunately, the reality according to Gursoy *et al.* (2012: 36), is that having a degree in hospitality management does not guarantee a reasonable job for a new graduate. Employers are likely to choose applicants with hospitality degrees only over less qualified counterparts if they believe that the applicant is likely to perform better than the others. In the same study, it is pointed out that due to the economic

downturn in the hospitality industry, organisations reduce their jobs in areas such as marketing, operations, innovations and product development because of the large expenses attached to them (Gursoy *et al.*, 2012: 36). The same applies to managerial jobs, where organisations would rather combine job duties than appoint an additional person or replace a staff that resigns (Gursoy *et al.,* 2012: 40). It was also argued that organisations prefer staff with good leadership skills in order to reduce the need for more managers and save costs.

Raybould and Wilkins (2006: 182) conducted a study of 371 general managers, human resource managers and operations managers working in 196 hotels in Australia. The study found that only a third of respondents had a university degree (36%). This percentage was much higher for the human resource managers (63%) than the managers in food and beverage (25%), rooms (27%), sales and marketing (36%), general managers (30%), and other employees (55%). In a study by Kavita and Sharma (2011: 41) of 800 staff from 30 hotels (five-star, four-star and banqueting) in Mumbai, it was found that all the managers or heads of department in these hotels possessed a diploma or degree in Hospitality Management (Kavita & Sharma, 2011: 41). In addition, the human resources managers also possessed human resources diplomas.

In a study by Annaroud (2006: 37) on the ranking of human relation, conceptual and technical skills, 248 American and Russian students and industry representatives in their hospitality faculties were surveyed and it was found that of the American industry respondents, less than 10% had obtained a master's degree, while 41% of the Russian industry respondents had a master's degree. This was attributed to the fact that the Russian educational system consists of five or six years' intensive course work, leading up to a master's degree, whereas in America students could exit their studies at the end of their bachelor's degree.

From a South African perspective, Maumbe and Van Wyk (2008) investigated employment in Cape Town's accommodation sector. They found that amongst 11 hotels in the Western Cape and 84 questionnaires, 29.3% of employees had grade 12 as their highest qualification; 26.2% had some high school education, but without grade 12; 16.7% had a technikon diploma; and 7.1% a college certificate. Approximately a third (28.8%) was in the process of furthering their formal

qualifications. The most common entry point was receptionists, followed by waiters and housekeepers, then chefs and porters. 15.9% indicated that their current jobs could be classified as general labour, 15.6% as skilled labour, 24.4% as administrative and 19.5% as managerial. Interestingly, 24% of the employees indicated that their current job did not require any type of formal qualification, while 16% said theirs required at least grade 12, 10% a degree in management, and 8% a hospitality degree. The study also showed that white employees in the general labour class were academically better qualified than both the coloured and black employees (Maumbe & Van Wyk, 2008). This is attributed to the fact that white employees are forced to take up lower ranking jobs due to the unemployment pressures caused by their inability to secure higher ranking jobs.

From the above it is evident that the qualification levels in the South African hospitality industry is deemed to be well below that of other countries. However, this may change as a result of international competition and the demand for better service levels. In addition, a study by Breakley and Craig-Smith (2007: 117) reveals that there is a growing demand for the formal education of hospitality managers worldwide, which can be confirmed by the trend that many organisations now employ new graduates as entry-level managers. According to Breakley and Craig-Smith (2007: 117), it is important to forecast the future demand for graduates in order to meet the needs of the industry as well as higher education.

Nevertheless, several factors make it difficult to forecast the need for qualified labour. The demand for labour is influenced by factors such as technological change, economic change, changes in demand for wages of certain occupations and short-term employment levels (Woolard, Kneebone & Lee, 2003: 460). The demand for the replacement of employees also needs to be considered. According to Woolard *et al.* (2003: 460), this may be due to retirements, emigration and employees moving between occupations.

The need for forecasting human resources has increased with the escalation of unemployment figures (Woolard *et al*., 2003: 461). It is therefore important to ascertain the demand for future jobs in the hospitality industry, to ensure that sufficiently qualified employees will be available to meet the demand. This would also assist in ensuring that fewer students enrol for the qualifications for which there

will be less demand and an increasing number for qualifications that are likely to be more beneficial to the job market in the future.

1.4 GOAL OF THE STUDY

The following section elaborates on the main goal and objectives of this study.

1.4.1 Goal

The main research question of this study is: *"What is the demand for labour with different levels of education in the accommodation industry of South Africa over the short to medium term?"*

This study therefore aims to assess the future need for jobs as well as the need for qualifications in each specific job level in the accommodation industry in South Africa. This involves the analysis and forecasting of the qualifications demand in the South African hospitality industry, and specifically in accommodation, for a 1- to 5-year horizon. A recent study by Song and Li (2008: 210-216) indicates that identifying and analysing demand in the hospitality industry is of interest to decision makers in tourism destinations, as this could aid them in making decisions regarding their own competitiveness. Role players may also benefit from knowing the timing of directional change as well as the effect of seasonality on tourism growth. Assessing trends in tourism forecasting is important for role players to be able to adapt to the changing tourism environment in a timely and efficient manner.

The main goal of this research is therefore to forecast the demand for various job levels and their associated qualification requirements in the accommodation industry in South Africa by using a combination of forecasting methods. This firstly entails quantitative forecasts, where the quantitative forecast will be adjusted using judgement forecasting by a panel of experts - an important methodological contribution of this study.

1.5 Objectives

In order to reach the main goal, the following objectives are set:

Objective 1:

To analyse the South African accommodation industry, with a specific focus on the qualification levels and current qualifications of employees in this industry.

Objective 2:

To evaluate quantitative forecasting methods, with a focus on time series forecasts that are used in the tourism demand forecasting literature.

Objective 3:

To evaluate the qualitative forecasting methods that have been applied in the tourism demand forecasting.

Objective 4:

To evaluate different methods used in manpower forecasting.

Objective 5:

To use the South African hospitality and tourism data, together with quantitative manpower forecasting methods, to determine the accuracy of labour demand forecasts in the accommodation industry.

Objective 6:

To use the identified optimal forecasting methods to generate quantitative forecasts of labour demand in the accommodation industry in South Africa and link these with job levels as well as qualification requirements.

Objective 7:

To use qualitative forecasting methods in order to adjust the quantitative forecasts, with the aim of enhancing the forecasts for future labour and qualifications demand in the South African accommodation industry.

1.6 METHOD OF RESEARCH

To understand the methodology in this study, the following section explains the literature study and empirical research that will be used. The empirical study

employs the quantitative forecasting methods and qualitative adjustment methods. Below is a short summary of the research methodology, with a detailed description in chapters three to five.

1.6.1 Literature study

The literature review will start by examining the current state of the accommodation industry and the current qualification levels in South Africa, with the aim of providing a background to forecast qualifications demand in the hospitality accommodation industry in the country.

Secondly, an overview of forecasting will be presented, which will serve as background to the forecasting research design, will be provided. This review will focus, first, on the quantitative time series forecasting methods, and specifically on Naïve forecasting, Autoregressive Integrated Moving Average (ARIMA) models and the exponential smoothing and Vector Autoregressive (VAR) models, which are prominent in tourism demand forecasting (see chapter three for a complete discussion of these methods). The review will discuss the qualitative forecasting methods, and specifically interviews with experts, as the method that will be used in the last part of the study.

Thirdly, an overview of labour demand forecasting will be presented. This overview will focus on the labour market in general, as well as labour demand practices. This will be followed by a review of factors influencing the labour supply. Labour forecasting as a practice will then be analysed according to the three main approaches which will be employed in this study, namely the bottom-up coefficient approach, the top-down forecasting model and several market signalling approaches. Literature on labour demand and supply in the hospitality industry will also be consulted, as this is the key focus of this study.

The sources to be consulted are, amongst others:

- Academic hard copies, internet journals, articles as well as government publications.
- Tourism and hospitality publications and labour economics publications.

- Stats SA for statistical data such as *Accommodation Industry 2012* and the *National and Provincial Labour Market Trends over the Last Decade* publications.
- CATHSETTA reports.
- SA Labour Market Trends and Future Workforce Needs 1998-2003.

1.6.2 Empirical research

The empirical research in this study focuses on two main sections, namely quantitative forecasting and qualitative adjustment.

1.6.2.1 Quantitative forecasting

This research, in order to achieve the objectives set out in section 1.5, follows three main phases of execution.

First, three quantitative manpower forecasting methods can be distinguished, namely (i) time series models, (ii) the bottom-up approach and (iii) the top-down approach.

The first approach is time-series forecasts. According to Lin (2013: 20), quantitative forecasting methods may be either univariate or econometric time series. In this study, the focus will mainly be on the univariate time series (extrapolative or non-causal) method of forecast, although causal methods will also be followed where needed. Lin (2013: 20) describes the time series forecasting as a method that analyses patterns and cycles of a variable of historical data, and then projects this data into the future using forecasting techniques. Using these methods is important in this study, as they assume that the pattern identified will continue to be constant in the future, thus arriving at valid forecasted data for a specific period of time (in this study, five years).

Three techniques of univariate time series forecasting will be employed, namely the Naïve model, ARIMA and the Holt-Winters exponential smoothing technique. The Naïve forecasting method, as explained by Frechtling (2001: 65), states that the last period of historical data available is equal to the value for the period that is being forecasted. This will be of value to the study, as the use of the last value to forecast the next value will be implemented to forecast data such as turnover, occupancies

and demand for job levels, as well as their corresponding qualification requirements. This model is normally seen as the benchmark against which all other forecasts are compared.

Due to the nature of the accommodation industry, which fluctuates according to seasons, holidays and sometimes even weather conditions, the seasonal time series method of Holt-Winters and ARIMA will be implemented. The Holt-Winters approach, which employs triple exponential smoothing, will be used to show a time series with a linear trend over time. According to Frechtling (2001: 96), this method uses three different levels to project the forecast, namely one for the trend, one for the level and one for seasonality. Autoregressive integrated moving average (ARIMA) models dominate tourism forecasting due to their accuracy and seasonal component, which denote that their identification, estimation and diagnostics include parsimony (Saayman & Saayman, 2010: 284).

One multivariate forecasting method will also be used, namely the Vector Autoregressive Model (VAR). This is especially relevant in linking the output in the accommodation industry with employment. These methods will be fully described in chapters three and five of this study.

The above-mentioned time series forecasting methods will be evaluated in order to determine the method that delivers the highest accuracy in forecasting. Forecasting accuracy will be evaluated using the mean average percentage error (MAPE) and root mean square percentage error (RMSPE) (refer to chapter three for a discussion on the accuracy metrics).

The second approach, the bottom-up approach involves the calculation of labour elasticities. For this purpose, autoregressive distributed lag (ARDL) models and a typical labour demand specification will be used (see chapters four and five). The derived labour elasticities will then be applied to the forecasts of output in the accommodation industry. These forecasts will also be done and evaluated using the methods described above.

The third approach, the top-down approach, explains the simulations completed by using the input-output model. This method and the simulations are described in chapters four and five.

The data for phase 1 of the quantitative research will be sourced from Quantec and Statistics South Africa. Secondly, these three methods, namely time series, the bottom-up approach and top-down approach, will be used to forecast for a period of 1 to 5 years in the future. Results of these forecasts for each of the three methods will be presented and further divided into jobs as well as qualifications (discussed in chapter six). For the division of the forecasts into jobs and qualifications, data from Stats SA as well as CATHSSETA will be used (see chapter six).

Thirdly, the generated forecasts will be used to obtain three main scenarios, namely, low, medium and high scenarios for each forecast. These forecasts are then tested by means of qualitative adjustment (discussed in chapter seven), and discussed in the section below.

1.6.2.2 Qualitative adjustment

According to Babbie and Mouton (2001: 270), qualitative research is used to describe and understand, instead of merely explaining, human behaviour. McMillan and Schumacher (2006: 26) agree with this statement, adding that the data from qualitative research is in the form of words rather than numbers. Qualitative research may also be termed as the study of social action, which incorporates qualitative methods to access participants, as well as qualitative methods to collect and analyse data (Babbie & Mouton, 2001: 270).

The qualitative methodology will follow an interview technique of qualitative research. Review and adjustments of the forecasts will be conducted with industry experts by means of a small focus group discussion. Participants will be asked several questions regarding their perception of the findings of the quantitative forecasting method that will be implemented in this study. They will be asked to review and justify their agreement or disagreement with the quantitative findings. The reasons for the adjustment will be documented, and the discussion will be completed when a consensus forecast is reached. This process aims to validate and enrich the findings of the study. Since an interview method is followed, an interview guide will be compiled. The interview guide and the sample of respondents are reviewed below.

a. Interview Guide

The goal of the interview is to obtain both quantitative and qualitative information from representatives of the accommodation industry. This information will include information regarding current turnover and expected turnover, current job levels and current qualification requirements, as well as estimates for future job levels and qualification requirements.

The questions will be based on a research study by the HSRC (1999) entitled *SA Labour Market Trends and Future Workforce Needs 1998-2003*. The questions will be reviewed, and those that are relevant to the current and estimated future turnover, occupancy, job levels and required qualifications for such job levels, will be investigated. This will inform the analysis of the forecasted turnover, current situation of job levels in the accommodation industry, the projected job levels and their necessary qualifications, as completed by the representatives of the accommodation industry in South Africa.

The interview guide aims to provide a framework in which interviewees may answer the relevant questions posed by the interviewer. The interview guide is important, as it ensures that all parties adhere to a specific structure during the interview, and ensures that the interviewer obtains all the relevant information during the interview process. It also outlines and clarifies information for the interviewees. The interview guide consists of an introductory letter, outlining the objectives of the study as well as the purpose of the questions. The section that follows in the interview guide consists of biographical and geographical information regarding the interviewees, including some basic information about the organisations. This is then followed by the interview questions.

The interview guide will be used during the interviews with representatives from the financial and human resources departments, of the largest role players in the South African accommodation industry. The questions included in the interview guide will be similar to a pilot study, using South African hotels that have been conducted by a master's degree student in a study, titled *Analysing and forecasting qualifications demand in the South African hotel accommodation sector.*

b. Sampling

The process for the identification of the largest role players in the South African accommodation industry is clearly outlined in chapter seven, section 7.3.2. These organisations' financial and human resources representatives will take part in this study. These representatives are deemed to be experts in the field of the financial and human resources in the accommodation industry in South Africa, due to the fact that their organisations contribute largely to the South African accommodation industry. These six organisations also represent different forms of accommodation types, for a wide range of diversity. Therefore, the quantitative forecasting methods will be complemented by the findings of the interview results and will enable a well-rounded qualitative adjustment and findings of this study.

Due to the fact that these organisations were selected according to the number of rooms/beds they offer to the South African accommodation industry, this study was completed according to stratified sampling. Dworkin (2012: 1319) and Guest, Namey and Mitchell (2013: 58-59) emphasised that the sample size in qualitative research is often small (between 5 and 50 participants are deemed to be adequate), due to the fact that in-depth interviews have a view to focus on an understanding, and are focused on experts in the industry, and when understanding is reached, the interview has reached saturation. Consequently, a large sample was not necessary, as saturation would be reached by completing interviews with representatives from these six organisations.

The questions from the interview guide will be forwarded to the representatives of all the chosen accommodation establishments electronically, for use during the interview process, and the data will be captured electronically. These findings are written up in chapter seven of this study.

1.7 DEFINING KEY CONCEPTS

The following concepts will be used frequently throughout this study and are subsequently defined:

a) Accommodation industry:

For purposes of this study, the definition of accommodation industry by Stats SA (2012: 4) is adopted, as follows: hotels, motels and inns; caravan parks and camping sites; guest houses and guest farms; and other accommodation. Other accommodation, according to Stats SA (2012: 15), includes conference centres, which are not part of a hotel but that have accommodation units; as well as holiday resorts where facilities and equipment are provided for self-catering purposes.

b) Employment:

SAQA (2003: 22) defined employment in three broad categories, according to the type of skills and work that is done; namely, self-employment (employees who work for themselves and for businesses that are self-employed), contract employment (employees who sell their skills and services on a contract basis) and permanent employment (employees are permanently employed by a company) (SAQA; 2003: 15).

c) Qualifications:

According to SAQA (2003: 22), a qualification and its corresponding unit standards are ruled by NSB regulations and developed by experts. Qualifications predetermine the outcomes, criteria for assessment and other details of the qualification. A qualification is *"the recognition of the learning you have achieved"* (SAQA, 2003: 22), and a qualification must be approved by SAQA prior to being registered by the NQF as a qualification.

d) Forecasting:

According to Frechtling (2001: 260), forecasting is a method of collecting information from historical information in order to predict the likelihood of a future event. More than one forecasting model may be utilised in forecasting.

e) Quantitative forecasting:

According to Frechtling (2001: 261), this is a forecasting method that organises historical information about a specific situation by using mathematical principles.

f) Qualitative forecasting:

This is a method implemented by following certain rules in order to obtain a judgement from an expert in the field, who is responsible for organising historical information by following such rules (Frechtling, 2001: 261).

g) Employment elasticities:

Employment elasticities can be defined as a measure of the percentage change in employment when related to a one percent -point change in economic growth (Gujarati, 2012: 21).

1.8 CHAPTER CLASSIFICATION

This study will be presented in eight chapters. The outline of this thesis is as follows: chapter one serves as an introduction to the research problem and background, in which the problem statement, objectives of the study and the research methodology employed in this study are explained.

Chapter two gives a thorough literature review of tourism and employment in South Africa. This chapter includes the role of tourism in the South African policy and education framework, the classification of tourism as an industry in South Africa. Then tourism and hospitality as part of the tourism industry, and accommodation as part of the hospitality industry will be discussed. A thorough review is provided of tourism employment in South Africa, as well as the profile of current hospitality employees in South African context.

Chapter three discusses the evaluation of the quantitative and qualitative forecasting methods. It includes detailed discussions of non-causal methods, such as the Naïve models, the Box-Jenkins methodology, smoothing methods, as well as non-linear univariate approaches. Causal methods such as single equation regression models and multiple equation regression models are discussed, followed by non-linear approaches. This is followed by qualitative research methods such as surveys, focus group discussions, Delphi techniques, observations and interviews. The combination and adjustment of forecasts and discussions on forecasting accuracy conclude this chapter.

The final chapter on literature, chapter four, provides a review of the labour market including labour demand and supply. Labour forecasting methods such as time-series forecasts, the bottom-up coefficient approach, the top-down forecasting model and market signalling approaches are discussed in detail. Labour demand and supply in the hospitality industry are discussed with evidence locally and internationally, on the demand for labour in the hospitality industry. This concludes with a discussion of the supply of labour in the South African hospitality industry.

Chapter five presents the methodology used for this study as well as model development. The data used in developing the models used, namely, time series forecasts (including Naïve, Naïve 2, ARIMA, Holt-Winters approach, VAR), and ex-post forecasting accuracy evaluations (MAPE, RMSPE, and forecasting comparisons) are explained. This is followed by labour forecasts according to the bottom-up approach, and the top down approach, which conclude the methodology chapter.

Chapter six presents the forecasting results, namely forecasting labour demand in the hospitality industry according to time series forecasts, the bottom-up approach (both short run and long run labour demand), and the top-down approach. Educational and employment profiles in the accommodation versus catering industries are presented after a discussion of the data used, and forecasts are presented for the educational profile, employment summary, vacancies and retirement figures. Forecast results are then presented according to the three methods utilised, and the demand is presented according to the qualifications and job levels in the accommodation industry, once again, per method.

Chapter seven presents the results of the qualitative adjustments of forecasts. This includes the process followed, and goals of qualitative adjustment. The role players in the South African accommodation industry included in this study are identified, three quantitative scenarios are offered, as well as the qualitative adjustments. Results from the qualitative interviews are presented according to the forecasts for the labour growth over the next five years, as well as the requirements for jobs in all skills categories (highly skilled, skilled, semi-skilled, unskilled and informal). Staff turnover is also discussed. Additional comments regarding the accommodation

industry are provided as results, followed by the adjusted qualitative results. The limitations of the study are addressed and conclusions are made on the results.

Chapter eight draws conclusions about the forecasts for labour in the accommodation industry. This includes the contributions of the research, and several recommendations for future research.

CHAPTER TWO

TOURISM AND EMPLOYMENT IN SOUTH AFRICA

2.1 INTRODUCTION

As discussed in chapter one, this study aims to combine quantitative and qualitative research methods in order to forecast qualified labour demand in the South African accommodation industry. The purpose of this chapter is to analyse the South African accommodation industry with reference to the qualification levels and current qualifications of employees in this sector. To this end, this chapter begins by providing a background to the research by discussing tourism in the South African policy framework, the classification of the tourism industry in South Africa, the differences between the tourism, hospitality and accommodation industries, as well as hotel organisational charts to explain the different employment opportunities in this industry. This is followed by a discussion of the key concern of this research, which is accommodation employment in South Africa. This encompasses employment, hospitality employment, and a profile of the current hospitality workforce in South Africa. This chapter concludes with the opportunities and challenges in hospitality employment.

Pfeffer (1997: 364) proposes that people and relationships are the foundation of competitive advantage in any industry, but even more so in the service industries, such as the tourism and hospitality industries. The tourism industry is largely dependent on people to deliver the core of the tourism experience to tourists (Baum, 2007: 1383; Baum, 2008: 783; Department of Tourism, 2011: 29; Solnet & Hood, 2008: 59). Ladkin (2002: 387) therefore argues that skills development and a focus on human resources is essential for the growth of the tourism and hospitality industries.

Unfortunately, the global tourism industry is characterised by small and medium enterprises that are well known for their low wages, low skills requirements, high segmentation and shift/night work and seasonal variation (Barron, Maxwell, Broadridge & Ogden, 2007: 120; CATHSSETA, 2014a: 11; OECD, 2014: 5). As with the international trends, the South African tourism industry is experiencing challenges in attracting and retaining quality people of all skills levels, which may be

ascribed to the poor training and development, low career progression and salary levels, for which this industry is renowned (Department of Tourism, 2011: 29). For this reason, THETA was created to address such obstacles, but has been largely ineffective in its mission (Department of Tourism, 2011: 29). Kraak (2008: 12) agrees that SETA's[6] progress has unfortunately been slow, especially when it comes to its commitment to education and training in South Africa.

As a unique tourist destination, with many diverse hospitality services to offer, South Africa has emerged as one of Africa's leading tourism destinations and will only be able to continue to thrive if the tourism products it offers are of a high quality (Ashley, Boyd & Goodwin, 2000: 2; Rogerson & Kotze, 2011: 13530). One of the implications is that quality service should be delivered by qualified personnel. However, this is hampered by the turbulent relationship between the hospitality industry and its employees (Davidson & Wang, 2011: 236; Lai & Soltani, 2008: 1).

Lowitt (2006: 7) states that for future growth in South Africa's tourism industry, the most important statistic to consider is the ratio of the number of jobs that are created for a certain number of tourists in the country. In South Africa this is one new job for every 12 tourists. Another important consideration is the ratio of employees to guests. Lowitt (2006: 8) further states that, the tourism industry loses more jobs when demand decreases; than it gains jobs when demand increases. This is due to the nature of the tourism industry where declining levels of service are common, without new jobs being created. Lowitt (2006: 7) quotes THETA, which found that in 2000: "In the hospitality sector in South Africa, the average for unskilled and semi-skilled employees was higher than the industry average of 50%, while travel services have a higher percentage of skilled workers and very few unskilled employees (7%)".

To further support the importance of tourism, the tourism industry and its reputation as a job creator have become priorities for South Africa since its democracy in 1994. According to the National Development Plan (Department of Tourism, 2013: 296) as cited in Stats SA (2014b: 1), tourism is the *"single most important investment any country can make it in its people"*. Vellas (2011: 8) and Baum (2008: 283) both agree on the important role that the tourism industry has in creating jobs. According to Baum (1996: 207) and O'Mahony and Sillitoe (2011: 21), the hospitality industry is

[6]SETA is defined by CATHSSETA (2013b: 6) as the Sector Education & Training Authority.

recognised for its many job opportunities, especially those that are aimed at unskilled and semi-skilled employees. Martinez-Ros and Orfila-Sintes (2012: 686) support that the service sector has become well-known for its contribution to the global economy as well as the creation of new employment opportunities. It could therefore be argued that the growth in the tourism and hospitality industries in South Africa have led to an increase in employment. However, this has not been sufficient in alleviating unemployment, which is evident by the large proportions of the population that are still unemployed. According to Munyeka (2014: 260) who analysed the South African economy between 1994 and 2012, South Africa showed large spells of jobless growth during this period; as a result of the country's inability to create adequate jobs at the time, even though the economy performed well. The relationship between employment and economic growth is thus unstable.

Worldwide, there is a concern regarding skills shortages amongst employees in the tourism and hospitality sector. Solnet and Hood (2008: 60) confirms the continuous decline in the supply of hospitality employees, which results in an increase in long-term demand for employees in the industry. According to CATHSSETA (2013b: 47), the global talent gap is so vast that the USA will need to add more than 25 million workers by 2030 and Europe more than 45 million.

Regrettably, it has been concluded that the skills employment structure in the accommodation industry is ineffective when compared to other sectors (Martinez-Ros & Orfila-Sintes, 2012: 686). Kaplan (2004: 219) concurs that the lack of skills in South Africa is one of the key factors hindering access to the economy for the vast unemployed population of South Africa. The lack of skills impacts negatively on the growth of South Africa, by perpetuating unemployment and poverty. The IDC (2012: 29) reports that the greatest obstacle facing the African hospitality industry is the shortage of skills as well as the poor service levels, which may originate from employing lesser skilled employees in jobs which require more skills. These poor service skills may also be impairing South Africa's tourism industry.

From the discussions of O'Mahony and Sillitoe (2001: 21) and Alonso and O'Neill (2011: 75), it is clear that due to a lack of clear education qualification criteria for the hospitality industry, the industry has become easy to access for employees of all backgrounds. This has led to the ineligibility of unqualified employees for promotions

or further career advancement, which often results in experienced employees leaving the industry (O'Mahony & Sillitoe, 2001: 21). O'Mahoney and Sillitoe (2001: 21) argue that the hospitality industry attempts to offer world-class service, with employees whose educational background and training may not be up to the necessary standards.

The push and pull factors (such as low wages) in the hospitality industry also lead to an increase in labour turnover (Davidson & Wang, 2011: 236). As mentioned earlier, despite the ample opportunities for higher education in the tourism industry and hospitality sub-sector, there is still an increasing shortage of qualified and skilled employees to address the current skills shortages, and this situation will continue to prevail.

2.2 TOURISM IN THE SOUTH AFRICAN POLICY AND EDUCATION FRAMEWORK

The tourism, hospitality, sports, arts, culture and heritage sector of the global economy is one of the fastest growing sectors (CATHSSETA, 2013: 10). The SETA that oversees the South African tourism industry is known as CATHSSETA. This SETA has the potential to create employment opportunities as well as to increase economic growth in South Africa (CATHSSETA, 2013: 7). Vellas (2011: 14) argues that plans and policies in the tourism sector are essential for both economic stimulation as well as job creation. Amoah and Baum (1997: 7) agree that a solution to effective tourism education practices, which may lead to skills development in the tourism industry, is to create and implement such policies on national and provincial level. Baum (2008: 784) reiterates the importance of this role of government in the economy and a country's development. To this effect, South Africa has formulated several national policies and implemented various government bodies to this effect. The role of these bodies and policies will be summarised below.

2.2.1 National Policies

Tourism is also regarded as a priority economic sector in the government's Medium-Term Strategic Framework (MTSF) 2009 election manifesto, which proposes the following priorities for the sector namely; creating decent work and sustainable

livelihoods, education, health, rural development and the fight against crime and corruption (Department of Tourism, 2011: 1).

The Tourism Act (Act 72 of 1993) as cited in the Department of Tourism's Annual Report 2012/2013 ensures that the core business of South African Tourism's (SAT) is to market South Africa as a tourism destination of choice. This can be achieved by encouraging persons to travel to and in South Africa, while ensuring a high quality of standards for tourism services and facilities (Department of Tourism, 2013: 11). The main goal of SAT is to ensure that the tourism sector contributes to economic growth (Department of Tourism, 2013: 11). Tourism is also regarded as a priority economic sector in the government's Medium-Term Strategic Framework (MTSF) 2009 election manifesto, which proposes the following priorities for the sector namely; creating decent work and sustainable livelihoods, education, health, rural development and the fight against crime and corruption (Department of Tourism, 2011: 1).

PwC (2014: 13) and Stats SA (2014b: 7) both confirm that tourism is a vital component of the national economy and is recognised in the National Development Plan (NDP) as a driver of economic and employment growth. Stats SA (2014b: 7) reiterates that skills development and human capital are essential to South Africa's economic growth. The NDP's (South Africa, 2013: 17) priorities are to raise employment by means of economic growth, to improve the educational quality, skills, development and innovation, as well as to build the capability of the government. One method of attaining this is by implementing labour market policies to increase employment, with special focus on the youth and unemployed (South Africa, 2013: 18). The NDP's targets are to create an additional 11 million jobs by 2030, which can be achieved by an annual increase in GDP of 5.4% over the period. As part of the NDP, the tourism sector's targets are to create 225 000 jobs by 2020 and to contribute R499 billion directly and indirectly to the GDP by 2020. Both of these targets will contribute to the main objective of the NDP of increasing the proportion of national income for 40% of the population that earn the lowest wages (Department of Tourism, 2013: 29).

The National Skills Development Strategy (NSDS) (2011-2016) allows for the co-operation of higher and further education and skills development (CATHSSETA,

2013: 25). In this strategy, the implementation of relationships between public colleges, universities, SETA's and employers is emphasised, with a view to promote such relationships and ensuring access to such opportunities to all persons in South Africa equally (CATHSSETA, 2013: 25 and Kraak, 2008: 16). SETA's were developed with the aim of developing sector-specific skills (NDP, 323 cited in Stats SA, 2014b: 8). This strategy also aims to overcome the skills shortage challenges and the variances in supply and demand in the country, thereby improving productivity in the economy (CATHSSETA, 2013: 25). The NSDS calls for the industry's skills and education levels to be elevated through the implementation of its strategies and government policies. Kaplan (2004: 217) reiterates the importance of skills development by recommending that an economy that wants to reap business and tourism opportunities requires a skilled workforce.

The Industrial Policy Action Plan II (IPAP2) projects that 2 477 000 direct and indirect jobs will be created over the next ten years (up to 2023) and 225 000 of these jobs will be created by the tourism sector alone (CATHSSETA, 2013: 27). The aim is to diversify and grow export trading from South Africa, improve trade balances, build long term capacity for industries, grow domestic technologies and enhance the development of skills in the country. Ashley *et al.* (2000: 2) cite one of the major advantages that tourism has for the economy, which is that, due to its labour intensity, more opportunities can be created for SMME businesses.

The above government bodies and policies, as well as their aims, prove that tourism is a growing priority in the national economy, and job creation and finding suitably qualified candidates for job vacancies will become increasingly important to economic growth and employment strategies in future.

According to CATHSSETA (2013b: 28), the Green Paper for Post School Education and Training reflects challenges facing higher education in South Africa, which it aims to overcome through expanding equal access to education and training opportunities. They state that one of the reasons that South Africa has not been successful in using quality education to increase employment figures, is the poor quality of education itself. The value placed on education and employment in various policies and by different government departments in South Africa, aims to show that the SETA's and NSDS goals of creating employment opportunities are very closely

aligned to the enhancement of skills in the workforce. The next section subsequently focuses on Higher Education Institutions as tourism skills educators.

2.2.2 Higher Education Institutions

Producing tourism graduates with the necessary skills, competencies and knowledge to be employable in the South African tourism industry, is increasingly becoming a challenging task for higher education institutions in South Africa. Rogerson (2013: 217) appraises hospitality management qualifications by citing Timothy and Teye (2009) who state that usually hospitality management courses are focused on preparing students to work in the accommodation sector, tending to ignore the other aspects of hospitality and its role in the tourism system.

According to SAQA (2011), the NQF is a framework designed to classify and register quality qualifications in South Africa (refer to Table 2.1 for the structure of the NQF). One of the aims of the NQF is to provide higher education and training, which provide relevant and quality qualifications to the public (SAQA, 2011). The NQF also guides (except SAQA), the Department of Higher Education and Training (DHET), as well as three Quality Councils (QC), namely the Council on Higher Education (CHE), the Council for Quality Assurance in General and Further Education and Training (UMALUSI) and the Quality Council for Trades and Occupations (QCTC). The NQF Act no. 67 of 2008 (SAQA, 2012: foreword) provides for a framework consisting of ten levels, where learning occurs in ascending order from one to ten. One manner in which SAQA aims to advance the NQF objectives is to establish this framework of Level Descriptors. The promotion of lifelong learning is seen as a benefit of the NQF. Each level descriptor in the ten categories, describes the following competencies (SAQA, 2012: 3): scope of knowledge; knowledge literacy; method and procedure; problem solving; ethics and professional practice; assessing, processing and managing information; producing and communicating of information; context and systems; management of learning; and accountability.

According to Umsobomvu (2003: 21) a qualification can be seen as recognition for the learning a graduate has achieved. Qualifications, according to Umsobomvu (2003: 21) are the best way to break down specific learning outcomes, as they measure whether a graduate is able to achieve the outcome. A qualification must be approved by SAQA before it can be registered on the NQF.

Table 2.1 National Qualifications Framework

	OLD NQF LEVEL	NEW NQF LEVEL	NQF BAND	Type of Qualification
HET	8	10 9	Higher Education and Training	Certificates, Diplomas, Degrees, Higher diplomas, Master Degrees, Doctorates, etc.
	7	8		
	6	7		
	5	6 5		
FET	4	4	Further Education and Training	Grade 10 – 12 Short Courses, Colleges and Workplace Certificates
	3	3		
	2	2		
GET	1	1	General Education and Training	Grade 0 – 9 Pre-school ABET 1-4

(Source: Umsobomvu, 2003: 20)

With the launch of the Trends in Public Higher Education in South Africa 1995 to 2004, Minister Naledi Pandor (2007: Online) stated that in 1995 there were 542 398 graduates and that this number grew to 1.18 million in 2004. As for demographics, she stated that in 1995 one in four graduates was Black, compared to two in four in 2004, which is an indication of governments' success in implementing policies which widened access to higher education.

Minister Pandor further explained that the largest growth in fields of study was attributed to Business and Management Sciences (hospitality management forms part of the management sciences' faculty in most universities) (Pandor, 2007: Online). She stated that it is well known that the South African labour market prefers better skilled workers, even though the figures since 1994 indicated that the education system had changed and so had the profile of the graduates entering the workforce (Pandor, 2007: Online). An obvious conclusion is that more grade 12 learners would need to graduate in order for the number of university graduates to increase in future. In this regard, Pandor (2007: Online) mentions that the focus should be on the quality of the education provided. The previous study conducted by SAQA (Trends in Public Higher Education in South Africa 1992 to 2001) indicates

that between 1992 and 2001 an increase was observed in the number of African, Indian and Coloured graduates, as well as in females. The same study also concluded that the total number of graduates from public higher education institutions had doubled since 1992 (Pandor, 2007: Online).

According to CATHSSETA (2013b: 32) the entire hospitality industry has the highest number of employees with NQF level 4 and 5 qualifications (8 841), which is the required qualification for most entry level positions in the industry (see Table 2.2 below). The lowest number of employees (795) in the sector have ABET (levels 1-4) and NQF levels 6-8 (144 employees). Due to the fact that these NQF levels show the lowest number of employees, the focus should therefore be on encouraging and recruiting school leavers to engage in education and training through NQF ABET levels 1-4, as well as levels 6-8. The limited number of employees at levels 6-8 indicates that there are a limited number of jobs in the industry that require such qualifications (middle and professional management). Currently, the majority of employees have qualifications at a lower skill level so that it will become increasingly difficult for such employees to progress in their careers or qualify for promotions (CATHSSETA, 2013: 33). The educational profile of the hospitality sub-sector is described in Table 2.2.

Table 2.2 Educational Profile of the Hospitality sub-sector

Education Levels	Employees
ABET	15 253
NQF 1, 2	48 468
NQF 3, 4, 5, 6	58 654
NQF 7, 8, 9, 10	5 388
Total	127 763

(Source: CATHSSETA, 2014a: 61)

According to a report by the Department of Higher Education and Training (DHET, 2012b: 2), in 2012, there were 23 public higher education institutions, 119 private higher education institutions, 50 public FET[7] colleges, 536 registered private FET colleges, 3 150 public AET Centres and 150 private AET Centres in South Africa.

[7] TVET (Technical and Vocational Education and Training colleges) is the new term for FET (Further Education and Training colleges) since 2014. When referring to FET colleges in the rest of this thesis, it also refers to TVET also (South Africa, 2014)

The total enrolment was more than 2 million students in the same year. Of these institutions, 22 universities and universities of technology throughout 8 provinces in South Africa, offer 63 degrees and diplomas related to the sector (CATHSSETA, 2013: 41; CATHSSETA, 2014a: 76). There are 43 FET Colleges over 55 campuses that offer the National Certificate Vocational (NCV) in Hospitality and Tourism (levels 2-4). CATHSSETA (2013b: 41) states that the quality of education provided by public providers is generally of a high standard. Budget issues, however, are a major concern at several FET Colleges.

According to the HSRC (2008: 54) tourism related courses and programmes are offered at 13 of the higher education institutions. The various types of qualifications available and their delivery sites are described in Table 2.3. According to CATHSSETA (2013b: 102), recognised qualifications for the Tourism industry may be summarised as follows:

a) Certificates (obtained after one year at a further or higher education level).

b) Diplomas (obtained after two years at an accredited and registered training provider).

c) National Diplomas (obtained after three years at a university of technology).

d) Degrees (may be three or four years of theoretical study at University Level).

e) Degrees are followed by Honours, Masters and PhD Qualifications.

f) Learnerships (workplace-based training with theoretical and practical components).

g) Internships (academic qualifications can be extended with structured workplace exposure and specialised training).

h) Apprenticeship (similar to learnerships but mostly occur in trade occupations).

i) Skills Programmes (accredited training which equals one credit contribution on the NQF).

j) Short Courses (may include structured training that is not yet NQF aligned but the skills may be necessary to learners).

k) Recognition of Prior Learning (RPL) (allows a person to obtain a qualification based on the assessment of their past training and experience).

Table 2.3 Qualification Types and Delivery Sites

<table>
<tr><th></th><th></th><th></th><th colspan="2">Qualification types</th><th colspan="2">Delivery sites</th></tr>
<tr><th>BAND</th><th>OLD NQF LEVEL</th><th>NEW NQF LEVEL</th><th>GENERAL ACADEMIC</th><th>OCCUPATIONAL PROFESSIONAL</th><th>GENERAL ACADEMIC</th><th>OCCUPATIONAL PROFESSIONAL</th></tr>
<tr><td rowspan="6">HIGHER</td><td>8</td><td>10</td><td>Doctorates e.g. PhD</td><td>Doctorates e.g. DTech</td><td>Universities</td><td>Institutes Academia, Private Universities, University of Technology</td></tr>
<tr><td></td><td>9</td><td>Masters e.g. MA</td><td>Masters e.g. MTech</td><td></td><td></td></tr>
<tr><td>7</td><td>8</td><td>Honours</td><td>(4yrs) 480+ Cr Bachelors, BTech</td><td>Universities</td><td>PHEI’s, Academies, Prof. Institutes & Schools</td></tr>
<tr><td>6</td><td>7</td><td>Bachelors</td><td>Bachelors, Diplomas, Certificates</td><td>Universities</td><td>-</td></tr>
<tr><td>5</td><td>6</td><td rowspan="2">Access Certificates, Bridging Certificates</td><td>Occupational Certificates, Diplomas</td><td rowspan="4">Schools, Secondary Technical Colleges, FE Colleges, (Private) Colleges</td><td>Technical Schools, Professional Institutions & schools, Technical schools/colleges</td></tr>
<tr><td></td><td>5</td><td>Occupational Certificates, Diplomas</td><td></td></tr>
<tr><td rowspan="3">FET</td><td>4</td><td>4</td><td>SC, NC VOC, NSC Adult</td><td>Occupational FETCs</td><td rowspan="3">Workplace Private College/schools, Technikons&Technical Schools/Colleges</td></tr>
<tr><td>3</td><td>3</td><td>NCI VOC, L3</td><td rowspan="3">Occupational Certificate Sector Based GETC</td></tr>
<tr><td>2</td><td>2</td><td rowspan="2">GETC, ABET, GEC, ABET CREDITS</td></tr>
<tr><td>GET</td><td>1</td><td>1</td><td>ABET Centres, Public and Private Schools</td><td>NGO’s, Special needs Schools, providers</td></tr>
</table>

(Source: CATHSSETA, 2013: 100)

In 2012, 49% of students enrolled in higher education institutions, 36% in FET Colleges and the rest in AET colleges (DHET, 2012b: 3). The majority (90%) of

students enrolled in public higher education institutions (DHET, 2012b: 4). The same report (2012b: 7) reveals that the majority of these students enrolled for studies in the Humanities Faculty, while the second most popular was Business and Management, which offers most of the Hospitality programmes. Of the students enrolled in public higher education institutions, most (500 430) enrolled in undergraduate programmes and 281 280 in undergraduate diploma and certificate courses, with 49 561 master's students, and 113 964 doctoral students. More than 165 000 students graduated from public higher education institutions in 2012, of which 70 742 graduated with undergraduate degrees, 49 654 with certificates and diplomas, 10 334 with master's degrees and 1 878 with doctoral degrees (DHET, 2012b: 14). FET Colleges (public and private) experienced an increase in enrolment since 2010, with a total of 773 276 enrolments in 2012 (DHET, 2012b: 20).

The Minister of Higher Education and Training is responsible for technical, vocational and tertiary education (up to Doctorate level), as well as FET Colleges (CATHSSETA, 2013: 99). According to the South Africa Bill of Human Rights, the South African government has an obligation to provide education to all, as it is the right of all citizens to have an education (CATHSSETA, 2013: 99).

The challenge of quality education becomes evident when one looks at the graduates entering the workforce. Unemployment rates are high due to the fact that the youth does not possess the necessary skills to enter the job market (British Council, 2014: 3). Grade 12 is regarded as vital to access jobs in the industry, but other formal qualifications may be obtained at universities, universities of technology, FET Colleges, and other private institutions which may offer courses related to the industry (CATHSSETA, 2013: 93).

Section 2.2 presented the tourism industry in terms of the relevant policies and educational framework, by elaborating on the various higher education institutions that present national qualifications. The following section describes the manner in which tourism is classified in South Africa, and provides a more detailed discussion of the tourism, hospitality and accommodation sectors. The aim is to provide a broader overview of the industry as a foundation for the discussion of tourism employment in South Africa.

2.3 CLASSIFICATION OF TOURISM AS AN INDUSTRY IN SOUTH AFRICA

A major challenge with researching on tourism worldwide and in South Africa, is that tourism activities are not captured explicitly in the United Nations' System of National Accounts. This is due to the fact that tourism uses products of a number of industries that are captured within sectors in the National Account Statistics (Pan African Research and Investment Services, 2010: 6). Tourism uses inputs from other sectors and supplies products and services to other sectors, making its impact difficult to assess (Pan African Research and Investment Services, 2010: 8).

These challenges are stated by Amoah and Baum (1997: 7) who states that the tourism industry can be seen as more of an economic sector than it is an industry. This leads to the differentiation by several organisations of the travel and tourism industry and the economy, by focusing on their direct or indirect interaction with guests/customers. For instance, the accommodation and transport industries are directly involved in the tourism, while the industries that are indirectly include, entertainment, accounts, energy and food production (Pan African Research and Investment Services, 2010: 6; Vellas, 2011: 4). The impacts of indirect tourism industries are more difficult to quantify (Pan African Research and Investment Services, 2010: 6). This relates to the WTTC definition of the tourism industry and of the tourism economy, which is differentiated by the fact that the tourism industry (2014b: 11) relates to the activities undertaken by travellers to environments outside their usual environments, for less than one year; while the economic activity of the tourism economy refers to the economic activity of all the aspects related to such trips.

The key sectors contributing to South Africa's GDP are categorised according to industries by Stats SA. The hospitality industry is broadly classified under trade (SIC[8] 6), which encompasses wholesale (SIC 61), retail (SIC 62), motor trade (SIC 63), catering and accommodation (SIC 64). In 2013 the trade industry (SIC 6) as a whole contributed 21.4% of jobs to the national economy (Stats SA, 2013a: 9). In the ten year period from 2002 to 2013, the trade industry showed a growth of 307 000 jobs (Stats SA, 2013a: 9). This industry employed a total number of 1 687 658 employees in 2012, which is a dramatic increase from 762 000 employees in 1993 (Stats SA,

[8] SIC is the abbreviation used for Standard Industrial Classification

2013b: 6.7). During 2013, the trade industry contributed 18.6% to the GDP of the national economy, as opposed to 14.2% in 1994.

Stats SA (2014a: 4) reiterates that the tourism industry is not measured as a sector in its own right when it comes to national accounts because it is not an industry which is clearly demarcated in the International Standard Industrial Classification of all Economic Activities (ISIC). It is also complex to measure the size of the tourism industry given that tourism is defined by the characteristics of tourists, while SIC industries are created on the basis of their activities and outputs (Stats SA, 2014a: 4). Therefore tourism is principally measured by finding the correlation between tourists and the total supply of goods and services in a country (Stats SA, 2014a: 4). The composition of the tourism, hospitality and accommodation industries will be discussed in depth in the sections that follow.

2.4 TOURISM, HOSPITALITY AND ACCOMMODATION

To provide a better understanding of the context of this study, the following section focuses on a discussion of the tourism, hospitality and accommodation industries, placing emphasis on the differences and placements of these sectors in the South African tourism industry. A standard hotel organisational chart is then proposed, including the job levels that will be utilised for this study.

2.4.1 The tourism industry

Stats SA (2014a: 52) defines the tourism industry as a set of establishments whose main activity is tourism-based. Gee (1994: 6) further states by defining it as a compilation of various services and products (sold by different sectors of the tourism industry), which are sold by means of an intricate distribution chain. The tourism industry includes accommodation, transportation (airlines, railway, car rental, buses and leisure vehicles), food and beverage outlets, sightseeing and entertainment activities, and components relating to retail and finances (Gee, 1994: 6). Gee (1994: 7) views the contribution of tourism as not only economic, but also educational, recreational, and enriching to the quality of life of citizens.

The tourism industry is identified by several sub-sectors. The five components that Kasavana and Brooks (2009: 4) divide the travel and tourism industry into are described in Figure 2.1 below. Lodging operations or accommodation (the preferred

term for the purposes of this study) offer overnight accommodation to guests; most also offer food and beverage operations and other components of the hospitality industry.

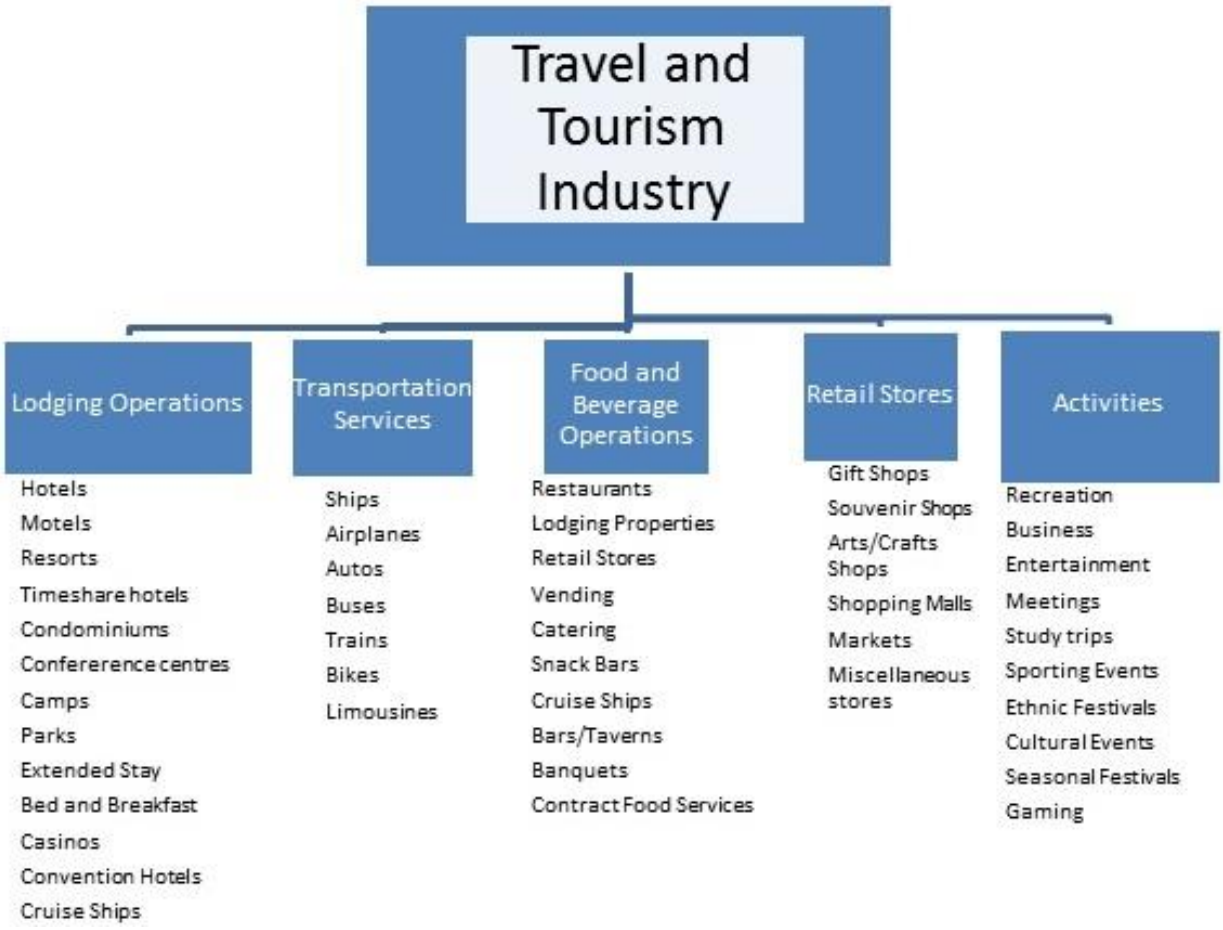


Figure 2.1 Overview of the Travel and Tourism Industry

(Source: Kasavana & Brooks, 2009: 4)

In a study by Prodigy-Grant Thornton (*Tourism and Sport Skills Audit* 2007), it is estimated that a total of 28 000 hospitality enterprises, 6 200 travel and tourism enterprises and 3 500 conservation and tourist guiding enterprises exist in South Africa.

The tourism sector therefore also consists of tourism-characteristic activities, related to households, non-financial and financial corporations, general government or non-profit institutions (Stats SA, 2014a: 52). According to Stats SA (2014a: 4), the United Nations World Tourism Organisation defines tourism as activities of persons who travel to and stay in places outside their routine environment (for leisure, business or

other purposes) for less than one year. The tourism sub-sectors are therefore based on the main consumptions by tourists, which include (HSRC, 2008: 16):

- Air transportation.
- Ground transportation.
- Accommodation.
- Food and beverage facilities and services.
- Recreation and entertainment.
- Activities and attractions.
- Tour/Nature or Site guides.

According to the WTTC/Oxford Economics 2014 Travel & Tourism Economic Research (2014a: 3), the tourism industry is economically important at the global level, and is well known for its direct and indirect impacts, as is reflected in Figure 2.3 below. While the sub-sectors of the tourism industry are based on the tourist consumption; the figure below indicates the manner in which tourist consumption contribute directly and indirectly to the economy.

The direct contribution of tourism to the GDP consists of several items (WTTC/Oxford Economics, 2014a: 4), namely: internal tourist spending within a country on travel and tourism; and individual spending (spending by government services directly linked to tourists) (see Figure 2.2 below). The direct contribution is calculated in line with tourism sectors such as hotels, airlines/airports and travel agents; and also takes the total "internal" spending of purchases made by the various tourism sectors into account (WTTC/Oxford Economics, 2014a: 4).

The total contribution of travel and tourism includes direct, indirect and induced impacts. The indirect impacts include investment spending such as the purchase of new airplanes and hotels; government collective spending such as tourism marketing, promotion, administration, etc., which impacts tourism as a whole; and the domestic purchases of goods and services by sectors related to tourism, such as purchases of food and cleaning supplies by hotels, etc. Induced contribution refers

to that part of the GDP and jobs supported by the spending of individuals who are directly and indirectly employed by the travel and tourism industry. The direct contribution of travel and tourism reflects the internal spending, government individual spending, as well as the direct contribution of the tourism sectors (for example hotels, airlines etc.). Figure 2.2 below describes the direct, indirect and induced contribution of tourism.

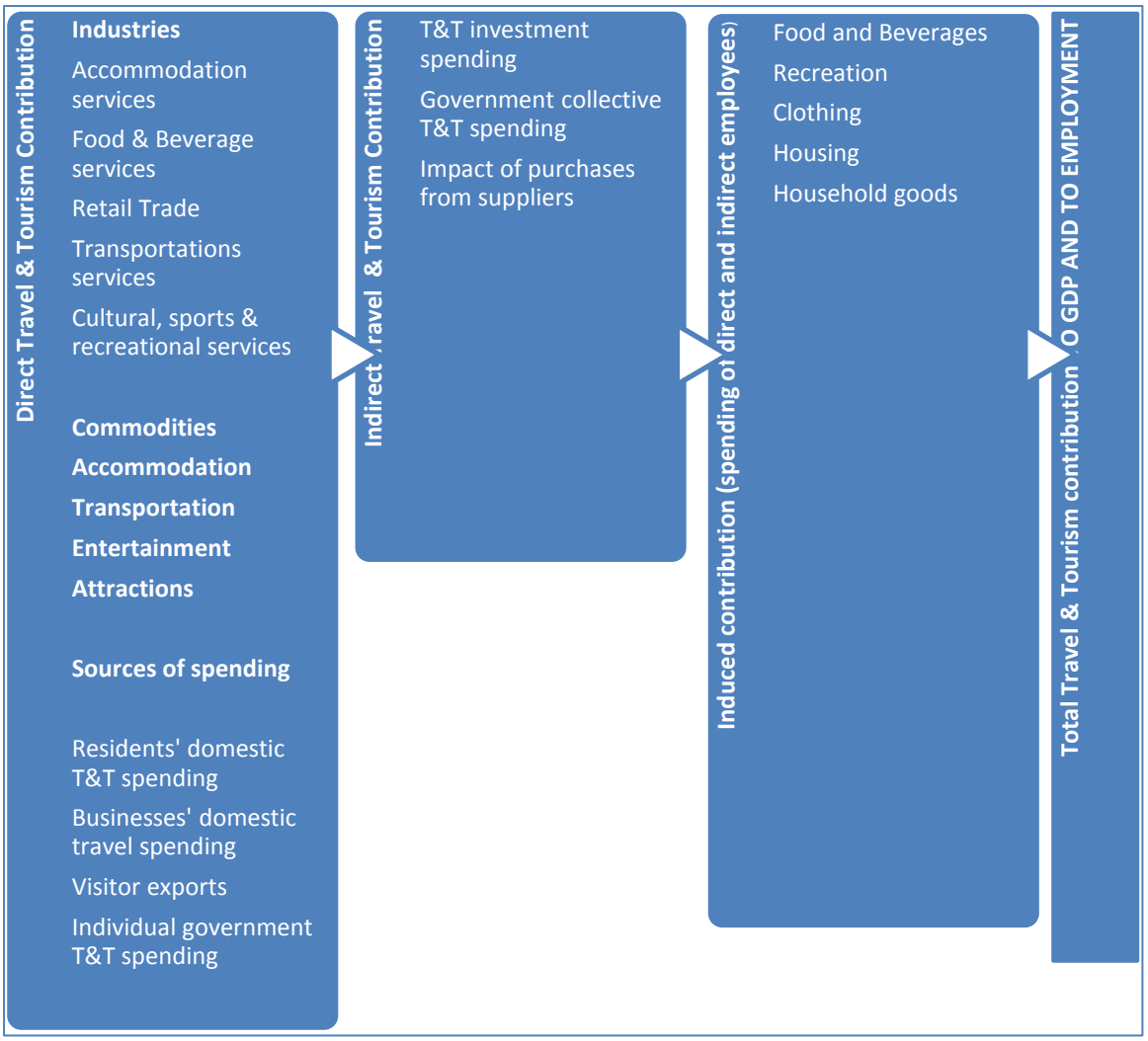


Figure 2.2 Direct and indirect contribution of tourism

(Source: WTTC/Oxford Economics, 2014a: 3)

A vital characteristic of the tourism industry is the interrelationships of the various sectors included in the industry (Angelo & Vladimir, 1994: 15). A guest experience may include transportation, accommodation, food and beverage, as well as some retail purchases (Angelo & Vladimir, 1994: 15). This is known as a mutual dependency or symbiotic relationship as the sectors of the travel and tourism

industry must work together in order to successfully satisfy a guest's needs (Angelo & Vladimir, 1994: 15).

According to CATHSSETA (2013b: 7) the DHET used the Standard Industrial Classification (SIC) codes to identify the SETA presiding over a specific industry. The sub-sectors belonging to this SETA are namely: arts, culture and heritage; conservation; gaming and lotteries; hospitality; sport, recreation and fitness; and tourism and travel services (CATHSSETA, 2013: 9).

2.4.2 The hospitality Industry as part of the tourism industry

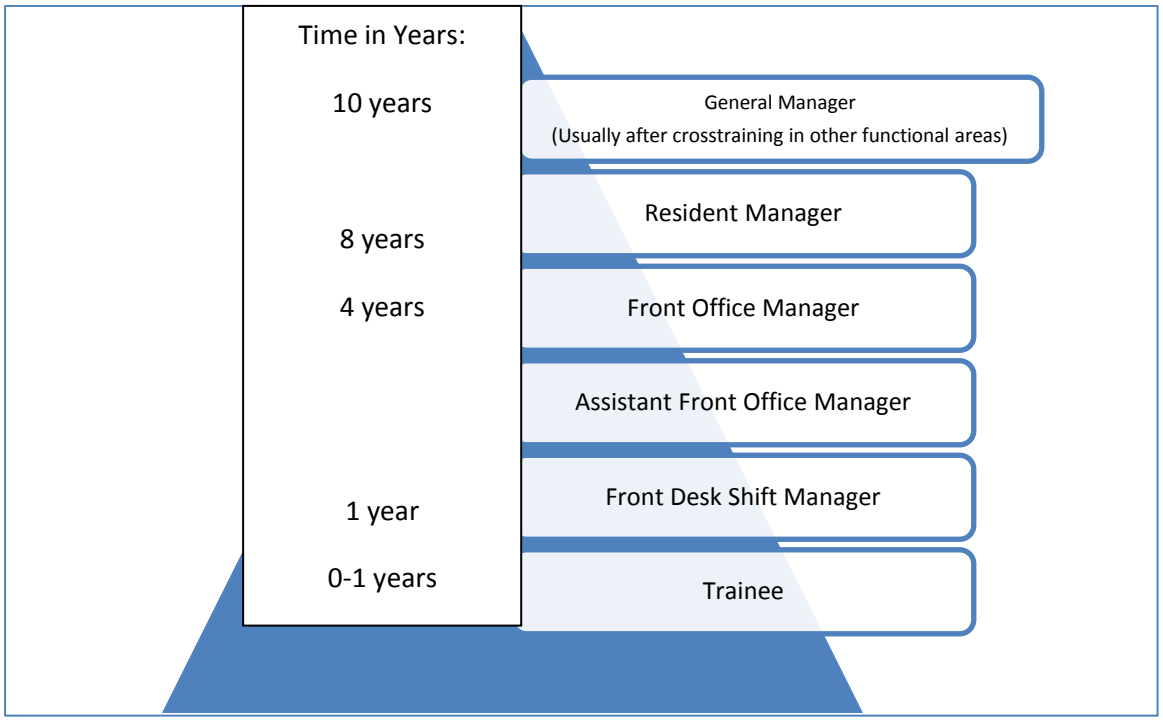
The hospitality industry is part of the travel and tourism industry (Angelo & Vladimir, 1994: 6). The hospitality sub-sector of the tourism industry, which mainly delivers services to guests, is highly dependent on quality employees. Maxwell, Watson and Quail (2004: 162) refer to hospitality employees as "service performers" whose main objective is to deliver quality services.

The CATHSSETA data available indicates that the Hospitality Chamber is the largest sub-sector of CATHSSETA, employing 122 464 or 67% of the sector's employees in 2012 (CATHSSETA, 2013: 14). It is important to note that only a few organisations report to CATHSSETA, mainly smaller organisations. CATHSSETA (2014a: 4) defines the hospitality sub-sector as consisting of hotels, motels, boatels and inns that may be registered with SAT; and guest houses, guest farms, bed and breakfasts, management and operation of game lodges, caravan parks and camp sites, restaurants, tearooms (that may have liquor licences), fast food or take away outlets, caterers and such services, timeshare and bioscope cafes.

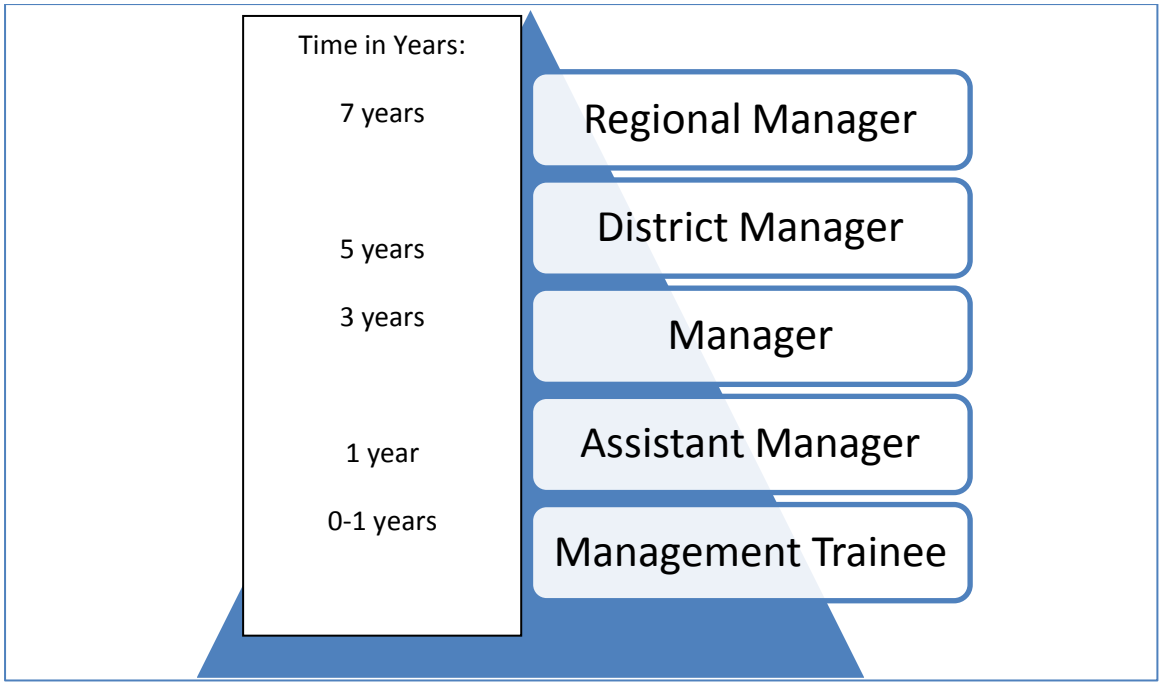
The hospitality industry falls within the tertiary industries in South Africa. According to Stats SA (2013a: 10), in 2003, this industry had 27.5% skilled labour, 40.0% semi-skilled labour, and 32.6% unskilled labour. Compared to 2013, skilled labour in this industry was 29.2%, semi-skilled labour was 43.3% and unskilled labour was 27.5%. This indicates a decline in the number of unskilled employees, with an increase in both skilled and semi-skilled employees. Overall, in all industries, in the ten year period, the number of skilled employees increased from 22.9% to 25.6%, semi-skilled decreased from 46.2% to 46.1% and unskilled employees decreased from 30.9% to 28.3%. These statistics confirm that in each of these industry groupings

(primary, secondary and tertiary industries) there was an increase in skilled jobs over the ten year period, which suggests that the education profile of employed persons had improved (Stats SA, 2013a: 10).

Figure 2.3 below illustrates two sample career plans for a person employed in the hospitality industry. The first is for a front office manager trainee in a large chain-operated hotel, and the second is for a manager trainee in a mid-scale/budget rooms only) hotel firm. It is evident from both of these career plans that time is a large factor in promotion. However, as mentioned earlier in section 2.1 above, a large number of employees (of all skills levels) leave the hospitality industry yearly, due to long working hours, hard labour, poor remuneration; and personal challenges, such as the toll it takes on relationships and family life. Especially for Generation Y employees, for whom work and family life balance is important, the hospitality industry loses many such skilled employees to other industries that offer better hours, remuneration and a more balanced lifestyle. This means that many employees never graduate to the level of general manager, because they leave the industry prematurely.



Front Office Manager Trainee - Large Chain-Operated Hotel



Manager Trainee - Mid-Scale/Budget (Rooms Only) Hotel Firm

Figure 2.3 Sample Career Plan

(Source: Angelo & Vladimir, 1994: 44)

According to Bardi (2007: 308) the word 'hospitality' means providing services to a guest in a generous manner. For employees that have not been adequately trained and educated in the world of hospitality, this implies unhappy guests who will not return, and will, by word of mouth, prevent other potential guests from visiting the hotel. The need for sufficiently trained and educated employees in the hospitality industry as a service industry, therefore, cannot be overemphasised.

There seems to be a correlation between the quality of the labour employed, their skills; and the quality of the services. Martinez-Ros and Orfila-Sintes (2012: 688) confirm this by stating that the quality of the front-line staff determines the quality of the outputs, due to the high staff and guest interaction. The more qualified and trained that employees are, the more knowledge, ideas and creative ideas they may have, which is important for this highly labour-intensive sector. Experience and qualifications are two important factors which play a role in the creative ideas of hospitality managers (Martinez-Ros & Orfila-Sintes, 2012: 688). According to the study by Martinez-Ros and Orfila-Sintes (2012), qualifications represent the knowledge that managers have when implementing innovative ideas and this is

represented by an intermediate or advanced degree. The findings of their study of the hospitality industry in the Balearic Islands concluded that the more skilled a hospitality manager is, the higher their ability to create new ideas (Martinez-Ros & Orfila-Sintes, 2012).

2.4.3 The accommodation industry as part of the hospitality industry

Van der Merwe and Wöcke (2007: 2) state that the accommodation industry is a vital part of the South African tourism industry. The accommodation industry in South Africa, according to the Stats SA (2013c: 10 and 2014a: 2) classification (based on the Standard Industrial Classification of all Economic Activities – SIC), covers income tax registered and value added tax registered private and public enterprises that are mainly involved in supplying accommodation. This includes:

a) Hotels, motels and inns (SIC 64101).

b) Caravan parks and camping sites (SIC 64102).

c) Guest houses and guest farms (SIC 64103).

d) Other accommodation (SIC 64109).

2.4.3.1 Accommodation Grading

According to Bernini and Guizzardi (2011: 6), the grading system used to grade hotels is beneficial for the tourism industry, as it governs the quality of services and relates strongly to employee productivity. The management style employed in a hotel also has an influence on the performance of the hospitality industry. The Tourism Grading Council of South Africa (TGSCA) (TGCSA, 2013: Online) is the only recognised quality assurance body for tourism products, in terms of value for money, service and customer expectations in South Africa, and presents a star grading system to accommodation establishments. Their motto is to "*establish a recognisable and credible benchmarked system of quality assurance for accommodation and MESE (Meetings, Exhibitions and Special events) experiences, which can be fully relied upon by visitors when choosing an establishment"* (TGCSA; 2014: Online). Star grading is a 3-year membership with a once-off application and annual renewal, on condition of validation by a TGCSA Accredited Grading Assessor.

2.4.3.2 Types of Accommodation Establishments

The TGCSA defines formal accommodation, which can be full or limited service, as a hotel or lodge. The TGCSA grades nine types of accommodation establishments, namely: Hotels, Lodges, Bed & Breakfasts, Country Houses, Guest Houses, Self-Catering Units, Caravan and Camping Parks, Backpackers and Hostelling facilities and Meetings, Exhibitions, and Special Events Venues (MESE) venues (TGCSA, 2014: Online).

A hotel refers to formal accommodation with full or limited services offered, has a minimum of four rooms and offers a reception area. Usually the term hotel refers to general accommodation such as hotels, motels, inns, suite hotels, conference centres, resorts and other accommodation facilities (Kasavana & Brooks, 2009: 5). According to Kasavana and Brooks (2009: 5) and Bardi (2007: 12), hotels are defined as establishments that provides accommodation to the general public, and that have one or more of the following services namely; food and beverage, housekeeping, concierge, bell or door assistants, laundry and dry cleaning, and the use of furniture and fixtures. Hotels may have 50 to 5 000 rooms, while inns have 5 to 50 rooms (generally known as guest houses in South Africa).

Hotels are the most developed and organised sub-sector of the hospitality industry (Van der Merwe & Wöcke, 2007: 2). According to Bernini and Guizzardi (2011: 14), the accommodation industry is varied and consists of large and smaller types of accommodation providers. There are five main methods according to which hotels may be classified – according to their size, target market, level of service, ownership and affiliation (Kasavana & Brooks, 2009: 5-19). To these methods of classification of hotels, Angelo and Vladimir (1994: 119) adds location and price.

Motels are defined as accommodation facilities which mainly cater for guests who travel by car; and are therefore usually located at highways or airports (Bardi, 2007: 12; Kasavana & Brooks, 2009: 5). Guest accommodation includes B&Bs, guesthouses and country houses.

2.4.3.3 Contribution of the accommodation industry to the economy

According to the Stats SA publication *Accommodation Industry 2012* (2013c: 2,15), the accommodation industry in South Africa generated income of R40 876 million in 2012, of which the largest contributors were "hotels, motels and inns" (R33 632 million or 82%). This was followed by "other accommodation", which includes conference centres that are not part of the hotel, with accommodation units or rooms; as well as holiday resorts where facilities and equipment are provided for self-catering purposes (R4 988 million or 12%). The profit margin for the accommodation industry in 2012 was 0.8%. The highest profit margin was from caravan parks and camping sites (6.4%), and the lowest profit margin was -1.8% from other accommodation (Stats SA, 2013c: 2). The largest expense for the industry in 2012, was from salaries and wages (R9 576 million or 24%) (Stats SA, 2013c: 3).

At the end of June 2012, the number of employees employed in the accommodation industry, was 105 299, most of which worked in hotels, motels and inns (76 611 or 73%), followed by other accommodation (19 740 or 19%), guest houses and guest farms (7 687 or 7%) and caravan park and camping sites with the least number of employees (1 261 or 1%) (Stats SA, 2013c: 4). The majority of the employees employed by the industry were female (57%), most of which were employed by guest houses and guest farms (67%) (Stats SA, 2013c: 4).

2.4.4 The organisation of a typical accommodation establishment

It is important to outline the organisational charts and job levels that can be found in the accommodation industry, leading to a better understanding of the job vacancies and qualifications which will be described in section 2.5 below.

In 2013, the hospitality sub-sector (CATHSSETA, 2014a: 61) had a total of 127 763 employees. Yet, it must be noted that these figures from CATHSSETA only refer to institutions (mainly larger hotels) that provide their information to CATHSSETA, and therefore SMME's, which are not obliged to report to CATHSSETA, are excluded from these figures.

According to Baum (2002: 347) the jobs and skills in the hospitality industry are influenced by the job title (such as chef or restaurant manager) but also include other

more generic skills and tasks which may not necessarily be included in the specific job title. A hotel organisational chart is an effective way of illustrating the structure in an organisation, as well as the relationships amongst the job levels, lines of authority and the place of each employee in the organisation (Kasavana & Brooks, 2009: 61). Organisational charts are flexible and differ from hotel to hotel, according to the specific responsibilities and job levels that exist. Five star hotels usually have specific defined departments and have more employees than hotels with a lower star grading. Some hotels may also outsource certain departments to outside companies, such as food and beverage or housekeeping.

Organisational charts for hotels may differ according to the level of service and size of the hotel. Large hotels usually have seven distinct departments or divisions, such as Human Resources, Maintenance, Security, Finances/Accounting, Food and Beverage, Sales and Marketing and the Rooms Division (Angelo & Vladimir, 1994: 161; Kasavana & Brooks, 2009: 62). The job levels and employees in the hotel are divided amongst their relevant departments. Smaller properties, such as guest houses, may have fewer employees and fewer distinct departments, but the overall duties of the accommodation facilities remain.

Departments may also be classified into revenue centres (departments responsible for generating direct revenue) or support/cost centres (departments which support the duties of the revenue centre departments) (Angelo & Vladimir, 1994: 162; Kasavana & Brooks, 2009: 63). Departments may be further classified as front of house or back of house departments. Front of house departments have direct guest contact, whereas back of house departments do not have any direct contact with the guests. These classifications dictate the role of employees and their job levels in the hotel. Figure 2.4 below is a standard organisational chart of a full service hotel, clearly indicating the seven main departments or divisions which may be found.

Kasavana and Brooks (2009: 60) describe hotel management as the person(s) who represents the owner's interests in the hotel. The management guides the daily operations of the hotel and reports to the owner regarding the finances of the hotel. The hotel management has seven main duties, namely, planning, organising, coordinating, staffing, directing, controlling and evaluating hotel activities and employees. The next level of management in a hotel is the managing director,

general manager or innkeeper. At an independent hotel, the general manager reports directly to the owner. The general manager is responsible for the success of the hotel and supervises all of its departments. Hotels that are part of a chain usually have a district/area/regional executive who supervises the general managers in their areas.

Next in the rank, is the assistant general manager, resident manager or director of operations that reports to the general manager. When all these persons are off duty and off premises, a duty manager usually is appointed to assume the managerial responsibilities.

Figures 2.5 to 2.8 below indicate organisational charts of hotels that are full service, medium-size and small-size hotels.

Figure 2.5 indicates the organisational chart of a full service hotel; Figure 2.6 indicates the organisational chart of a medium-size; property and Figures 2.7 and 2.8 illustrate the charts of small-size properties. The smaller the hospitality organisation, the less defined the departments or divisions that the hotel will have, which results in less employees as compared to a large full service hotel.

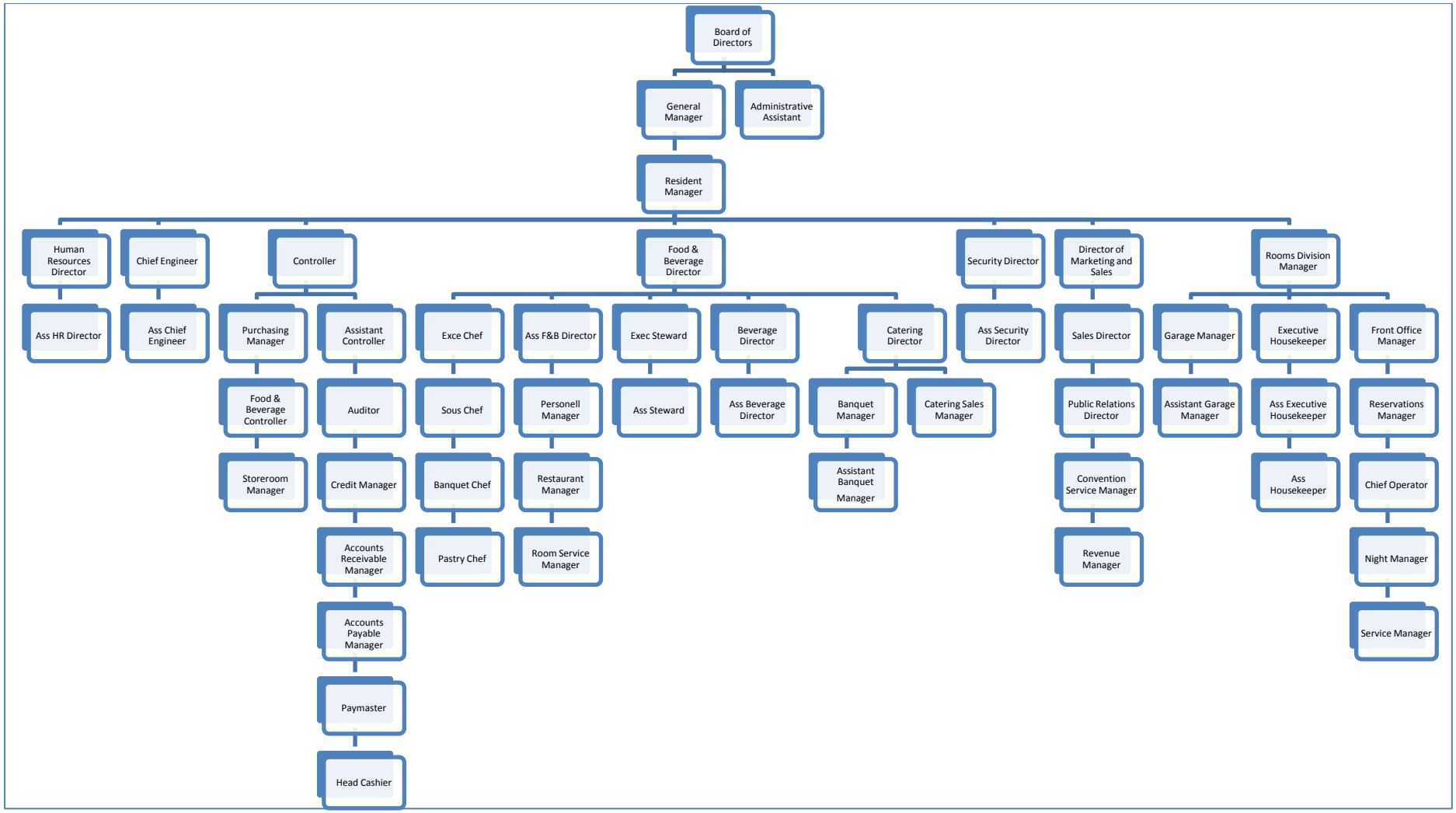


Figure 2.4 Organisational Chart: Management Positions in a Full Service Hotel

(Source: Kasavana & Brooks, 2009: 61)

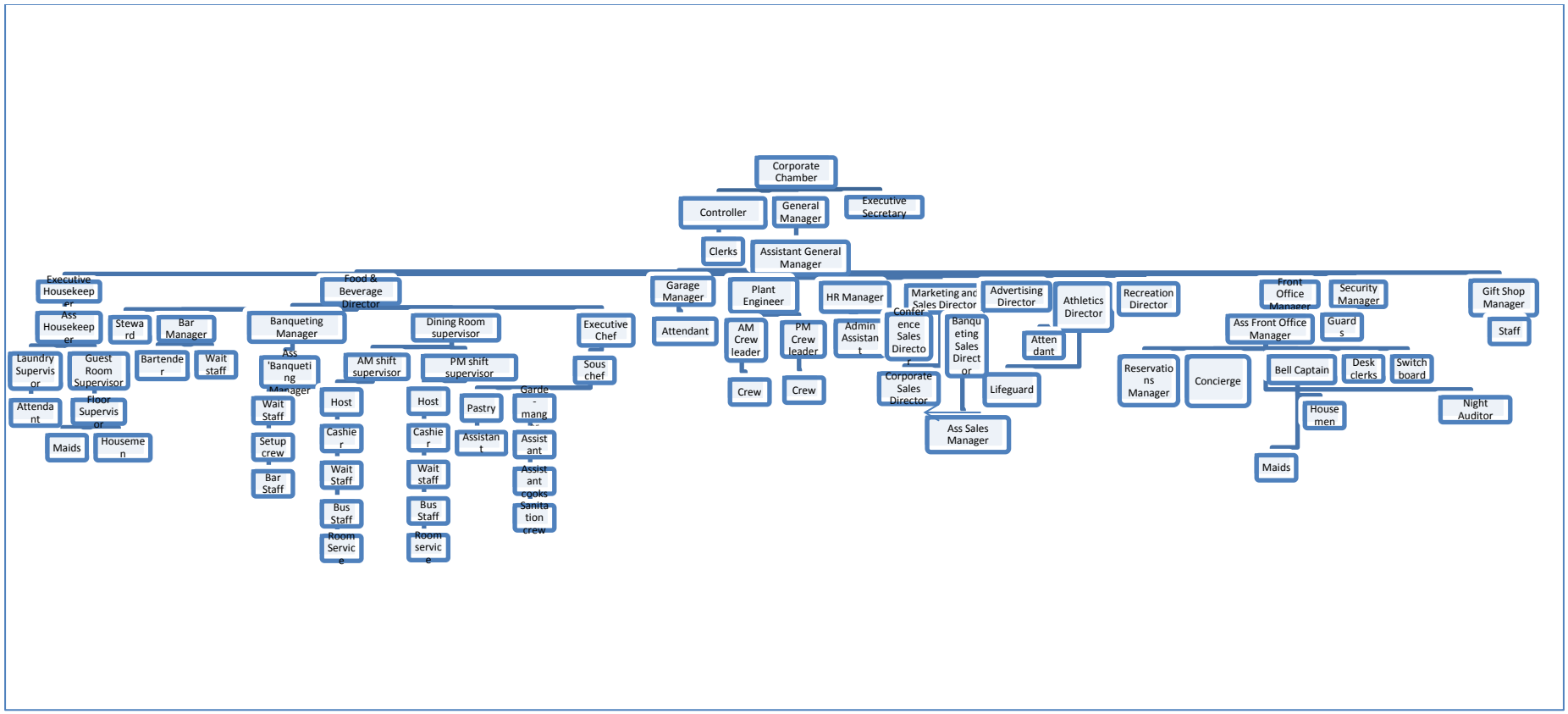


Figure 2.5 Organisational Chart: Management Positions in a Full Service Hotel

(Source: Bardi, 2007: 38-39)

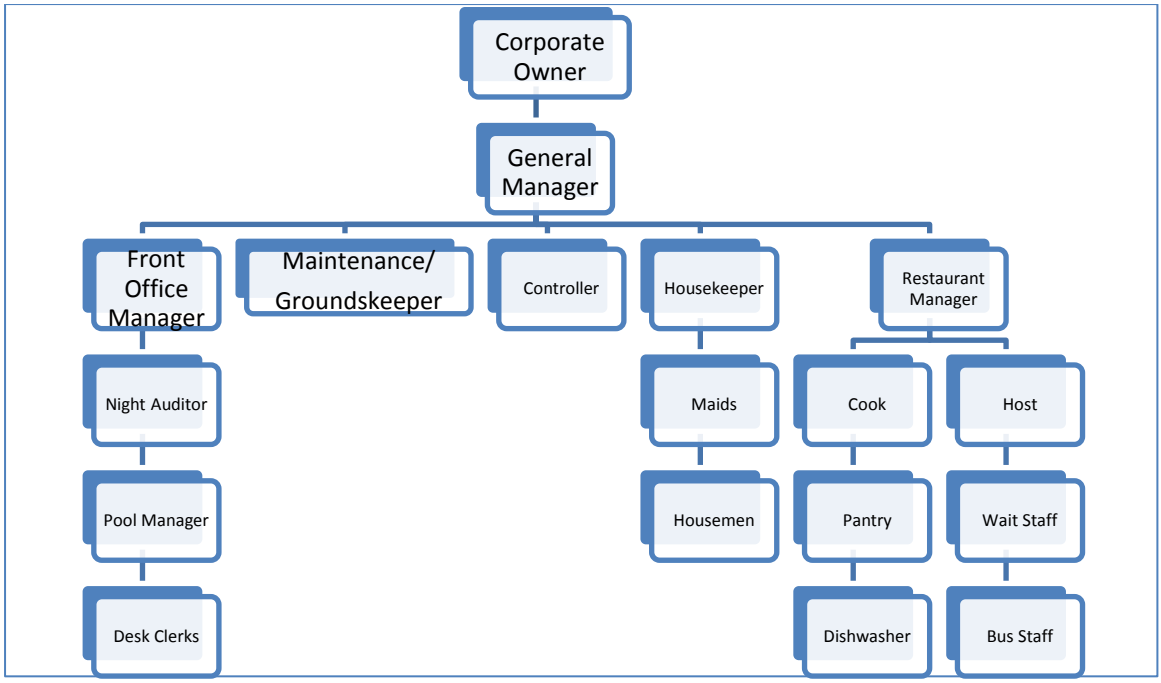


Figure 2.6 Organisational Chart: Medium-Size Lodging Property

(Source: Bardi, 2007: 43)

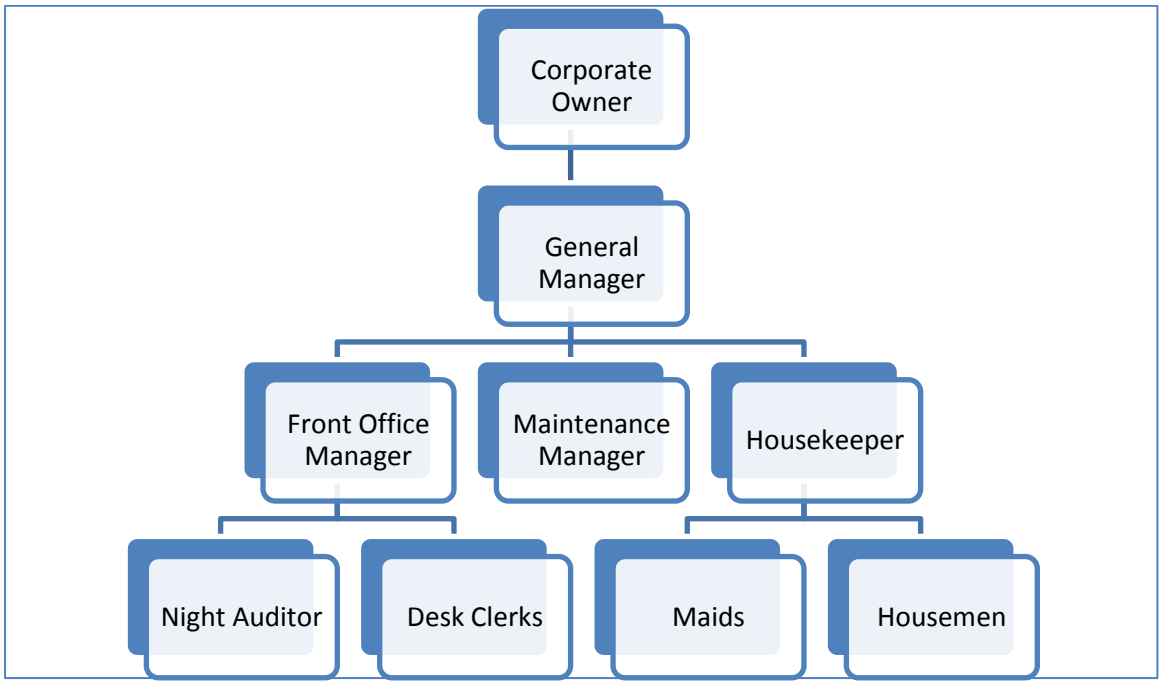


Figure 2.7 Organisational Chart: Small-Size Lodging Property

(Source: Bardi, 2007: 45)

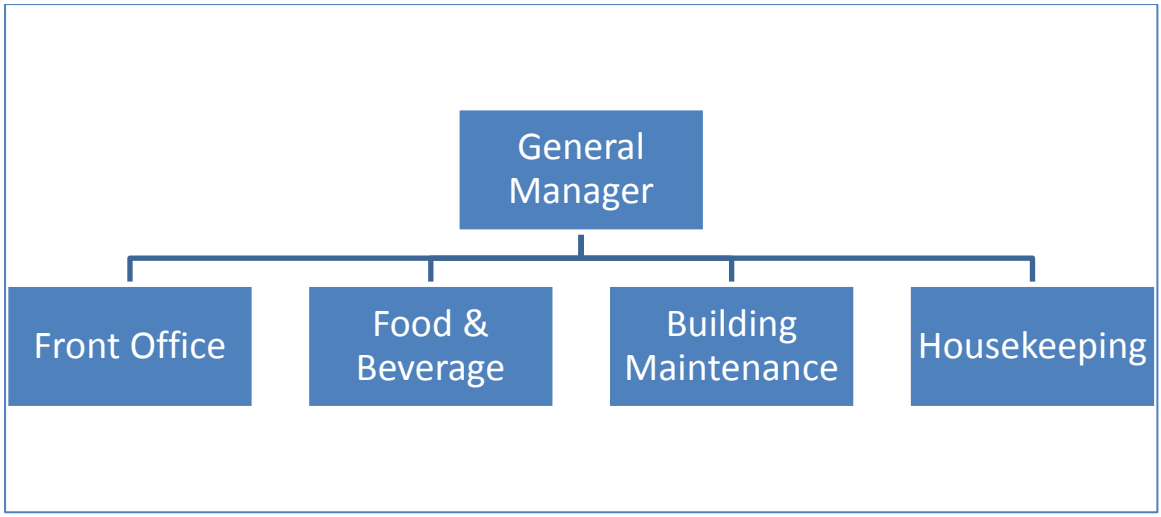


Figure 2.8 Organisational Chart: Small-Size Lodging Property

(Source: Angelo & Vladimir, 1994: 162)

This section aimed to highlight the integration between the tourism, hospitality and accommodation industries in South Africa. It also included a discussion of several hotel organisational charts, as well as the relevant job levels. Against this background, the focus turns to the profile of the tourism workforce in South Africa.

2.5 TOURISM EMPLOYMENT IN SOUTH AFRICA

It may be argued that the challenges facing the South African tourism industry may be combated through the effective implementation of the above-mentioned government policies, as discussed in section 2.2.1. One of the main challenges facing South Africa, as well as its tourism industry, is unemployment. This section provides an overview of employment in the country, before contextualising this to tourism employment, its challenges and the manner in which tourism statistics are classified in South Africa.

2.5.1 Employment in South Africa

According to Stats SA's *National and Provincial Labour Market Trends 2003-2013* (2013a: 1), the economy is not absorbing enough labour to ensure a decline in the unemployment rate. The study indicates that although 2.1 million jobs were created over the ten year period (2003-2013), the working age group of the population increased by 4.9 million during this time. The number of South African residents between the ages of 15 and 64 with jobs declined severely in a short period of time

as a result of the global recession; from 44.5% in the third quarter of 2008 to 41.9% in the corresponding quarter of 2013 (Stats SA, 2013a: 1). The challenges seem to be in failing to create more employment opportunities and in not replacing the South African workforce that has retired, or been affected by HIV/AIDS.

Placing emphasis on the skills and educational profile of the South African workforce may have a positive impact on job creation, given that the country is still characterised by low levels of skilled labour. According to the report by Stats SA's (2014b: 2) on *Youth Employment, Unemployment, Skills and Economic Growth 1994-2014,* there was a 4.6% increase in the employment skills profile between 1994 and 2014 for skilled employees, and a decrease of 3.9% for low-skilled labour. In the skilled labour group, all population groups saw an increase in skills between 1994 and 2004, with the exception of the White population. For the time period 1994 until 2004, in the semi-skilled group, the largest increase was for the Black population (at 19.2%), as opposed to the 13.7% decline for the White population, indicating that the White population experienced an increase from skilled to the highly skilled level. The low-skilled group showed a decline for all population groups except for Blacks with an increase of 3.1% (Stats SA, 2014b: 3). These figures are indicative of the workforce transformation that has occurred in South Africa since 1994.

Yet, these findings must be considered in context. In 2014, the total skilled employment for the White population was 61.5%, 50.7%, for the Indian/Asian, 22.5% for the Coloured and only 17.9% for Black employment (Stats SA, 2014b, 4). These figures seem to indicate that after 20 years of democracy in South Africa, there are still inequalities amongst the population with the disadvantaged groups most affected. The challenge of building skills in previously disadvantaged groups is therefore still a major concern in South Africa's employment profile and economy.

According to a 2013 study by the *Labour Market Intelligence Partnership* (LMIP, 2013: 12), the employment growth rate doubled for high-skilled occupations, followed by unskilled jobs (with an overall growth rate of 0.8) and medium skilled jobs (with an overall growth rate of 0.6). Over 1.1 million highly skilled jobs were created between 2001 and 2012, with 768 000 skilled and also 613 000 unskilled jobs. Therefore, skilled workers benefited the most from economic and employment growth. The category of 'managers and professionals' showed a growth of triple and double

overall employment, respectively. The largest shares of increase in employment were shown by professionals (26.7%), managers (19%), skilled service and sales workers (25.1%) and unskilled elementary workers (20.7%). The trade sector (under which the hospitality industry falls) accounted for a 27% increase in the employment of managers.

The *Labour Market Intelligence Partnership* study shows that labour demand has favoured employees with higher skills levels (LMIP, 2013: 17). According to the same study, the shifts in labour demand in sectors are determined by 'within-sector shifts' as well as 'between-sector shifts' (LMIP, 2013: 17). Within-sector shifts tend to include technological changes and outsourcing, which come from the industry itself. Between-sector shifts occur between sectors in the economy as a result of changing shares in the output of different sectors. Taking into consideration that sectors have different skills demands, a change in the production of a specific sector may also influence labour demand at different skills levels, where the domestic output has an influence on the shifting labour demands between sectors. In addition, shifts in demand for products may also influence the demand for labour and skills.

This section is further discussed in chapter four, section 4.6.2 as demand and supply of labour in the South African hospitality industry, as well as sections 4.6.2.1 and 4.6.2.2 in which the skills and qualifications demand in the South Africa hospitality industry is elaborated upon.

2.5.2 Employment in tourism in South Africa

The data available from CATHSSETA is used as the framework for the discussion in this section. It is important to note that CATHSSETA reports the hospitality industry separately from the travel and tourism industry. Thus, in this section the review focuses on the data from CATHSSETA on the tourism sub-sector followed by the data on the hospitality sector.

The hospitality chamber is the largest in CATHSSETA's profile, while the tourism and travel sub-sector is the second largest in CATHSSETA's responsibilities. The latter uses the most skilled labour and is the most labour-intensive sector. It is widely accepted that the tourism industry in South Africa has the largest number of employers (CATHSSETA, 2013: 93).

In 2014, CATHSSETA (2014a: 29) ranked the travel and tourism sector as the third largest sub-sector with 16 292 employees registered with SETA. Most employees were under the age of 35 (56%), with 39% between the ages of 35 and 55, and 5% above 55 years of age. Of these registered employees, 8 125 employees were Black, 4 980 White, 2 106 Coloured and 1 081 Indian.

The Department of Tourism (2011: 2) admits that although tourism is a large industry in South Africa, there are still countless opportunities for growth that are yet to be exploited. This is reiterated by Rogerson and Kotzé (2011: 13527) who state that several tourism segments of the economy have not been explored in totality, resulting in many opportunities still to be investigated. For instance, with the rise in technology, an emerging occupation for the accommodation industry, as identified by CATHSSETA (2013b: 32), is Social Media Network Specialist. This suggests that knowledge of social networks, promotions and marketing may be an important future skill.

Baum (2007: 1388) states that the tourism industry offers a variety of job opportunities throughout its sub-sectors, and at different levels. The impact of the tourism industry on job creation is well-documented. A 2010 study by Pan African Research and Investment Services (2010: 2, 25) concludes that when foreign tourism expenditure increases by 1%, employment increases by about 0.07% (i.e. the employment elasticity), while an increase in domestic tourism by 1% will results in a 0.15% change in employment. This impact is calculated by multiplying the number of jobs created, by one rand spent by tourists on any item in any sector of the economy (Pan African Research and Investment Services, 2010: 30). The same study concluded that for 2008, a foreign tourist only had to spend R8 988 in the country in order to create one additional job. Domestic tourists had a less significant effect on job creation during the same period, as 17 domestic tourists were identified to create one job in the economy (Pan African Research and Investment Services, 2010: 32). By addressing skills shortages in the tourism and travel sub-sector (especially in the fields of product development and customer service), increased growth can also be expected in the number of foreign arrivals and their spending (CATHSSETA, 2013: 47). Gee (1994: 311) also mentions two ratios to consider in measuring employment in the hospitality industry, namely, staff to room ratio (staffing ratio per 100 rooms) as well as the labour cost to sales ratio.

Vellas (2011: 8) values the qualitative impacts of youth job creation in the tourism industry. He concludes that especially due to seasonal jobs (such as in Europe), the youth are empowered with more experience and are cross-trained. This adds to their chances of securing permanent employment. According to Bertrand, Goldin, and Katz (2010), half of the tourism jobs that are created globally are created for youth under the age of 25 (and the majority for women), emphasising the contribution that tourism can make to alleviating youth unemployment. Regrettably, there are approximately 3 million youths in South Africa that do not possess the tourism and travel skills required to be employed in this sector (CATHSSETA, 2013: 65). Stats SA (2013a: 5) reiterates that youth unemployment in South Africa is more than double that of adults. Consequently, opportunities are currently being created by CATHSSETA for youth to be trained and receive further education in order to qualify for the vacancies that may be available in this industry. Vellas (2011: 19) reiterate that by enhancing unskilled jobs and integrating youth into long term employment, poverty and its negative effects may be reduced.

According to CATHSSETA (2013a: 67), the *"skill level of an occupation is related to the competent performance of tasks associated with an occupation*" and is therefore seen as an attribute of an occupation. The skill level of an occupation is usually determined by reviewing what is required to competently perform a set of tasks. This is measured by: the amount of formal education and training required; the amount of on-the-job training; and previous experience related to that occupation.

Bernini and Guizzardi (2011: 15) state that labour elasticity is often unclear when it is used in accommodation management establishments. These authors conclude from their study that labour elasticity is overestimated in five star hotels. The major differences between labour and capital elasticity were found in three star hotels. They also mention that labour return overcomes return on capital in most hotels, with only high-rated and large hotels exhibiting more capital than labour. Labour is well known for being the largest operational expense in the hospitality industry (although the building is the largest capital expense), while recruiting and employing suitably qualified candidates remains a challenge.

2.5.2.1 Profile of the current hospitality workforce in South Africa

CATHSSETA (2014a: 5) presents findings of their *2013 CATHSSETA SETA Management System* figures from the 18 158 hospitality enterprises that are registered in this system. According to their research, 96% of these registered hospitality organisations are SMME's. The hospitality sub-sector is the largest of the CATHSSETA sub-sectors, which makes up 71% of the sector (CATHSSETA, 2014a: 5). The 212 large enterprises employ 40% of the hospitality workforce (CATHSSETA, 2014a: 5). The majority of the employees in the hospitality sub-sector of CATHSSETA (2014a: 63) are male (64%). The hospitality sub-sector employs 78% Black, 11% Coloured, 9% White and 2% Indian employees (CATHSSETA, 2014a: 24). Gauteng (47%) and the Western Cape (22%) employ the majority of the hospitality labour force, with the Free State and Northern Cape employing the least number of employees in the sector. Although 29% of the employers are located in rural areas, only 19% of the total hospitality workforce is employed from the rural areas (CATHSSETA, 2014a: 25).

CATHSSETA (2014a: 24) concludes that hospitality is the largest employer of its sub-sectors, with 127 811 (65%) employees. This is an increase of 4.4% between 2012 and 2013. According to CATHSSETA's 2014 Sector Skills Plan (2014a: 2), employment in the sector increased by 6% during the five years preceding 2013. According to the National Department of Tourism (NDT) SMMEs employ 599 412 people directly, although there is a lack of data regarding the tourism sector in South Africa. This may be due to reporting not providing a detailed breakdown per sub-sector or by occupation (CATHSSETA, 2013: 13).

CATHSSETA (2014b: 50) uses the following three-skill levels classification system:

1. High level skills – NQF levels 7-10 (offered by public and private training institutions).
2. Middle level skills – NQF levels 3-6 (offered by public and private training providers).
3. Low level skills – NQF levels 1-2 (offered by public and private training providers).

The above skill levels are also reflected in the following tables: Table 2.1 (which reflects the NQF qualifications); 2.2 (on the educations profile of employees in the hospitality sub-sector); and 2.3 on the qualification types.

According to the records of CATHSSETA the hospitality industry is dominated by 74.4% semi-skilled and unskilled workers. The most difficult vacancies to fill are management posts, followed by waitrons and chefs.

The HSRC (2008) commissioned a report by the South African Department of Labour regarding the Tourism industry in South Africa. The study revealed that in 2007, the hospitality sector had 62.6% semi-skilled workers, 25.3% highly skilled and skilled workers, and 12.1% unskilled workers (HSRC, 2008: 40). Most employees in the industry were employed as other SOC[9] positions (28%), waiters/waitresses (22%), cooks/chefs (18%), reservations/operations managers/assistant managers/supervisors (9%), cleaners (9%), housekeepers (6%), cashiers (5%), sales/marketing directors/managers, assistant sales/marketing managers (4%). Most employees were employed at higher positions than their qualifications.

According to the same study, the third most important criterion for gaining employment in the hospitality industry was having a diploma/qualification (for mid-level and senior level employees) (HSRC, 2008: 41). The other top criteria were experience and a matric/grade 12 certificate. Vacancies that were difficult to fill were for management, waitrons, chefs, cooks, cashiers, grillers, accountants, sales staff and cleaners; because in most instances people were not suitably qualified for the positions. The HSRC study also claims that scarce skills encourages employers to employ under-qualified employees with limited experience, resulting in further skills gaps (2008: 43).

According to CATHSSETA 6 794 (3% of total employment in the sector) employees will be retiring over the next five years (until 2019), while there are currently 1 593 vacancies and another 1 508 potential vacancies over the next two years in the firms that report to them (CATHSSETA, 2014a: 3). According to CATHSSETA's records, the hospitality sector employs 82 928 employees, with 65% under the age of 35 years, and 3% over the age of 55 years (CATHSSETA, 2014a: 24). According to

[9]SOC means specific occupational categories (HSRC, 2008: 40)

CATHSSETA (2014a: 46), of the 16 occupations in the hospitality sub-sector, 1 580 employees will retire and need to be replaced in the next five years (see Figure 2.8). The highest numbers of employees that will be needed are cooks, waiters, kitchen hands, commercial cleaners and chefs. However, CATHSSETA admits that these occupations are difficult to fill because most of the retired employees leave with many years of experience. Moreover, these are occupations that are generally not favoured by the youth.

Table 2.4 Employees over 55 in the Hospitality sub-sector (2013 data)

Occupational Class	**Occupation**	**Number of Employees over 55**
Managers	Director (Enterprise/Organisation) – 112101	112
	Catering Production Manager - 141203	88
	Hotel or Motel Manager – 141101	63
Professionals	Management Consultant – 242101	5
Technicians and Associate Professionals	Chef – 343401	155
	Production/Operations Supervisor (Manufacturing) - 312201	24
	Maintenance Planner – 312202	18
Clerical Support Workers	General Clerk – 411101	33
	Switchboard Operator – 422301	27
Service and Sales Workers	Cook – 512101	253
	Waiter - 513101	214
	Commercial Housekeeper – 515103	133
Skilled Agricultural, Forestry, Fishery, Craft and Related Trades Workers	Pastry Cook – 681202	4
Plant and Machine Operators and Assemblers	Chauffeur – 732201	27
Elementary Occupations	Kitchen hand– 841201	215
	Commercial Cleaner – 811201	209

(Source: CATHSSETA, 2014a: 46)

The chef occupation is on the list of scarce and critical skills and has the highest number of potential and current vacancies in the sector. Thus, of the five occupations in the hospitality sub-sector, the highest vacancies are for the chef, cook, cafe (licenced)/restaurant manager. The café (licenced)/restaurant manager, catering production manager and hotel/motel manager have the highest vacancies in

terms of managerial occupations (CATHSSETA, 2014a: 47). Table 2.4 above summarises the employees that are over the age of 55 years in the hospitality industry.

One method that may be used to replace employees and to ensure that the replacement employees are adequately qualified and experienced, is to train undergraduates with the relevant skills and knowledge, in order for them to be able to enter the hospitality job market sooner and be more productive in their jobs (Phelan & Mills, 2011:98).

The Organising Framework for Occupations (OFO) provides the following definitions which are of importance: *"A job is a set of tasks of duties to be carried out, by one person for a particular employer. An occupation is a set of jobs whose main tasks and duties are defined by high skill specialisation. A skill is the ability to carry out tasks and duties of a specific job. A skill level is a function of the tasks and duties to be performed in a specific occupation, whereas skill specialisation refers to the field of knowledge required as well as tools/machinery needed and the kinds of good/services produced"* (CATHSSETA, 2014b: 45; DHET, 2012a: 6).

OFO is a skill-based coded classification system that includes all occupations in South Africa (CATHSSETA, 2014b: 44). The OFO provides occupations categorised according to major groups, in order to analyse the highest number of current and potential vacancies (according to six digit level numbers) (see Table 2.5). Also see the most common hospitality occupations, according to OFO, indicated in the same table.

The DHET (2012a) offers guidelines for OFO in their 2012 document. The eight major OFO groups and their skill levels (CATHSSETA, 2011: 8; CATHSSETA, 2014b: 47; Stats SA, 2014b: 1) are defined as:

- Managers (skilled)
- Professionals (skilled)
- Technicians and associate professionals (skilled)
- Clerical support workers (semi-skilled)

- Service and sales workers (semi-skilled)
- Skilled agricultural, forestry, fishery, craft and related trades workers (semi-skilled)
- Plant and machine operators and assemblers (semi-skilled)
- Elementary occupations (low-skilled)

Table 2.5 OFO Groups

<table>
<tr><th>NSDS</th><th>NQF Level</th><th>Skill Level</th><th colspan="4">OFO Major Groups</th></tr>
<tr><td rowspan="2">HIGH</td><td>10 - 7</td><td>4</td><td colspan="2">2
Professionals
(most common occupation: Park Ranger)</td><td colspan="2" rowspan="2">1
Managers
(most common occupation: Licenced Café or Restaurant Manager)</td></tr>
<tr><td rowspan="2">INTERMEDIATE</td><td>6</td><td>3</td><td colspan="2">3
Technicians and Associate Professionals
(most common occupation: Chef)</td></tr>
<tr><td>5</td><td rowspan="4">2</td><td rowspan="2">4
Clerical Support Workers
(most common occupation: Hotel or Motel Receptionist)</td><td rowspan="2">5
Service and Sales Workers
(most common occupation: Waiter)</td><td rowspan="2">6
Skilled Agricultural, Forestry, Fishery, Craft & Related Trades Workers
(most common occupation: Landscape Gardener)</td><td rowspan="2">7
Plant and Machine Operators and Assemblers
(most common occupation: Delivery Driver)</td></tr>
<tr><td>4</td></tr>
<tr><td rowspan="3">ENTRY</td><td>3</td><td colspan="4" rowspan="2"></td></tr>
<tr><td>2</td><td rowspan="2">1</td></tr>
<tr><td>1</td><td colspan="4">8
Elementary Occupations
(most common occupation: Kitchen hand)</td></tr>
</table>

(Source: OFO, 2012: 10 and CATHSSETA, 2014a: 63)

In 2013, general receptionists were in the greatest demand, with 10 potential vacancies and 274 current vacancies in the hospitality industry (CATHSSETA, 2013: 31). This can be attributed to the nature of shift work and the constant vacancies

available at this job level. The top 5 vacancies in the hospitality sub-sector are outlined in the Figure (2.9) below.

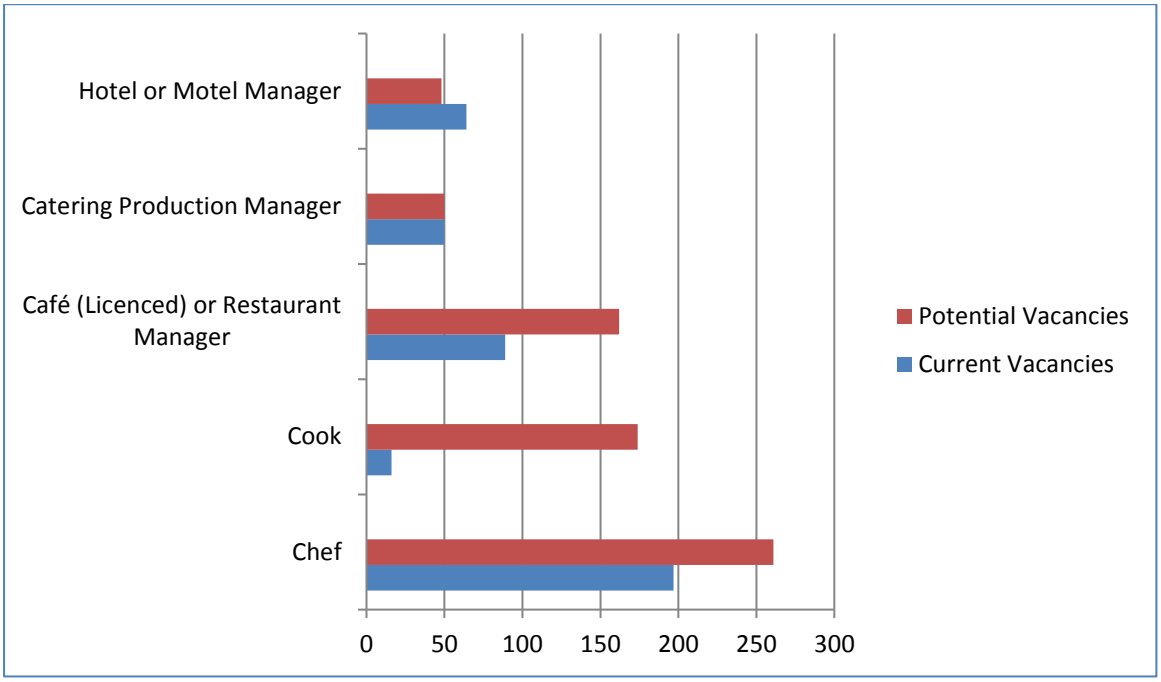


Figure 2.9 Top 5 Vacancies in the Hospitality sub-sector in terms of current and potential vacancies

(Source: CATHSSETA, 2014a: 47)

The educational profile of employees in the sector is as follows: 144 employees at NQF levels 6, 7 and 8, with a limited number of occupations available in the sector that require such qualifications (middle management); 8 841 employees at NQF levels 4 and 5 that are required for typical occupations in the sector such as entry level jobs; 3 554 employees at NQF levels 1, 2 and 3; and 795 employees at ABET level (CATHSSETA, 2013: 33). From all of these employees, 2 801 are employed as managers, 899 as professionals, 1 234 as technical and associate professionals, 1 755 as clerical support workers and 1 688 as service and sales workers (CATHSSETA, 2013: 35-40).

According to the former Minister of Tourism, Mr Marthinus van Schalkwyk, in the National Tourism Sector Strategy (NTSS) (2011), the tourism sector has committed itself to creating 225 000 additional jobs by 2020, which will also result in the indirect and direct contribution of the tourism industry to the economy culminating to R499 billion in 2020. The pace of growth in the economy is linked to the growth in

employment, as far as the creation of new job opportunities is concerned (Stats SA, 2013a: 9). The NDP, as cited in Stats SA (2014b: 8), identifies four characteristics of the "low growth, middle income trap" in South Africa, namely, weak competition for goods and services, high unemployment, low savings, and a poor skills profile. The poor skills profile is a consequence of the failure of employers to invest in their employees' potential or to provide adequate training opportunities.

2.6 CONCLUSION

This chapter provided a detailed literature review on tourism and employment. The literature review was aimed at fulfilling objective one of this study, to analyse the South African accommodation industry, with a specific focus on the qualification levels and current qualifications of employees in the accommodation industry.

The review considered purpose of discussing the policy and education framework of tourism in South Africa. Many national policies have come into existence since 1994, which have had a major impact on higher education institutions, their programmes and the instructional methods. The purpose of these policies has been to diversity the labour market in South Africa, with the goal of achieving employment equity and equal opportunities for all South African citizens. Therefore, national policies have placed a great focus on the upskilling of employees and creating more opportunities for the employment of all South Africans.

Although South Africa is faced with a high unemployment rate, the accommodation industry, as part of tourism and hospitality, is faced with enormous skills shortages with entrants that are not suitably prepared for the industry. They are not able to meet the needs of the industry in terms of skills, competencies and knowledge. Opportunities in the hospitality industry are ample, but are often overlooked by graduates and even prospective graduates due to the negative image of the industry. By implementing employment strategies and educational policies to increase skills development, increased growth in the tourism industry may be expected, which can be measured by an increase in tourism arrivals and spending. This, in turn, will have a positive effect on increased employment opportunities in the tourism industry in South Africa.

It was important for this study to gain clarity on the classification of tourism as an industry in South Africa, as it is the largest employer in South Africa. For this reason, the study provided the definitions of the tourism, hospitality and accommodation management industries in South African context. The definitions of these components are vital, as they guide the rest of this study, on the relevant terminology for the accommodation industry specifically in relation to the forecasting of jobs and the relevant qualifications required for each job level. The forecasting of such employment opportunities and the qualifications necessary in order to achieve these opportunities is of increasing importance in the South African labour environment. By forecasting demand for hospitality qualifications and job vacancies in the next five years, the higher education industry in South Africa is able to prepare itself to meet the demands of the hospitality industry. Demand for hospitality jobs in the hospitality industry is usually concluded through time series analysis or review of demand by researching past occupancy and sales over one to three years (Gee, 1994: 417).

Tourism employment in South Africa is then discussed and it is established that even today, in 2017, many jobs in South Africa are still characterised by low levels of skilled labour. Employment in tourism reiterates this trend, with a discussion on CATHSSETA, which is the main body governing the Culture, Arts, Tourism, Hospitality and Sport Sector Education and Training Authority in South Africa. The current hospitality workforce was profiled in the South African context, outlining OFO groups, skills levels and main vacancies in the hospitality industry. From the literature review, it is clear that although many policies are in place for employment equity, skills development of employees, curbing unemployment and increasing job opportunities, the gap between the skills levels, as well as the labour demands of the hospitality industry (and more specifically the accommodation industry) are still too wide. Herein lies the reason for this study.

Keeping this in mind, a study by Song and Li (2008: 216) assessed 121 studies on tourism demand and forecast modelling since 2000, and concluded that time-series models, econometric approaches, and emerging methods such as artificial intelligence techniques could be considered as latest developments that may lead to more accurate forecasting. Therefore, chapter three of this study, will focus on the time-series model of quantitative forecasting, as well as the qualitative methods employed in tourism forecasting. The second objective of this study, which to be

addressed in chapter three is to provide a literature study on the quantitative forecasting methods that exist, with a main focus on time series forecasts. Chapter three will also address objective three, which is to evaluate the qualitative forecasting methods that have been applied in tourism demand forecasting.

CHAPTER THREE

EVALUATION OF THE QUANTITATIVE AND QUALITATIVE FORECASTING METHODS

3.1 INTRODUCTION

This chapter addresses the second and third objectives of this study, which are to evaluate the quantitative and qualitative forecasting methods applied in tourism research. These objectives provide the background to the time-series models that will be estimated in chapters five and six, and to the qualitative adjustments in chapter seven. The first part of the chapter provides a brief introduction to tourism forecasting, followed by a discussion of the quantitative and qualitative forecasting methods, and the combination and adjustment of forecasts. This chapter concludes with an explanation of forecasting accuracy.

Reflecting on chapter two, which concludes that the tourism industry is well-known for its low skilled labour and for being highly labour intensive, tourism forecasting may be helpful in identifying and increasing employment opportunities (Louw & Saayman, 2013). Therefore, planning for future labour demand has become an important field, especially for developing countries that already experience the pressures of labour shortages and an insufficiently skilled labour market. According to Lin, Goodwin and Song (2014: 156), tourism demand studies in general focus on two specific areas, namely: the analysis of the effect of various determinants on demand; and providing accurate forecasts of future tourism demand. This will be discussed further in this chapter, commencing with a brief discussion of the field of the tourism forecasting methods.

3.2 THE IMPORTANCE OF TOURISM FORECASTING

Tourism forecasting falls under the field of economics, particularly tourism economics. Economics is a social science which focuses on studying how resources that might be limited can be used to attempt to satisfy unlimited needs. Tribe (2011: 4) shows that various imbalances in the world affect resources such as land, labour and capital, and these resources need to coincide with customers' wants. Tribe (2011) specifies that the tourism, leisure and recreation industries have drawn the interest of economics researchers, based on the changes in economies and the

effects thereof, on these specific industries. The importance of forecasting tourism demand cannot be underestimated (Tribe, 2011: 90). Editorial (2011: 817) states that due to the fact that accurate forecasting of tourism demand has an effect on growth and business, it is an important part of the tourism industry and thus tourism research in general.

In the same vein, Hara (2008: 32) states that econometrics, as a subdivision of economics, is the application of statistical techniques in investigating an economics standpoint. An understanding of such viewpoints assists the researcher in becoming familiar with various assumptions and how to deal with them in the proper manner (Tribe 2011: 14). According to Ashenfelter, Levine and Zimmerman (2003: 1), econometrics is mainly concerned with quantifying economic relationships, testing hypothesis and forecasting. According to Akis (1998: 99), econometrics methods were successfully used to study tourism demand in the past.

This particular study focuses on forecasting, which Ashenfelter *et al.* (2003), defines as forecasting future values of economic variables. According to Narodzonek-Karpowska (2015), forecasting is a systematic procedure of predicting a future event. Forecasting is only possible and reliable when there is some stability in the system and the variables that influence the future are the same as those that influence these variables. Forecasting can also be defined as "a process designed to predict future events" (Frechtling, 2001: 45). The event is known to have two elements, namely, a specified time and outcome (Frechtling, 2001: 45). Forecasting enables a more efficient and effective way of planning. One way of preparing for the future, is to make use of forecasting methods. Frechtling (2001: 7) describes it as the systematic way of arranging information from past history in order to predict the occurrence of an event in the future. Lee (2009: 2) states that demand forecasting is an estimate of future demand, which is determined by using historical data, estimates from informal sources, or a combination of techniques.

Planners use forecasts in order to forecast consequences of visitors, assess the impact of policies, to project revenues, and to ensure sufficient infrastructure is available to deal with changes in demand. According to Witt and Witt (1992: 1), and Song and Witt (2006: 214), tourism demand is important for accurate planning by airlines, shipping companies, hotels, investors, government and other tourism

organisations. Therefore, for these entities, tourism forecasting determines the feasibility of projects (Song & Witt, 2006: 214). Additionally, the findings of tourism demand forecasting are often useful for tourism policy decisions by government. Song *et al.* (2011: 855) and Shen, Li and Song (2011: 72) mention that, due to seasonal patterns and changes in tourism demand, accurate forecasting of tourism demand is crucial, not only for tourism policies but also for the wider tourism industry. Moreover, the potential impact of the implementation of new policies and potential revenues may be forecasted. Capacity and infrastructures may be planned for more effectively, using accurate forecasting.

Lee (2009: 4) states that tourism demand forecasting involves determining the information to be forecasted, assigning responsibility to the forecaster, and setting up forecast system parameters such as horizons, levels, period and frequency, as well as revision. This is followed by determining the relevant models and techniques, and the testing of the data collected for input and models. The final stages are to record and report on the actual demand against the forecast. However, tourism demand forecasting and modelling is dependent upon mostly secondary data to design the forecasting model. The availability of such data plays a role in the success of the forecast. The groups of variables that exist in organisation forecasts are likely to follow similar time-based patterns. These variables may be influenced by global (economic and environmental) factors. As a result, the co-variation of time series can be advantageous for the accuracy of such tourism forecasts (du Preez & Witt, 2003: 435).

However, several challenges associated with forecasting usually arise from the assumptions of the models being utilised (Tribe, 2011: 94). The unpredictable nature of world economies and natural or man-made disasters also influence the accuracy of forecasts. The accuracy of forecasting lies with the knowledge of the forecasting models being used and understanding how various variables influence the forecasting models. The continuous evaluation of the environment in which these variables operate, will increase the accuracy of the forecast results. Song, Li, Witt and Athanasopoulos (2011: 856) confirm that although many forecasting studies exist, studies that focus on tourism demand forecasting have only begun recently. Taking this into consideration, tourism demand forecasting and modelling has

become an increasingly important sub-area in tourism-related research (Song and Li, 2008: 203).

In addition to its importance in tourism planning, forecasting is also vital for anticipating shortages or overages (Burger, Dohnal, Kathrada & Law, 2001: 404). Goh and Law (2011: 296) add that due to the perishability of the tourism product, accurate estimates and forecasts are essential in this industry. This is confirmed by Witt and Witt (1992: 3) who state that due to the nature of the tourism industry, it is not possible to generalise research findings from other industries to the tourism industry.

Another one of the main purposes of tourism demand forecasting, is to forecast for risk in order for better decision making (Frechtling, 2001: 10). Managers are also able to better plan for operational requirements, and have better information in order to plan for project feasibility.

In this regard, Frechtling (2001: 5-6) identifies five distinct characteristics of decision-making in the industry that necessitate tourism demand forecasting. These are: (i) the perishability of the tourism product; (ii) the inseparability of the product and people; (iii) complementary services add to customer satisfaction; (iv) the sensitivity of tourism demand to potential disasters; and (v) large capital investments are required in the industry. According to Song and Witt (2006: 214), tourism policies should implement medium to long-term tourism strategies, as identified by the tourism forecasts.

Marketers, on the other hand, use tourism demand forecasting for a range of purposes, such as creating marketing goals, exploring new markets and to simulate the effects of potential future events on tourism demand (Frechtling, 2001: 10).

Tourism forecasting is also important in the field of labour demand. Due to the changing nature of economies and labour markets, it is not suitable to generalise outdated studies on labour demand, to the current labour market environment. For this reason, Song et al. (2011: 58) state that the benefits of forecasting labour demand for the tourism industry may include: better information for decision-making on staff rostering; planning and operation management; resource allocation; and capacity building.

In developed countries, which are known for implementing the manpower requirements approach, macro approaches have not yet been well researched in terms of specific and new skills development (Wong, Chan & Chiang, 2004: 52). Willems and de Grip (1993: 173-174) conducted a study in the Netherlands from 1989-1994 in order to forecast the replacement demand by occupation and education. Their study followed the transition matrix to assess flows within the labour market and establish the educational profile and skill level required to replace employees who were retiring, changing jobs or leaving on maternity leave. For this study, it is therefore necessary to conduct a comprehensive literature review of the quantitative and qualitative forecasting methods available, in order to find the most suitable method for the South African tourism industry.

3.3 FORECASTING METHODS

According to Ozcan (2009: 10), certain elements of forecasts remain similar, regardless of the technique employed – the main element is the assumption that past events will continue in a similar manner in the future. Frechtling (2001: 21) and Ord and Fildes (2012: 4) conclude an important difference between the methods and models of forecasting. Forecasting methods are a systematic way of organising information that is used to generate a forecast, whereas forecasting models express a forecasting method and represent reality by showing relationships, past information and procedures, to forecast. The objective of using a model is to predict what will happen when it is implemented in a real-world context. The first step is to construct assumptions around the model. The outcomes are then predicated by the working of the model. Tribe (2011: 93, 94) similarly describes forecast modelling as a method to describe the relationship between product demand and the various factors that may influence the demand.

Frechtling (2001: 46) presents four phases in developing a forecasting programme. These are:

a) Design phase

This phase entails choosing forecasting methods.

b) Specification phase

This involves determining the relationships in the model in order to choose the most appropriate model.

c) Implementation phase

The implementation phase entails employing the selected model, and generating and preparing forecasts.

d) Evaluation phase

This phase entails monitoring the forecasts over time and taking corrective action as and when it is necessary.

These phases are adopted in this study.

According to Narodzonek-Karpowska (2015), forecasting methods may be qualitative or quantitative in nature: Quantitative forecasting methods are used when the environment is stable in nature and historical data exists. Mathematical or simulation models are usually utilised for these methods. Qualitative forecasting methods are used with there is little data available. This involves a subjective approach.

Although there are many methods of forecasting tourism demand, it is often a challenge to select the most suitable methods for a given forecasting exercise. Wong, Song, Witt and Wu (2007: 2) conclude that using a combination of forecasts can increase their accuracy, and that combined forecasts are preferable to single model forecasts. Wong, Song and Chon (2006: 775) state that although the literature on tourism forecasting aims to assist in the selection of forecasting models in practice, the empirical results of such studies have not significantly proven this.

Hara (2008: 33) states that tourism forecasting will often require the addition of qualitative techniques to quantitative methods, to predict the values of interest in the future. Hara also mentions that in terms of demand forecasting, a combination of methods such as quantitative and qualitative may be the most effective (Hara, 2008: 33). Ord and Fildes (2012: 43) observes that the method of forecasting that is chosen should match the type of data available.

Frechtling (2001) distinguishes between the following methods for forecasting demand:

- Naïve forecasting.
- Qualitative forecasts.
- Time-series exploration.
- Surveys.
- Delphi technique.

Song and Li (2008: 204) assert that the methods used in tourism demand forecasting have developed over the past few decades, to include time-series models, econometric approaches and the implementation of statistical and non-statistical approaches. Figure 3.1 below illustrated the various types of forecasting methods.

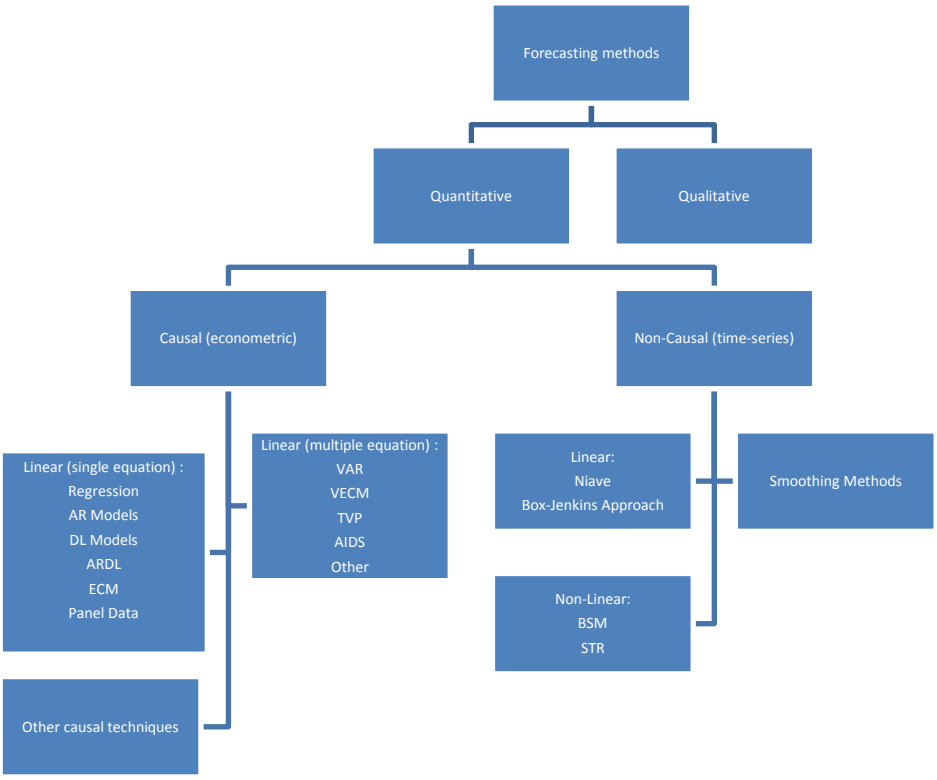


Figure 3.1 Types of Forecasting Methods

(Source: adapted from Narodzonek-Karpowska, 2015)

This study focuses on the qualitative and quantitative methods and other selected approaches for forecasting tourism demand.

3.4 QUANTITATIVE FORECASTING

Although both quantitative and qualitative forecasting methods are used to forecast variables to stakeholders in the tourism industry, Frechtling (2001: 2, 20) explains that quantitative forecasting methods organise past information about an occurrence by mathematical principles, using patterns and relationships between them to forecast. These principles are based on the assumption that some characteristics of past events will continue into the future. Thus, quantitative forecasting is based on data that already exists.

Song and Li (2008: 204) conclude, from their 2006 study, that the majority of tourism demand forecasting studies focus on quantitative forecasting methods. The popularity of using quantitative forecasting methods is confirmed by Song and Li (2008: 204) who report that 199 of the 121 studies reviewed used such forecasting methods. In addition, 72 of the 121 total studies used the time-series model in their tourism demand research. Frechtling (2001: 22) provides several criteria to implement when choosing a quantitative forecasting method, namely, specified structure, plausible structure, acceptability, explanatory power, robustness, parsimony, cost and accuracy. According to Witt and Witt (1992: 156-61), the most important criterion is when selecting a forecasting method.

According to Lin (2013: 20), quantitative forecasting methods may be either univariate time series or econometric (non-causal). Song and Li (2008: 204) and Frechtling (2001: 20), also propose that the two categories of quantitative methods are the time-series models and econometric models. These are also referred to as the extrapolative methods and causal methods. The main difference between the two categories is found by establishing whether the model can identify a causal relationship between the demand variable and other factors. Louw and Saayman (2013: 7) confirm the subdivision of forecasting into causal and non-causal methods. Causal methods estimate the relationship between tourism demand and explanatory variables using historical data of the dependent and explanatory variables (Chu, 2004: 210). These methods may further be sub-divided into single equation methods, system of equation methods and panel data methods. Non-causal methods, on the other hand, use the dependent variable to forecast. The following

section provides a review of the most important quantitative forecasting methods and a discussion of their strengths and weaknesses.

3.4.1 Non-Causal Methods

Non-causal methods involve statistical projections of past behaviours and extrapolating historical trend into the future. These techniques range from linear extrapolation (such as Naïve model), to the ARIMA model. Non-causal methods are also popularly referred to as time series forecasting or univariate forecasting. Asteriou and Hall (2011: 266) state that the two reasons for time series analysis are namely, (i) time series forecasting and (ii) dynamic modelling. The main difference between these two, is that time series analysis refers to building efficient forecasting models, while dynamic modelling refers to understanding the economic structure and testing hypotheses. Lin (2013: 20) describes time series forecasting as a method that analyses the patterns and cycles of a variable. These patterns or trends in previous data are used to forecast or extrapolate into the future. According to Tribe (2001: 93), time-series models may be especially advantageous for predicting seasonal trends, which vital for the tourism industry.

Time plays a central role in time-series models. Narodzonek-Karpowska (2015) states that time-series is numerical data that is evenly spaced out over regular time periods, i.e. weeks, monthly or annually. Time series data assume that the factors influencing previous data will continue in the same manner in the future. According to Wong *et al.,* (2004: 44) and Chen (2011: 10368), the main characteristic of time series models is its assessment of past information and time, in order to forecast the trend into the future. Motta, Barroero, Sacco and You (2013: 2) and Lee (2009: 7) conclude that time series forecasting reflects that observations closer together in time are closer in relation, than those that are further apart.

According to a recent forecasting competition by Athanasopoulos, Hyndman, Song and Wu (2010), on average, non-causal time series models outperform causal regression models, regardless of how the causal models are specified. This popularity is confirmed by Song and Li (2008: 204), in their tourism demand research review paper, who showed that 72 out of the 121 reviewed quantitative studies, used time-series models. Witt and Witt (1992: 7) confirm that time-series may be especially useful where causal models are inappropriate due to a lack of causal data,

while Song and Li (2008: 210) propose that the difference in time series model accuracy can be overcome if alternative time-series approaches are used. These main approaches found in the tourism demand literature are reviewed below.

3.4.1.1 Naïve

The Naïve 1 forecasting method, as explained by Frechtling (2001: 65) and Tribe (2011: 91), states that the last period of historical data available is equal to the value for the next period that is being forecasted. This is known as the simplest forecasting method - where the value for the period that needs to be forecast is equal to the actual value of the last available period (Frechtling, 2001: 65; Goh & Law, 2002: 501; Ozcan, 2009: 14; Tribe, 2011: 91; Witt & Witt, 1992: 8). Therefore, the Naïve 1 forecasting method states that the forecast value (F_t) for this period is equal to the actual value of the last period available (A_{t-1}):

$$F_t = A_{t-1}$$

Where *F* = forecast value; *A* = actual value and *t* = time.

The series shows no discernible trend or pattern so that the change in the series value from the present value, is said to be random. And therefore, the last value is the best forecast for the next value.

Goh and Law (2011: 303) state that this equation is also equivalent to the random walk model. This model assumes that trends and patterns cannot be predicted and that the forecast is extrapolated in a horizontal line. The random walk model, however, includes an error term to account for random disturbances (ϵ_t):

$$Y_t = Y_{t-1} + \epsilon_t$$

Ozcan (2009: 15) further states that this method projects the actual value of the previous period. It can be of particular benefit to data that is not affected by trend or seasonality. Due to its simplicity, this method is rarely used alone, but rather as the basis for benchmarking, as well as for developing and implementing more complex models (Frechtling, 2001: 85).

Song and Li (2008: 210) distinguishes between Naïve 1 (no-change) and Naïve 2 (constant growth rate) models, although they are both implemented as benchmarks

for assessing the accuracy of forecasts. The Naïve 2 forecasting model is when the forecasted value, is the current value, and is multiplied by the growth rate between the current and previous values. This is suitable for using as a benchmark for a series that may trend up- or downwards (Frechtling, 2001: 66).

$$F_t = A_{t-1} * \frac{A_{t-1}}{A_{t-2}} \quad (3.1)$$

Additionally, the seasonal Naïve is useful when data is seasonal. It populates the next period's value to be equal to the value of the same period in the previous year. For instance, the seasonal Naïve value for April 2016 will be the same as the actual value for April 2015 (Frechtling, 2001: 66).

$$F_t = A_{t-m} \quad (3.2)$$

m = number of periods in the year (for example, twelve months)

3.4.1.2 Box-Jenkins Approach

George Box and Gilwyn Jenkins (1976) introduced the ARIMA models. This approach searches for the combination of two forecasting methods and the parameters that mimimise the error in simulating the past series (Frechtling, 2001: 112). Statistically it then confirms the validity, after which the series can be forecasted. The two models that the Box-Jenkins uses, are: the autoregression and moving average models. This process uses these two models in order to suggest the relevant form of the forecasting model and to then further test the validity of the model.

Known as the Box-Jenkins methodology, or the ARIMA methodology, this method focusses on the analysis of the probability (stochastic) elements of economic time series by letting the data "speak for themselves" (Gujarati & Porter, 2009: 774-775). This complex and time-consuming approach is ideal for forecasting horizons of twelve to eighteen months, when fifty or more observations are available.

ARMA models can only be estimated using stationary time series (Frechtling, 2001: 112). Non-stationary time series use differencing in order to reach stationarity. According to Yaziz, Ahmad, Nian and Muhammed (2011: 1122) ARIMA is a popular

forecasting method used for stationary time series models in the economics, agriculture and business fields.

The term ARIMA originates from the various components of the model (see the discussion below):

AR = autoregressive of order p

I = integrated of order d

MA = moving average of order q

The main principle of the Box-Jenkins approach is parsimony, which refers to stinginess or sparseness. The three stage approach that Box and Jenkins presented was: identification, estimation and diagnostic checking (Asteriou & Hall, 2011: 276). For forecasting, Gujarati and Porter (2009: 777-778) add a fourth step, namely:

- Identification – to find the values of *p, d* and *q.*
- Estimation – estimation of the parameters of the autoregressive and moving average terms of the model.
- Diagnostic checking – to determine whether the model fits the data well.
- Forecasting – the forecasts obtained by this model are more reliable than the results obtained from traditional forecasting methods, especially with respect to short term forecasting.

a) Autoregressive Models (AR)

This is a purely statistical time series model, AR(p), where the current value of the series depends on 1 or more past values of the series. The AR(p) model is shown below with the number in parentheses denoting the order of the autoregressive process (Asteriou & Hall, 2011: 269).

$$Y_t = a + B_1 Y_{t-1} + B_2 Y_{t-2} + \cdots + B_p Y_{t-p} + \varepsilon_t \qquad (3.3)$$

Where:

Y_t = the time series

a, B_i = coefficients

ε_t = i.i.d. white noise error term

If there is only one past value (Y_{t-1}), then it is a first order autoregressive model (AR1), which is the simplest AR model, as shown by:

$$Y_t = a + b_1 Y_{t-1} + \varepsilon_t \quad (3.4)$$

b) Moving Average Models (MA)

Moving average models imply that the time series (Y_t) depends on the value of the immediate past error, known at time *t*. The MA(*q*) is the general form of this model and is simply a linear combination of white noise error terms (Frechtling, 2001: 112).

Moving average therefore refers to the relationship between actual values in the time series and successive error terms (actual values minus the forecast values). The general form of MA model (first order moving average) is:

$$Y_t = a + \varepsilon_t + c_1 \varepsilon_{t-1} + c_2 \varepsilon_{t-2} + \cdots + c_q \varepsilon_{t-q} \quad (3.5)$$

The time series Y_t is equal to a constant (a) plus a moving average of the current and past error terms (ε_t).

The simplest MA model has only 1 lag error term, i.e. MA(1):

$$Y_t = a + \varepsilon_t + c_1 \varepsilon_{t-1} \quad (3.6)$$

The value of *q* is influenced by the frequency of the data used in the data series, for example for monthly data, *q*=12.

c) Autogressive Moving Average (ARMA)

ARMA models are a combination of the two processes of AR(*p*) and MA(*q*). ARMA(*p, q*) models can only be created when the time series (Y_t) is stationary. Therefore the mean, variance and covariance of the time series are all constant over time (Frechtling, 2001: 112).

$$Y_t = a + b_1 Y_{t-1} + \cdots + b_p Y_{t-p} + \varepsilon_t + c_1 \varepsilon_{t-1} + \cdots + c_q \varepsilon_{1-q} \quad (3.7)$$

Where the definitions are the same as above.

The ARMA model therefore combines the two models (AR and MA) using the Box-Jenkins approach (explained in section 3.4.1.2). The simplest ARMA model is ARMA(1,1):

$$Y_t = a + b_1 Y_{t-1} + \varepsilon_t + c_1 \varepsilon_{t-1} \quad (3.8)$$

d) Autoregressive Integrated Moving Average Model (ARIMA)

Due to the fact that not all economic and financial time series are stationary over time, as needed in ARMA modelling, non-stationary series need to be converted through a process called differencing (Asteriou & Hall, 2011: 275-6). Chen (2011: 10369) proposes that ARIMA is the most popular linear model for forecasting time series, especially in the industrial sector. ARIMA (according to Goh & Law*,* 2002: 502) stands for autoregressive integrated moving average. A series is transformed to a covariance stationary series and then identified, estimated, diagnosed and forecasted, as already discussed in section 3.4.1.2.

Box and Jenkins (1976) proposed the popular methodology for applying ARIMA models to time-series analysis, forecasting and control measures (Wong *et al.,* 2005: 981 and Song & Li, 2008: 210). This model can be used to forecast any time series, including stationary, non-stationary, seasonal or non-seasonal series.

The simplest ARIMA (1,1,1) model is:

$$\Delta Y_t = a + b_1 \Delta Y_{t-1} + \varepsilon_t + c_1 \varepsilon_{t-1} \quad (3.9)$$

ε_t refers to the zero mean, white noise error term. Y_t is explained by the immediate past or lagged value of Y itself and the error term (ε_t), and the immediate lagged error term (ε_{t-1}). ARIMA models are sometimes referred to as a-theoretic models, as they are not derived from economic theory.

Cho (2001) concludes that the ARIMA model is more accurate than the other time-series models. This is also confirmed by Goh and Law (2002), where Seasonal ARIMA outperformed eight other time-series models, and ARIMA showed results above the average of all the forecasting models implemented.

e) Seasonal Autoregressive Moving-Average Model (SARIMA)

Song and Li (2008: 210) confirm that the seasonal component of ARIMA, i.e. Seasonal ARIMA or SARIMA, is vital in tourism demand forecasting, as the tourism industry is well-known for its seasonal variations. Frechtling (2001: 63) also identifies that seasonality has an effect on tourism demand, owing to factors such as climate/weather, social customs/holidays, business customs, and calendar effects. SARIMA models have increased in popularity due to the prevalence of seasonal influences on tourism demand in the industry (Song & Li, 2008: 210). SARIMA is only used when there are seasonal variations, found mainly in monthly or quarterly time series data.

As for the SARIMA's performance when compared to other models such as Naïve, inconsistent and conflicting research seems to conclude that in some cases SARIMA outperforms other models, and in other cases, it does not. Wong *et al.* (2007: 10) state that SARIMA models have been proven to be reliable in terms of forecasting monthly or quarterly time series models.

According to Saayman and Botha (2015), the SARIMA *(p.d.q) (P,D,Q)* process, can be expressed as follows:

$$\Phi(B^m)\phi(B)(1-B^m)^D(1-B)^d y_t = c + \Theta(B^m)\Theta(B)\varepsilon_t \qquad (3.10)$$

Where:

$\Phi(z)$ and $\Theta(z)$ are polynomials of orders P and Q.

The advantages of ARIMA are that it is a fairly simple, reliable and cost effective method of forecasting (Wong *et al.,* 2005: 981), used mainly when causal factors remain constant. Personal bias is removed from the forecasting process. This method considers trend, cycles, seasonal elements as well as previous patterns (Wong *et al.,* 2005: 981). ARIMA is more accurate in the short term than in the long term. The disadvantages of ARIMA are that the Box-Jenkins procedure produces large errors if trends do not continue in the same manner, and with very limited explanations.

3.4.1.3 Smoothing Methods

Any time series can be decomposed into a trend component, cyclical component, seasonal component and irregular component. Trend refers to the shift in time series values (higher or lower) over a long period of time. This can be attributed to economic, demographic, or technological changes in society. Cycle refers to an irregular pattern of sequences which may occur above or below the trend line, and which usually last more than one year. This may be due to cyclical changes in the economy. Regular patterns that vary during a year period cause seasonal components. This does not necessarily refer to actual seasons of the year, but more to "seasonal behaviour" that may take place during a month, week or even a day. The irregular component refers to the residual factor which accounts for all irregular or unaccounted data values, caused by short-term, unexpected and once off events that effect the time-series (Narodzonek-Karpowska, 2015).

Lee (2009: 22) states that the decomposition of time series may include two types of variation, namely additive (forecasting including trend and seasonal = trend + seasonal) and multiplicative (forecasting including trend and seasonal = trend x seasonal). The seasonal index estimates how much the demand during the season will be above or below the average demand.

To average out the irregular components of time series models, smoothing methods are methods are utilised (Narodzonek-Karpowska, 2015). Gujarati and Porter (2009: 774) state that exponential smoothing methods are usually supplemented by regression models, ARIMA models and VAR models (see section 3.4.2.2). According to Wooldridge (2016: 587), exponential smoothing implies that the weights on the lagged Y_t (time series) decline exponentially. Moving average methods may not require historical data. However, this makes these methods less responsive to changes, and therefore not always accurate in forecasting trends. The forecast lags with increasing demand, and leads with decreasing demand. Common methods of smoothing include moving averages, weighted moving averages, centred moving average and exponential smoothing techniques (Narodzonek-Karpowska, 2015).

a) Moving averages method

This method consists of computing an average of the recent *n* data values for the time series, and then averaging this out in the forecast of the time series in order to forecast the future values. This may be useful to forecast a steady time series over time. The result is a good overall forecast over time (Frecthling, 2001: 67).

The simplest model is shown by:

$$F_t = \frac{A_{t+1} - A_{t+2} - A_{t-n}}{n} \qquad (3.11)$$

Where:

n = number of past periods.

Averaging the last several values assists in forecasting better for the next period. Some past values determine the forecast values, and all values have the same influence on the forecasting value. In the above example, the average of the past three values is used to forecast for the next period. This is known as the simple moving average (SMA) method of extrapolation. The only other simpler model than this is the Naïve model.

b) Weighted moving averages

The method of weighted moving averages is used when a trend is evident and the presence of older data is not important. Recent observations are allocated more weight (by means of intuition) than the older observations.

c) Centred moving average

The method of centred moving averages consists of using an average of *n* periods' data and computing the midpoint of the periods, in order to compute seasonal index.

d) Exponential smoothing

This is the most common type of time series prediction, originating from the moving average technique. The advantage of exponential smoothing is that it does not require a large amount of past values, unlike moving averages and weighted averages that require extensive past records to forecast. Exponential smoothing

methods include: single exponential smoothing, double (Holt's) exponential smoothing and triple (Winter's) exponential smoothing techniques. Goh and Law (2002: 502) state that exponential smoothing techniques are used to average the data, although the smoothing takes place in an exponential manner. In other words, the smoothing takes place according to weights assigned to observations. The most recent observations receive more weight than less recent observations.

e) Single exponential smoothing (SES)

This method is similar to the single weighted moving average approach, with weights declining exponentially so that the most recent data carries the most weight.

Frechtling (2001: 87) explains that this provides equal weights to all of the past values included in it. It allows variation in terms of recent values and includes all past values.

$$F_t = F_{t-1} + \phi(A_{t-1} - F_{t-1}) \quad (3.12)$$

The forecast is adjusted based upon the error in the previous forecast. The adjustment is only partially weighted, for instance, 50%.

This SES equation indicates that the forecast for the period (t) is equal to the forecast of the previous period ($t-1$), plus a portion of the error of the forecasting model of the previous period. This is called the smoothing constant (ϕ) and is determined by the researcher. The purpose of the SES equation is to attempt to include the range of values for the smoothing constant to be one-tenth or fifty one-hundred tenths increments, to find the one that best minimises the MAPE (see section 3.7) or other measure of error over the past series. This minimum error model is the best SES model for the series. The higher the smoothing constant, the more weight is given to the most recent value. In turn, the lower the constant, the more weight is given to all of the values prior to the last one.

f) Double (Holt's) exponential smoothing (DES)

According to Frechtling (2011: 92) this method was developed to deal with time series that show a linear trend over time. Brown's one-parameter adaptive method is one of the simplest and easiest methods to apply. This method is similar to the double moving average and estimates trend. It is also referred to as the exponential

smoothing with a trend. If there is a trend present, the single exponential smoothing may need to be adjusted. Trends need a second smoothing constant. This method is generally computed by computer.

The advantages are that it is simple to use, it can capture linear trends and can forecast several periods ahead. Yet, it cannot track non-linear trends accurately, neither can it stimulate a stepped series nor consider seasonality. Moreover, it does not consider any causal relationships.

The equations for DES are (Frechtling, 2001: 93):

Level:

$$L_t = \alpha A_t + (1 - A)(L_{t-1} + b_{t-1}) \quad (3.13)$$

Trend:

$$b_t = \alpha(L_t - L_{t-1}) + (1 - \alpha)\, b_{t-1} \quad (3.14)$$

Forecast:

$$F_{t+h} = L_t + hb_t \quad (3.15)$$

Where:

L = level of the series

α = level and trend smoothing constant between 0 and 1

A = actual value

b = trend of the series

h = number of time periods ahead to be forecast.

According to Frechtling (2001: 93), the level equation produces an estimate of the level of the time series at *t*, while the trend equation denotes the slope of the time series at that time. The forecast equation is the smoothing which produces the actual forecast. The trend, b_t multiplied by the number of steps that may be added to the forecast (*h*), are added to the base value of L.

g) Holt-Winters exponential smoothing technique

This method estimates the trend as well as seasonality, making it a better forecasting method to use when these variables should be considered (Frechtling, 2001: 95). It is also known as the triple exponential smoothing technique as it takes into consideration: one equation for the level, one for the trend and the last one for the seasonality.

The Holt technique is an extension of the simple exponential smoothing technique and adds a growth factor or trend to the smoothing equation to adjust for the trend (Goh & Law, 2002: 502). The Winters technique adds smoothing for both trends and seasonality (S).

The Holt-Winters approach can be summarised as follows (Frechtling, 2001; 96):

Level:

$$L_t = \alpha \frac{A_t}{S_{t-s}} + (1 - \alpha)(L_{t-1} + b_{t-1}) \quad (3.16)$$

Trend:

$$b_t = \beta(L_t - L_{t-1}) + (1 - \beta)b_{t-1} \quad (3.17)$$

Seasonal:

$$S_t = \psi \frac{A_t}{L_t} + (1 - \psi)S_{t-s} \quad (3.18)$$

Forecast:

$$F_{t+h} = (L_t + hb_t)S_{t-s+h} \quad (3.19)$$

The definitions are the same as above.

The level equation estimates the level of the series at the time, with the actual value divided by the season number (S). This is done to remove seasonality within the twelve month period. The trend equation denotes the trend at this time period and mirrors the trend equation in the DES. The seasonal equation estimates the seasonal variation from the trend, while the final forecast uses the seasonal factor at the time, *t*, multiplied by the result of the level and trend.

3.4.1.4 Non-Linear

While linear models remain the most popular forecasting tools used in tourism forecasting, non-linear methods have gained popularity over the years. Two popular univariate non-linear methods used in tourism demand studies are the basic structural model (BSM) and STAR models.

Saayman and Botha (2015: 02) state that the BSM is used to decompose the time series into various unobserved components. These include the trend, seasonal, irregular or cyclical components (as described above). The main advantage of the BSM is that it has the ability to treat the trend, seasonal, irregular or cyclical components as stochastic. This may also be the main reason that this model has been successfully used in tourism forecasting literature. In addition, the BSM allows for interventions in the implemented model.

The STAR model allows smooth transition of autoregressive parameters, as a linear parametric technique. For STAR models, changes of various agents in time series are the focus, and due to the fact that these agents seldom vary with economic signals, this is a relatively stable model to use. The main advantage is that time series changes are influenced by the changes of several agents and is unlikely to react directly to such economic changes. A series can alternate between two regimes and although the transitions between both regimes can be smooth (which change over time), they can also remain constant.

3.4.1.5 Advantages of time series models

Wong *et al.* (2004: 45) state that univariate time series forecasting models are known to be reliable, easy to use and also inexpensive. It may remove personal bias from the forecasting process, and forecasters may focus on the trend, cycle, seasonal elements or patterns. Song and Li (2008: 210) confirm that time series models are cheaper in data collection and model estimation.

Other advantages of time-series models are that future seasonal demand may be predicted, so that supplies can be adjusted to meet forecasted demands (Tribe, 2011: 93). This may be extremely useful in the tourism and hospitality industries where seasonal demand plays a large factor. Chen (2011: 10368) states that this

model is useful when there is insufficient knowledge about the process or when there is no explanatory variable data available.

3.4.1.6 Disadvantages of time series models

Wong *et al.* (2004: 45) state that time series models are more suitably used for short-term forecasts (up to one year ahead) due to their limited structure. They do not provide reasons into the causes of changes in manpower. The assumption with time series models is that the past events or patterns will be repeated in the future. Therefore expert verifications are valuable in providing reasons for time series forecast data. Song and Li (2008: 211) conclude that time series models are not able to assist when tourism demand is influenced by governments or external factors. Furthermore, seasonal forecasts cannot always be accurately predicted by historical data. Certain events/holidays are affected more by the date that they fall on, while random events do not have any historical data which could assist in forecasting demand for the future (Tribe, 2011: 93). Therefore, time-series should always be used along with other forecasting methods, to obtain more accurate predictions for forecasting.

The following section provides a review of the most important quantitative forecasting methods, as well as a discussion of their strengths and weaknesses.

3.4.2 Causal Methods

Frechtling (2001: 20) indicates that causal methods, as a type of quantitative forecasting, simulate cause and effect relationships. Song and Li (2008: 210) agree that econometric or causal models are able to analyse the causal relationships between tourism demand (dependent) variables and the influencing factors (explanatory variables). These models can also interpret the change in tourism demand from an economics standpoint, which assists economists in making informed decisions regarding their tourism policies. Typical variables which are included as explanatory variables in causal methods include: tourist income, substitute tourism prices and exchange rates. Detailed information regarding variables must be available, including the actual variable that is being studied.

Although more expanded than univariate models, causal methods are also relatively simple to use and therefore very popular amongst academia (Wong *et al.,* 2005:

980). As indicated in Figure 3.1, causal methods can be divided into single equation linear (regression) models, multiple equation linear (regression) models and other causal techniques. The most popular of these methods in tourism demand studies are subsequently reviewed.

3.4.2.1 Single Equation Regression models

These models use one or more exogenous explanatory variable to explain variation in the dependent variable. Simple regression models are models in which the dependent variable is a linear function of the explanatory variable. In multiple linear regression models, a regression has more than one independent or explanatory variable, which is used to explain the dependent variable (Gujarati & Porter, 2009: 33).

a) Simple Regression

The classic linear regression model (CLRM) examines the nature and form of the relationship between two or more variables (Asteriou & Hall, 2011: 30). The direction of the causation is the most important factor to consider, as this indicates the variables that influence or are dependent on each other. Only one independent explanatory variable is present. Regression models are usually known as single-equation models as the explanatory variables are expected to be exogenous. The simple regression model can therefore be written as:

$$Y_t = \alpha + \beta X_t + \varepsilon_t \quad (3.20)$$

The dependent variable is Y_t. There is only one independent or explanatory variable (X_t) and ε_t refers to the white noise error.

Ordinary least squares (OLS) is the estimation method used in traditional regression analysis. The OLS technique was developed by Carl Friederich Gauss (Gujarati & Porter, 2009: 55).

b) Multiple Regression

An extension of the simple regression model arises when there are more than one explanatory variable present, i.e.

$$Y_t = \alpha + \beta_1 X_t + \beta_2 Z_t + \beta_3 W_t + \varepsilon_t \quad (3.21)$$

In the above example there are three explanatory variables (X_t, Z_t, W_t).

c) Dynamic

Dynamic models portray the time path of the dependent variable in relation to its past values. The inclusion of one lagged value is the most common of these. If the regression model includes current but also lagged (past) values of the explanatory variables (the X's), then it is known as a distributed lag model (Gujarati & Porter, 2009: 373):

$$Y_t = \alpha\ \beta_1 X_t + \beta_2 X_{t-1} + \varepsilon_t \quad (3.22)$$

This indicates a time dynamic lag, for an explanatory variable (X).

Autoregressive models are known as models which include one or more lagged values of the dependent variable (Y) amongst their explanatory variables.

$$Y_t = \alpha + \beta_1 X_t + \beta_2 Y_{t-1} + \varepsilon_t \quad (3.23)$$

A combination of both distributed lag and autoregressive models can be found, and therefore autoregressive distributed lag (ARDL) models include lagged dependent and independent variables, i.e.:

$$Y_t = \alpha + \beta_1 X_t + \beta_2 X_{t-1} + \beta_3 Y_{t-1} + \varepsilon_t \quad (3.24)$$

The ARDL model is still a single-equation model as the explanatory variables are exogenous. These models can be used when limited data is available for a specific period of time and is therefore more suitable for recent data (Louw & Saayman, 2013: 7).

d) Error Correction Model (ECM)

An ECM can be estimated when the data is non-stationary (X and Y) but the linear relationship between the non-stationary variables (indicated by the error term ε_t), is stationary. ECM utilised long and short term information to obtain a forecast. It therefore uses the cointegrating relationship as well as error correction from the long run as its main characteristic, i.e. (Asteriou & Hall, 2011: 359):

$$\Delta Y_t = \alpha + \beta \Delta X_t - \pi\ \varepsilon_{t-1} + u_t \quad (3.25)$$

Where:

Δ = the difference operators

π = the adjustment term, which shows how quickly equilibrium will be restored

ε_{t-1} = the lagged error term from the long run model (i.e. $Y_t = \beta_0 + \beta_1 X_t + \varepsilon_t$).

u_t = i.i.d white noise error.

e) Panel data models

Asteriou & Hall (2011: 16) state that panel data consists of a set of time-series for each cross-sectional part of the data set. The advantages of panel data analysis are that it obtains more in-depth information than is acquired from simple time-series or cross-sectional data. This approach minimises the multicollinearity and encourages freedom in model estimation. Furthermore, it is accurate for shorter time-series models since cross-sectional information is available for variables (Song & Li, 2008: 212). Therefore, panel data are said to have both time-series data as well as cross-sectional data, as shown in the simple equation:

$$Y_{it} = \alpha i + \beta_1 X_{it} + \varepsilon_{it} \quad (3.26)$$

i = cross section number

t = time

This approach is, however, seldom implemented for tourism demand forecasting.

3.4.2.2 Multiple Equation Regression Models

As indicated in Figure 3.1, the second linear forecasting methods that are used in tourism demand studies are multiple equation regression models. Two multiple equation regression models are popular in tourism forecasting namely, the Vector Autoregressive (VAR) models and the Almost Ideal Demand System (AIDS).

a) VAR

A Vector Autoregressive (VAR) model treats all variables as endogenous, and each is specified as a linear relationship of the other variables (Song & Li, 2008: 211). Gujarati and Porter (2009: 784-787) state that while developing VAR models, Simms

concluded that if true simultaneity exists amongst variables, they should all be treated the same. Thus no prior distinction exists between endogenous and exogenous variables. VAR models are capable of accurate medium to long-term forecasts (Song & Witt, 2006: 214-222). They facilitate the use of impulse response analysis in the tourism industry, and therefore can analyse the manner in which tourism demand responds to variations in the VAR system's economic variables.

According to Asteriou and Hall (2011: 320-321), VAR models are used when the variable is not confirmed to be exogenous. The advantages are that this model is very simple to use, estimation is simple and each equation can be estimated separately using the OLS technique.

Gujarati and Porter (2009: 775) states that for VAR, each variable is explained by its lag or past values and that of the other variables in the system. A two variables of the VAR model (with only one lag) can be written as follows:

$$Y_t = \alpha_1 + \beta_1 X_t + \beta_2 Y_{t-1} + \beta_3 X_{t-1} + \varepsilon_{1t} \quad (3.27)$$

$$X_t = \alpha_2 + \beta_4 Y_t + \beta_5 X_{t-1} + \beta_6 Y_{t-1} + \varepsilon_{2t} \quad (3.28)$$

Since VAR models can only be estimated using stationary data, the inclusion of an ECM in the VAR, i.e. Vector Error Correction Model (VECM), has recently grown in popularity.

ECM was first used by Sargan and made popular by Engle and Granger. This method corrects for disequilibrium (see section e). The equation states that the equilibrium depends on the next variables and also on the equilibrium error term. If the equilibrium term is nonzero, then the equation is out of equilibrium. The ECM term is significant as the long and short term forecasts can be adjusted with a lag.

$$\Delta Y_t = \zeta_1 + \beta_1 \Delta X_t + \beta_2 \Delta Y_{t-1} + \beta_3 \Delta X_{t-1} + \pi_1 \varepsilon_{1t-1} + U_{1t} \quad (3.29)$$

$$\Delta X_t = \zeta_2 + \beta_4 \Delta Y_t + \beta_5 \Delta X_{t-1} + \beta_6 \Delta Y_{t-1} + \pi_2 \varepsilon_{1t-1} + U_{2t} \quad (3.30)$$

where Δ = differencing operator

Using matrix notation, the VECM can be written as:

$$\Delta X_t = \eta + \sum_{i-1}^{\rho} \Phi_i \Delta X_{t-i} + \Pi X_{t-1} + \varepsilon_t \quad (3.31)$$

Where:

X_t = vector of all the variables in the system

η = vector of deterministic terms

ρ = lag length

ε = vector of white noise distirbunces.

An extension of the VECM model that is often used is the Time Varying Parameter model (TVP). Louw and Saayman (2013: 7) state that TVP is often used when there are structural data changes or when coefficients are too restricted. With TVP, the most recent data is more important than historical data. Song *et al.* (2011: 856) state that TVP relaxes restrictions on constant demand parameters over a specific time. Song and Wong (2011: 58, 59) establish that TVP can successfully be used to model tourism demand, while taking parameter changes into account. It is known to generate more accurate forecasts than traditional regression models, since it allows for structural instability (demand elasticities which vary over time).

b) Almost Ideal Demand System (AIDS)

AIDS was developed by Deaton and Muellbauer in 1980 (Song & Li, 2008: 211), and is a system-of-equations approach recently and successfully applied in tourism demand for geographically close destinations by source. It uses tourism expenditure shares as dependent variables. The AIDS is strongly based on economic theory where demand is a function of price and income. According to Song & Li (2008: 212) it is more powerful than the single equation approaches and is especially useful for analysis of destination competitiveness.

3.4.2.3 Other causal models

Although the above are the most popular forecasting methods when it comes to linear causal methods, several non-linear causal methods also exist.

In the Bayesian VAR (BVAR) approach, the number of parameters that need to be estimated, are greatly reduced. The structured equation model (SEM) is mainly used for simultaneous equation models, where variables have a complex influence over

one another and reciprocally. It represents relationships among variables and therefore is suitable for tourism demand forecasting.

Structural time series models (STSM) specify the trend, season and cycle components (Song *et al.,* 2011: 856). Basic STSM without explanatory variables (known as BSM – see section 3.4.1 above) decompose time series into the above components. BSM does not account for economic determinants regarding the variables, although it may be designed to include causal variables in the model specification (causal structural models (CSM)). Nevertheless, CSM has not been as accurate as the BSM approaches, and only started appearing in tourism demand forecasting literature recently.

Artificial Intelligence (AI) techniques are used in several disciplines, as well as in tourism forecasting. These techniques are rule-based and rely on logic programming systems. The advantage is that additional information about data is not essential, such as the distribution and probability.

Generic Algorithms (GAs) are adaptive heuristic search algorithms that use the evolution ideas of natural selection and genetics as a basis. It is known as an optimisation approach, which explains changes in tourism demand composition (Song & Li, 2008: 213).

The Artificial neural network (ANN) method is a computing technique that attempts to replicate the function of the human brain. It adapts to imperfect data, nonlinearity, arbiter function mapping and is a good alternative for classical (statistic) regression forecasting models (Song & Li, 2008: 212). It has been shown to outperform classical time-series models and multiple regression models in tourism forecasting. Support Vector Machine (SVM) is another AI technique which solves classification, nonlinear regression estimation and forecasting challenges. SVM has proven to outperform ARIMA and SARIMA in forecasting tourism demand.

The rough set (RS) approach deals with classificatory analysis of imprecise, uncertain or incomplete data (Au & Law, 2000: 70). This is a decision rule induction method to model the relationship between mixed numeric and non-numeric variables. It focuses on variables such as demographic features and can forecast

tourism demand levels in relation to each demographic category. It is useful to complement tourism demand from an economic point of view.

The fuzzy time-series method and grey theory focus on model uncertainty and insufficient data availability. These types of models (Tsaur & Kuo, 2011: 9164) are best suited for smaller data groups. The advantage is that the fuzzy time-series can analyse short time series that have limited past observations.

The above section on tourism forecasting methods has described quantitative forecasting methods. These include causal and non-causal methods, as well as a discussion on each of these methods.

3.5 QUALITATIVE RESEARCH METHODS

According to Tribe (2011: 92), qualitative forecasts consider the elements which influence the demand for goods or services, according to their importance. Their purpose is usually to reveal a trend. These types of forecasts are, typically, not reliant on mathematical outcomes but focus more on common sense and generalisations. Babbie and Mouton (2004: 270) state that qualitative research has the purpose of studying human action, to understand and describe human behaviour. One of the features of qualitative research is that it uses words rather than numbers. Another feature is that it focuses on understanding the society by studying its participants, and observing the interactions of individuals (Bryman, 2012: 380).

Veal (2006: 195) states that Kelly (1980) laid the foundation for the use of qualitative research methods, in tourism studies, above quantitative research methods, stating that most tourism and leisure activities are qualitative in nature. Kelly also states that due to the fact that leisure research involves people and face-to-face interactions, and that it needs to be understood by people from various backgrounds, qualitative research methods are more successful in this field. The main contrast that Kelly points out between quantitative and qualitative research, is that quantitative research, as a rule, takes the present behaviour into account, in contrast with qualitative research where the information may change over time depending on the participants' experiences. In addition, Kelly adds that qualitative research is more effective at pointing out people's needs and aspirations.

Nonetheless, qualitative research, as stated by Bryman (2012: 405-406), might be seen as too subjective, producing results that are often overly generalised, leading to skewed results. Qualitative data is also difficult to replicate, making follow up studies or comparisons difficult. The transparency of qualitative research methods also seems to result in ineffective results.

According to Frechtling (2001: 211, 212), qualitative forecasting methods are employed when: there is insufficient data available; the time series data is unreliable; the environment changes too rapidly and major events are expected; and longer term forecasting is required. The benefits of using qualitative forecasting methods seem to revolve around their inexpensiveness and the low level of statistical skill required. In addition, they can be vital to understanding certain forecasting challenges. On the other hand, difficulties may be experienced in terms of bias or lack of expertise in the implemented forecasts, leading to inaccurate and often subjective forecasting.

Frechtling (2001: 20) defines qualitative forecasting methods as judgemental methods in which experts arrange past information about a forecast variable using their own judgement. Therefore qualitative forecasting methods do not need historical data series. Lee (2009: 6) states that qualitative techniques are based on subjective opinions of future demand and may include focus groups, expert groups, think tanks, research groups, to name a few. This method of qualitative forecasting is therefore also known as the jury of executive opinion (Frechtling, 2001: 212-13). In this method a panel of experts is convened and discusses key variables of the future. The steps for this method are:

a) Select the judges who must be familiar with the variables being forecasted.

b) Pose the questions to the judges.

c) Ask for answers and record them.

d) Obtain forecasts after discussion between the judges until consensus is reached.

Below is a discussion of some of the most common qualitative forecasting techniques.

3.5.1 Surveys

Tribe (2001: 93) states that surveys are beneficial in the forecasting of demand where there is a scarcity of time-series data. Leedy and Ormrod (2010: 187) and (Maree, 2007: 155), state that survey research involves asking questions to specific groups of people and analysing their responses. Survey research may consist of telephonic interviews, face-to-face interviews and questionnaires (2001: 188).

Survey research can be effective in cases where no previous time-series data exists (Tribe, 2011: 93). Surveys are characterised by large samples and the assessment of many variables (Maree, 2007: 155). Babbie and Mouton (2008: 230) agree that surveys are the best method to obtain data when a population is too large to observe personally. The main purpose of using survey research is to obtain information about a population, by carrying out a survey on a sample of that population. If the sample is too small or not representative of the population, then the results will not be a true reflection. Surveys are usually more useful for testing ideas (Tribe, 2011: 93). Pilot surveys are also essential in analysing the effectiveness of the survey (Tribe, 2011: 93).

The data should then be analysed according to the following steps (Cresswell, 2003):

- Organisation of details about the case. In this study the organisations and their details will be listed.
- Categorisation of the data – data is clustered into groups.
- Interpretation of single instances – specific data is explored for meaning. In this study, the turnover data from each organisation is compared to the data from Stats SA.
- Identification of patterns – data and the findings of the qualitative research will be analysed for patterns or trends, amongst specific types of organisations.
- Synthesis and generalisations – an overall picture will then be constructed and conclusions will be drawn from this, including recommendations for the study.

Purposeful sampling is normally utilised for this phase of the study as individual experts in the field of the study will be selected for the specific inputs that they are able to make towards the findings of the study (Guest et al., 2013: 48); Leedy & Ormrod, 2005: 147).

3.5.2 Focus Group Discussions

A focus group discussion follows interview technique of qualitative research. Veal (2006: 197, 198) mentions that focus groups are the same as in-depth interviews but are implemented in a group format, including interactions between the participants and the moderator. Leedy and Ormrod (2010: 148) and Guest *et al.* (2013: 172-173), indicate that a focus group discussion occurs when interviews are held with several participants at the same time. These can be for 10-12 people, lasting one to two hours at most. Focus groups are intended to be between 6 and 12 individuals per focus group (Guest *et al.,* 2013: 176), while Maree (2007: 91) indicates 5 to 12 persons per focus group. Guest *et al.* (2013: 64) conclude that most literature sources indicate that as few as 3 to as many as 50 groups should be sufficient per research study. Guest *et al.* (2013: 199) suggest that focus groups should be documented by video-audio recordings and notes that are taken from the discussion.

Veal (2006: 197, 198) mention that focus groups are the same as in-depth interviews but are implemented in a group format, including interaction between the participants and the moderator.

According to Maree (2007: 91), focus groups have several limitations. For instance, smaller focus groups may not be representative, yet gathering all the focus group participants in one area might be difficult. There may also be biases amongst the participants. Ultimately, it could be said that the performance and findings of a focus group are based on the skills of the moderator. A disadvantage of focus group discussions, is that it may inhibit the responses of the participants. Bryman (2012: 516) also as argues that these discussions may have the disadvantage that the researcher may lose control over the focus group discussion. It is also evident that the findings of a focus group discussion may be difficult to analyse. Moreover the organisation of the focus group may be difficult and time consuming, with so many individuals involved. Recording the focus group discussion may also prove to be

difficult. More than one participant may speak at a time. Thus, the group dynamics are important to take into consideration.

In focus group discussions, the researcher facilitates the conversations until a consensus is reached on several topics (Babbie & Mouton, 2001: 293). The panel is selected on the basis that they have information that the researcher would otherwise not be able to access, as they are seen as experts in their fields (Babbie & Mouton, 2001: 292). Review and adjustments of the forecasts will be conducted with industry experts by means of a small focus group discussion.

In this study, participants will be asked several questions regarding their perception of the findings of the quantitative forecasting method that will be implemented. They will be asked to review and justify their agreement or disagreement with the quantitative findings.

3.5.3 Delphi Technique

Tribe (2011: 93) describes the delphi technique as a method of forecasting which utilises expert opinions on a specific subject. Firstly questionnaires are distributed to gain insight from the experts and the results are forecasted. The feedback is provided to the experts for discussion until consensus is reached on the outcomes. Guest *et al.* (2013: 246) state that the Delphi technique is a mixed method approach, as it uses qualitative components to derive a quantitative outcome. The goal of the Delphi technique is to arrive at the "correct" estimate.

3.5.4 Observations

The observation technique may also be utilised. Leedy and Ormrod (2005: 147) states that observations may be unstructured, flexible and can change as new information becomes available. Various data recording strategies should be employed, such as recorders, field notes, video or audiotapes (Leedy & Ormrod, 2005: 147). In observations, the researcher should remain quiet and inconspicuous. Notes should be taken and interpreted objectively.

Babbie and Mouton (2004: 293) state that the two types of observations are: (i) simple observations where the researcher remains an objective observer; and (ii) participant observations where the researcher becomes a member of the group

under study. Maree (2007: 84) adds to this by stating that the participant may also become an observer and a complete participant in the task her/she is observing. According to Veal (2006: 173), the four main types of observations can be structured, unstructured, contrived or participant observation. Veal (2006: 197, 198) state that, this way, the researcher is able to obtain information by being an actual participant in the study, and he/she may be known to the participants.

The main advantage of using observations in research studies is that observations are flexible and unstructured (Leedy & Ormrod, 2010: 147-148). The disadvantages may be that the researcher may not know the things to look for in the observations, and fail to adapt accordingly. The researcher may also influence the observations by his/her presence and change the outcome of events, even unwillingly. Objectivity is therefore an essential factor in the success of observations. The record keeping of observations may also cause problems, such as written notes, audiotapes and videotapes.

Guest *et al.* (2013: 76,77) provide three elements of observation studies, namely, going to the actual location where your participants are, creating rapport with the participants and allowing sufficient time for the collection of data. Welman, Kruger and Mitchell (2012: 172) promote observations for the first-hand experience with the behaviour being observed. On the other hand, the disadvantage is that the mere presence of the observer may influence the behaviour of the participant. Other advantages may also include (Bryman, 2012: 493): seeing the world through someone else's eyes; focusing on observing behaviour and seeing hidden activities; and being sensitive to context and flexible to unexpected encounters.

3.5.5 Interviews

Bryman (2012: 209-213) shows that interviews are often employed in day to day life, and are a good method of collecting data. Babbie and Mouton (2004: 289) confirm that interviews are the most frequently used method of gathering data in qualitative studies. Veal (2006: 197, 198) mention that in-depth interviews can be used with a small sample, for half an hour up to several hours. A checklist is used and the interview may be recorded. Welman *et al.* (2012: 165, 166) and Maree (2007: 87) provide evidence of three types of interview research namely, structured, semi-structured and unstructured.

Leedy and Ormrod (2010: 148) specified that interviews can offer important information. Interviews are often unstructured, allowing for flexibility. However, where participants give different responses, making comparisons of findings may become impossible. Difficulties may also arise during the interview where the researcher is relying on the memory of participants, which is often be flawed. They are a comfortable way for interviewer and interviewee to communicate, and can be used for a variety of questions. Bryman (2012: 227-228) adds that difficulties may arise when participants respond differently to the actual meaning of a question, due to their past experiences.

Guest *et al.* (2013: 113-114) confirm that in-depth interviews involve a skilled interviewer asking a knowledgeable interviewee certain questions. The characteristics of in-depth interviews are that: they are conducted one-on-one, use open-ended questions, using probing techniques for in-depth answers and flow as if they were a normal conversation. Such interviews are used to harness in depth answers. Bryman (2012: 494-495) cites the advantage that the researcher is able to ask questions about things that might not be easy or possible to observe. Another advantage is to be able to reconstruct events that occurred and asking interviewees questions about such events. Additionally, a wider field may be investigated, with a specific focus, and there is less intrusion into people's daily life as compared to other research methods.

The above was a discussion of the several qualitative forecasting methods that were presented. Due to the nature of qualitative forecasting methods, the suitability of the choice of research method should complement the type of data required.

3.6 COMBINATION AND ADJUSTMENT OF FORECASTS

Bates and Granger, in 1969, created the concept of combining forecasting methods for better accuracy. Their rationale was that the combination of individual forecasts leads to greater accuracy. This includes the use of a combination of forecasting methods. They used two separate time series forecasts and concluded that a linear combination of both forecasts resulted in better forecasting, and a smaller error variance, than merely analysing the two separate time series. Bates and Granger suggested that the ideal is to combine two or more forecasts (where they exist). It can thus be concluded that the greater the number of combinations utilised, the

greater the accuracy will be. Mixed method designs where quantitative and qualitative research methods are combined, are often common in research where a more complete picture of research findings is necessary (Leedy & Ormrod, 2010: 97). Maree (2007: 261-262) suggests that mixed methods involve mixing the numerical information with text information and integrating these findings for a more elaborate result.

Theodosiou (2011: 1178-1179) concludes that combination techniques use various models in order to enhance the accuracy of the forecast outcomes, by reducing the forecasting errors. She also finds that the accuracy of forecasts are dependent on the individual strengths and weaknesses of the forecasting models used. However, Bryman (2012: 407-411) asserts that many similarities between these two research methods exist. These similarities include: data reduction, the focus on research questions, linking data to results is an important outcome, exploring variations, aiming for objective and transparent research methods to be followed and the investigation of errors.

Wong *et al.* (2004: 989) conclude that combining qualitative information such as employers' views and their knowledge into forecasts can complement quantitative forecasts. Quantitative studies are more structured than unstructured qualitative studies. This implies that: artificial settings and natural settings differ; behaviour or meaning is investigated; macro and micro connections between variables are interpreted; generalisations are made or understanding is determined; and the finding of hard and reliable data versus rich and deeper data.

Maree (2008: 261) states that a mixed method research approach, in which both qualitative and quantitative research methods are employed, has several benefits. It is said to be particularly beneficial to gain an understanding of trends or patterns, in theory analysis, for designing measurement instruments as well as studying perspectives or even determining relationships amongst variables. Maree confirms that using a mixed method approach will result in the deeper understanding of the subject matter researched. Bryman (2012: 392) describes the use of more than one method or data source as triangulation. This is usually used in quantitative research methods.

Creswell (2003) provides four main reasons for implementing mixed method approaches. These are: to explain or elaborate on quantitative results by using qualitative data; to develop a new instrument or theory for testing; to compare qualitative and quantitative findings; and to enhance research. Goh, Law and Mok (2008: 327) state that using qualitative non-economic factors in data analysis results in tourism demand forecasts that are up to 90% accurate.

Bunn (1989) as cited in de Menezes, Bunn and Taylor (2000: 190), confirm that by combining forecasts, using data and resources, the accuracies of the forecasts are improved. In the past, and in general, when researchers forecast, they are concerned only with the measures of accuracy. This is usually the case with the mean squared error (MSE). In fact, it is also more accurate to take into consideration the forecasting error pattern. Much, if not more, focus should be placed on evaluating the combination of methods, than on the actual selected individual forecasts (de Menezes *et al.,* 2000: 190). Risks may be averted when combining data sets. Clements (1989: 567) confirms that the benefits of combining forecasts include, practicality, usefulness and that it makes economic sense.

Shen et al. (2011: 87) confirms that different sets of forecasts (using various models) represent different benefits for prospective tourism growth. Focussing only on one forecast could be a risk, rather decision-making in the tourism industry should be based on multiple forecasts, to reduce risks.

Data on tourism demand is very seldom solely linear or non-linear, but often contains both types of patterns. The general consensus, also proved as early as 1982 by Makridakis and Winkler, is that there is no single best method to use in a particular situation (Chen, 2011: 10369, 10375). Due to the fact that all the characteristics of a time series model cannot be known, it is expedient to combine the linear and non-linear models to forecast seasonal time series data. Both models have different and unique strengths, which are used in their individual models to forecast future values. Combining such strengths promotes accuracy in the forecast. Chen (2011: 10375) concludes that using a combination of models to forecast tourism demand time series results in a more accurate forecast, than simply implementing the individual models. In his study, Chen found that prediction errors and directional change are superior to individual models. Therefore, combining two models results in better

predictions and showed more promising results. This raises confidence to use the model again (Chen, 2011: 10375).

According to Lin *et al.* (2014: 157), the majority of tourism demand forecasting research focusses on time series and econometric models, without regard for judgemental or qualitative forecasting techniques. However, the former does not take into account the importance of sociological and psychological factors that cannot be expressed numerically. Moreover, disaster and emergency situations, and their resulting implications, are impossible to forecast.

Therefore, in the tourism industry, forecasts must be flexible and should also reflect qualitative factors, as mentioned above. It is therefore beneficial for the industry to combine these two types of forecasts (quantitative and qualitative), for more accurate and improved forecasting.

The study by Goh *et al.* (2008) which incorporated a rough sets approach to analysing and forecasting tourism demand concludes that non-economic factors have a stronger impact on tourist arrivals than other economic factors. Thus their conclusion is that incorporating qualitative non-economic factors into demand analysis is beneficial to the outcome (2008: 335). Wong *et al.* (2007: 21) in situations of uncertainty about the forecasting methods to utilise, a combination of these methods will be the most efficient and less risky. Wong *et al.* (2004: 49-50) suggest that implementing a combination of forecasting approaches is common. Song and Li (2008: 214) therefore suggest that quantitative forecasting techniques should be integrated with qualitative methods to improve forecasting accuracies.

De Menezes *et al.* (2000: 191) state that the selection of the right combination of forecasts is also challenging. When additional criteria is observed (even a single accuracy criteria), the practicalities and judgement becomes difficult to implement. For this reason, the same authors, in their 2000 study, aim to design criteria for the use of combined forecasts (and for switching between combining methods). They present seven well-known methods of combining forecasts (2000: 191-192):

- The simple average method, which uses impartiality, robustness, and a good “track record” of business and economic forecasting.

- The outperformance method, developed by Bunn (1975). This method develops the forecast combination as a simplex of probabilities which can be analysed and revised using Bayesian methods. Each weight is analysed in terms of the forecast performing at its best. Each probability in turn, is reflected as a fraction of occurrences, taking into consideration the best performance of the forecasting model historically. This is a non-parametric method of using different weights to achieve an accurate forecast.

- The optimal method from Bates and Granger (1969), which calculates linear weights to minimise error variances.

- The optimal (adaptive) method with independence assumption, used when only individual forecast error variances are present.

- The optimal (adaptive) method with restricted weights, which makes use of the optimal formula but without any individual weight outside the interval.

- The regression method, where OLS regressions are used by including a constant.

- The regression method with restricted weights, where the least squares regression is used including a constant but the weights remain sum to one.

De Menezes *et al.* (2000: 200) created the following guidelines for combining forecasts:

- Use the simple average of the forecasts when there are small sample sizes.

- Use an optimal combination when there are larger sample sizes.

- Check the combined forecast error for serial correlation and look for a pattern.

Judgmental adjustment of statistical forecasts is generally known as an alternative to the mere combination of statistical and judgemental approaches. The main purpose of revising quantitative forecasts by means of judgemental adjustments is to include environmental knowledge into the otherwise quantitative forecasts. In such cases the goal is to improve the quality of the forecast by means of combining statistical and

judgemental approaches. This is in contrast to the more traditional approaches, where forecast accuracy is measured by means of measuring root mean squared percentage error (RMSPE) or the mean absolute percentage error (MAPE) (see section 3.7 below) (de Menezes *et al.,* 2000: 200).

Although it is difficult to prove that judgemental adjustments improve forecast accuracy, several studies have been able to do just that. Klassen and Flores (2011) reported an improvement in accuracy of 7.2%. Similarly, Fildes and Goodwin (2007) found a median improvement of 7% forecasting accuracy with an absolute percentage error (Lin, 2014: 158). The study by Lin *et al.* (2014: 171) concludes that experts, in their adjustments, understood the statistical forecast as a continuation of past data, hence their analysis of past data and forecasts to make these adjustments. The majority of experts were cautious to adjust the statistical forecasts, doing so only when necessary; which is consistent with good forecasting practices. Requesting experts to provide reasons for their adjustments, for purposes of accountability, encourages them to be cautious. The same study concludes that using ECM, TVP and AIDS results in increased forecasting accuracy, in line with study by Goh and Law in 2011.

Several researchers are cautious about using judgemental adjustments, as they may be inaccurate if it involves inexperienced and untrained experts in an uncontrolled environment. Lin (2014: 158) states that the risk arises when statistical forecasts are nearly optimal and judgemental adjustments have a small impact. However, the opposite is also true – when statistical forecasts are inaccurate, judgemental adjustments improve accuracy. Judgemental adjustment is useful when the underlying patterns of time series data need to be forecasted. It is also useful when there is contextual information relating to the forecasted data, which can only be interpreted accurately by means of judgemental adjustment. It is also useful in times of severe uncertainty. According to Willemain (1989) as cited in Lin (2014: 159), forecast review meetings, utilising adjustments by groups of forecasters, may have more success, as they are able to combine a wider range of expert information, different perspectives, opinions and discussions.

3.7 FORECASTING ACCURACY

Witt and Witt (1992: 154-61) state that the most important determinant for forecast evaluation is accuracy. In terms of accuracy, Frechtling elaborates by stating that there are three dimensions of accuracy, namely: (i) error magnitude accuracy; (ii) directional change accuracy; and (iii) trend change/turning point accuracy. He also mentions that the accuracy of a model can be evaluated at three stages: over all the data available at the time of developing the model, over only the recent past of the data and over a period beyond the data set utilised (Frechtling, 2001: 24).

According to Chen (2011: 10368) accurate forecasting is useful for better tourism planning and forecasting. Thus, more efficient and effective forecasting techniques need to be utilised. Forecast accuracy is the number one concern and challenge in forecasting. The reason for this is that it indicates the level of agreement between the actual values and the forecasted values, and presents the difference/variance between these two values. Bias and efficiency are also important when considering accuracy (Lin *et al.* 2014: 158). To test for bias involves checking whether forecasts have consistent errors. This means that the errors will reflect a trend for forecasts that is either too high or too low. Efficiency tests refer to the use of all available information accurately.

However, Lin *et al.* (2014: 162-163) state that all forecast error measures are limited in some ways and the accuracy of forecasting methods vary depending on the measure that is implemented. Error magnitude is the most familiar manner in which forecast accuracy is determined and is also applicable for this research.

$e_t = A_t - F_t$ (3.32)

t = time period

e = forecast error

A = actual value

F = forecast value.

If the actual value is greater than the forecast value at a certain point in time, then the forecast error is positive; in contrast to when the actual value is less than the forecast value, which means that the forecast error will be negative.

Due to human error, there is always a possibility for forecasting errors. The following are three causes of such errors: (i) a forecasting model may not have, intentionally or unintentionally, included all possible variables; (ii) there may be a measurement error due to variables which are difficult to measure; and (iii) the patterns of human behaviour do not always last or repeat themselves, resulting in errors in forecasting (Frechtling, 2011: 25).

A range of error measures can be implemented, such as percentage better (PB), absolute percentage error (APE), mean absolute percentage error (MAPE), and root mean squared percentage error (RMSPE). The PB, reporting and counting the percentage of time of a forecast, has a smaller forecast error than another forecast, resulting in improved accuracy.

A smaller value of all measures indicates greater accuracy. Both the MAPE and RMSPE allow comparison across time series even when they are measured on different scales. When actual values are too low, the accuracy is distorted. Hibon and Evgeniou (2005: 15) confirm this by stating that when researchers are unsure about the most appropriate forecasting method to use, accuracy will be improved when combining several forecasting methods and the forecasts become less risky. Although it may not always be possible to combine forecasts, spread and variance may assist in selecting the most appropriate and accurate combination of forecasting methods.

Various manners exist in which the accuracy of the error magnitude can be measured. These are summarised in Table 3.1 below:

Table 3.1 Measures of Forecasting Accuracy

	Explanation	**Advantages and Disadvantages**
Mean Absolute Percentage Error (MAPE) $$MAPE = 100 * \frac{\sum_{t=1}^{N} \left\lvert \frac{E_t}{Y_t} \right\rvert}{N}$$	Percentage errors, which are comparable over different time periods, are used relative to the values in the historical series (Frechtling, 2011: 25). The MAPE is a sum of absolute errors for each time period, which is then divided by the actual value for the period, and divided by the number of periods, in order to obtain a mean value. This is then multiplied by 100 in order to obtain a percentage. Lower MAPE values indicate a lower error percentage. **Ideal Solution:** Simulate the time series using the Naïve 1 model. Growth trends could be forecasted using Naïve 2 model. The MAPE model should then be compared to the Naïve 1 and Naïve 2 models, implement the following guidelines: MAPE that is half of Naïve indicates a highly accurate model, MAPE between 50-100% of the Naïve indicates a reasonably accurate model, MAPE equal or more than Naïve is a poor forecasting model.	**Advantages:** Can be compared across various models and time periods. **Disadvantages:** The interpretation is intuitive. Can be misleading as it does not consider the change characteristics of the forecasted time series.
Theil's U-Statistic $$U = \sqrt{\frac{\sum_{t=1}^{n-1} \left(\frac{\hat{Y}_{t+1} - Y_{t+1}}{Y_t} \right)^2}{\sum_{t=1}^{n-1} \left(\frac{Y_{t+1} - Y_t}{Y_t} \right)^2}}$$	Is an objective measure of accuracy relative to Naïve 1 for the same data series. If the U statistic is equal to 1 then Naïve 1 is as good as the evaluated forecasting model, If the U statistic is greater than 1, then this is the more accurate model compared to Naïve 1.	
Root Mean Square Percentage Error $$RMSE = \sqrt{\frac{\sum_{t=1}^{N} E_t^2}{N}}$$	RMSE is used as a dependent measure for scale errors, and this changes the error measure's numerical value. RMSE's are not estimates of models or even parameters, so should not be used when durable statistical results are required.	**Advantages:** Computes an average error in percentage terms and can be compared to actual rates. **Disadvantages:** It penalises larger errors more than smaller errors. This approach should only be applied to final demand series to reduce the possibility of values of zero or close to zero.
MSE – Mean Squared Error	It is important to note that neither MAPE nor RMSPE are good indicators or post	

	sample accuracy or predicting intervals. The averages of the squared forecast errors for the past data is calculated. The forecasting method or parameter/s which will minimise the mean forecasted error is then the method which is selected.	
MAD – Mean Absolute Deviation	The mean of the sum of the values of all forecast errors are calculated and the forecasting method or parameter/s which will minimise the error is then selected.	**Advantages:** The mean absolute deviation measure is less sensitive to individual forecast errors than the mean squared error measure (Narodzonek-Karpowska, 2015).

According to Wong *et al.* (2008: 986), an ideal forecast yields the lowest errors with the least variances. Statistics are used to track actual data and to measure and compare the results of the various methods employed. Wong *et al.* (2008: 986) state that incorporating qualitative information into quantitative findings can result in more accurate and complimentary results (2009: 989). Theodosiou (2011: 1178) states that forecast accuracy is a vital issue and has made the selection of forecasting model even more vital. Chen (2011: 10368) opines that accurate forecasts are responsible for better tourism planning and administration, where the selected model influences the efficiency and accuracy of future tourism plans.

In quantitative forecasting methods, several models are tested in order to find the most accurate method (Frechtling, 2001: 21). Gujarati and Porter (2010: 220) propose the following criteria for selecting a good model, namely; parsimony, identifiability, goodness of fit, theoretical consistency and predictive power. Song and Li (2008: 217) conclude that there was no evidence from their study, that one model can consistently forecast better than all the other models. The fact that the integration of quantitative and qualitative forecasting methods are becoming increasingly popular, confirms that further research and utilisation of both research methods in forecasting are necessary.

3.8 CONCLUSION

Planning for labour demand has become a vital part of labour forecasting, especially in developing countries where skills shortages, the lack of qualified employees and limited resources, may prevent economic development. Econometrics is a field of study used to forecast such future demands.

The literature shows that the identification and forecasting of skill requirements and the implementation of such findings are important research topics for academic institutions (Wong *et al.,* 2004: 52). The purpose of such research is to further develop the industry and provide useful information for occupations in the labour market. In today's economic and technologically volatile markets, it is important to forecast labour requirements to align education and teaching practices with the qualifications and skills required for graduates by the industry. This will minimise risk situations for recent graduates and ensure that the industry has sufficiently qualified graduates for future job vacancies.

Forecasting the demand of labour for the accommodation industry, as explained in detail in chapter two, is of increasing importance not only to human resources policy-makers but also to the economy and to training establishments. The assessment of labour demand can therefore have far-reaching effects, especially in a developing country such as South Africa. The combined use of quantitative and qualitative forecasting and research methods, will lead to increased forecast accuracy, as this diminishes the possibility of errors and variations.

The main goal of this research study is therefore to forecast labour demand in the accommodation industry in South Africa, for various job levels and their requirements, in terms of qualifications, by using the various forecasting methods discussed in this chapter. The objectives of this chapter (outlined as objectives two and three of the study) were to evaluate quantitative forecasting methods, focussing on time series methods, as well as to evaluate qualitative forecasting methods, both of which are used in tourism demand forecasting literature.

The quantitative forecasting methods for this study, were discussed in this chapter such as the non-causal and causal classification. The non-causal methods include, the naïve models, the Box-Jenkins approach (including autoregressive models, moving average models, autoregressive moving average, autoregressive integrated moving average model, seasonal autoregressive moving-average model) and smoothing methods (such as the moving averages method, weighted moving averages, centred moving average, exponential smoothing, single exponential smoothing, double exponential smoothing, and Holt-Winters exponential smoothing

technique). The non-linear methods were also discussed, including the advantages and disadvantages of the time series models.

The causal methods were discussed such as single equation regression models (simple regression, multiple and dynamic regression, error correction model, and panel data models). The multiple equation regression models were discussed according to VAR and AIDS. Several other causal models were also elaborated on.

It was determined that for quantitative forecasting this study would employ time series forecasts. The methods to be used are Naïve, Naïve 2, ARIMA, Holt-Winters approach, and VAR. These methods will be implemented in chapter five, where the methodology of the study will be discussed.

Qualitative research methods were then presented, with specific focus on surveys, focus group discussions, Delphi technique, observations and interviews. It was decided that a combination of quantitative and qualitative methods would be best suited for this particular study, to add depth and insight to the empirical findings. The qualitative adjustment of the quantitative forecasting findings will assist in obtaining a greater overview of the research findings. It was determined that for better forecasting accuracy, MAPE and RMSPE will be used to determine the accuracy of the forecasts of this study.

The following chapter discusses manpower forecasting in detail, with the goal of addressing objective four of this study - to evaluate different methods used in manpower forecasting.

CHAPTER FOUR

LABOUR DEMAND FORECASTING

4.1 INTRODUCTION

As one of the fastest growing industries, which accounts for one third of global services trade (ILO, 2010: 5), the hospitality and tourism industry is a source of employment for employees of varying skills levels worldwide (ILO, 2010: 11). For this reason, the World Tourism Organisation reiterates the need for more in depth studies regarding employment in the tourism industry (UNWTO, 2014).

The opportunity for growth of the tourism industry and the developments in labour markets are important for the economic growth of a developing country such as South Africa (UNWTO, 2014: 17). The UNWTO (2014: 17) states that, globally, there is an average of one employee for every hotel room, and that one job may create up to one and a half additional (although indirect) jobs in the tourism industry and other related industries. The same report also indicates that three workers are indirectly dependent on each person that works in a hotel.

Be that as it may, there is a large misconception that the majority of jobs offered in this industry are low skilled jobs. This may be due to the fact that most hospitality employees work in service occupations, for which low skills are needed, such as in the food and beverages department (UNWTO, 2014: 17). Stacey (2015: 9) states that the tourism industry is ever changing and that higher skill levels and more complex thinking will be required in future, although the lower level of skills will still need to be maintained.

Therefore, labour demand forecasting may assist in alleviating the challenges related to educated labour in the hospitality industry. Herein lies the rationale for this study. Thus in this chapter, the aim is to evaluate the different methods used in manpower forecasting. The first part of this chapter discusses labour demand forecasting and labour demand and supply. This is followed by a discussion of the four main labour forecasting methods, namely, time series forecasts, the bottom-up coefficient approach, the top down forecasting method and the market signalling approaches. The chapter concludes with a presentation of labour demand and supply in the hospitality industry.

4.2 THE LABOUR MARKET

Colander (2010: 446-447) describes the evolution of labour markets in the 1700 and 1800s. During that period, there were no rights for workers, so that long hours, low wages and intolerable working conditions prevailed. However, over the years employees used political power and unionisation to improve the circumstances for the labour market. Governments have responded to workers' demands with certain laws prescribing improved working conditions. Child labour, health and safety considerations and labour relations are governed by certain laws. Unions and bargaining councils were introduced to assist workers to bargain with employers. This led to strikes, unions and various ways of bargaining for better working conditions. All these developments have resulted in the labour market as it is known today.

Smit, Dams, Mostert, Oosthuizen, Van der Vyver and Van Gass (1997: 101) define a market as a place where buyers and sellers liaise in order to decide on the conditions of the sale of good and services. Barker (2015: 2) and Ehrenberg and Smith (1997: 26) confirm that a labour market is the place where labour is "bought and sold". The worker, however, is a human being and not a product, which raises questions about fairness, equality and also humanness. The labour market therefore sells the services of the worker. Yet, because the worker is not bought by the employer, the result is a contractual relationship. The workers in the labour market are not standardised, which results in diversity. In addition, their skills and knowledge fluctuate and may also vary over time.

Begg (2013: 135) mentions that the labour force includes everyone who is working or looking for a job. In this context, Mohr, Fourie and Associates (2000: 34) define the quantity of labour as a factor of the size of the population and the proportion of the population that is able and willing to work. The quality of labour is described by the human capital, which refers to skill, knowledge and health. Human capital is also influenced by education, training and experience, which leads to increased productivity and higher earnings, as illustrated by Figure 4.1 below.

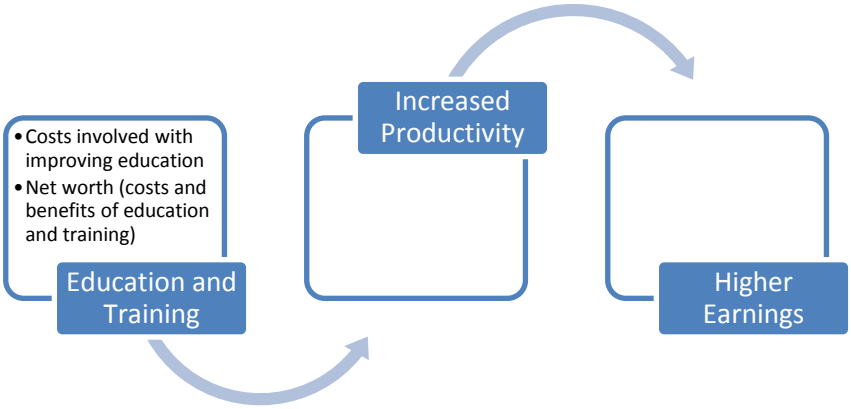


Figure 4.1 Human capital theory

(Source: Barker, 2015: 218)

Barker (2015: 219), Begg (2013: 142), as well as Lipsey and Chrystal (2011: 227) agree that education and training result in increased productivity and higher earnings, but they also come with at a cost – the cost of improving education. This not only refers to the direct costs of tuition and notes, but also indirect costs such as the expense of studying, especially without an income. These challenges and opportunities together, result in the net return on investment in education. The rate of return for education and training can therefore be calculated. Sapsford and Tzannatos (1993: 74) provides the following formula for estimating the return on education:

$$\frac{difference\ in\ annual\ earnings\ between\ university\ and\ secondary\ school\ graduates}{net\ total\ cost\ of\ university\ education}$$

$$= rate\ or\ return\ on\ education$$

The costs and benefits (net present value) discount the effect of future values to the present. The benefits of education and training to the greater society should also be considered. Society benefits when employees are able to reach societal objectives, which results not only in individual but also societal rate of return. Sapsford and Tzannatos (1993: 70-73) confirm that educated labour is dependent upon the percentage of workers that are educated and the relative wage (educated compared to uneducated). The higher the demand is for more complicated products, the higher the need is for more educated and skilled employees, whose wages are also high.

4.2.1 The demand for and supply of labour

Barker (2015: 4) states that in the supply and demand of labour, workers offer their labour *(supply of labour)* while employers employ workers *(demand for labour).* The statistics around the South African labour force were discussed in depth in chapter two, section 2.5.1, of this study. The literature distinguishes between the demand for lower skilled labour and for educated labour. Lipsey and Chrystal (2011: 227) state that if the demand for lower skilled labour declines, the earning of these workers will also decline. The opportunity cost of completing high school then also falls, which in turn leads to an increase in unemployment. On the contrary, the consumption return is the difference between the income that is earned if one had left high school, and the income that could have been earned as a result of completing higher education. Figure 4.2 below illustrates the market for educated labour and shows the difference clearly. The D-curve indicates the demand for educated labour by the employer, while the S-curve indicates the supply of educated labour (demand for education). The D1-curve and the S1-curve indicate the demand and supply of low-skilled labour. The Y axis indicates the wage rate and the X-axis the quantity of Labour. It is evident from the graph that the wage of educated labour exceeds that of low skilled labour. The relative wage therefore indicates that as education increases, the wage also increases (Sapsford & Tzannatos, 1993: 70-73). The higher wage rate is as a result of: (i) the greater demand for skilled workers due to the high production and results, for which customers are willing to pay a higher price; and (ii) the lower supply of educated workers, which is evident from the supply curve of the skilled worker, which is positioned to the left of that of the unskilled workers.

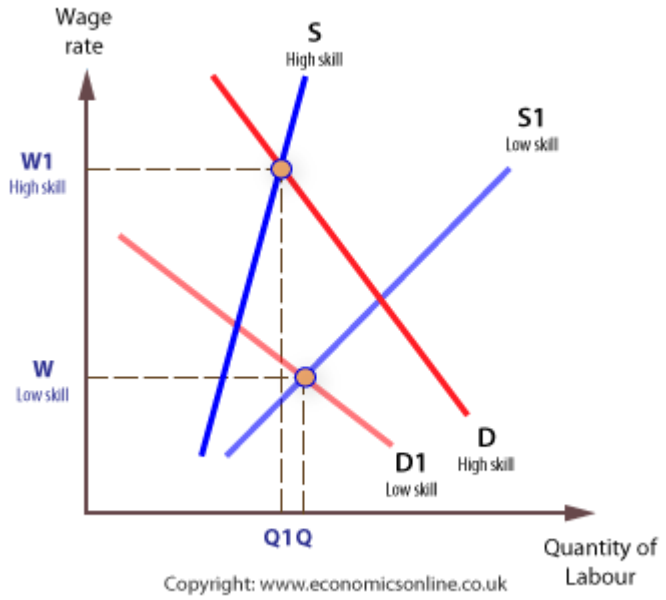


Figure 4.2: The demand and supply of labour

(Source: Economics Online, 2016: Online)

According to Barker (2015: 45), to create an increase in the demand for labour, there must be an increase in production. In other words higher production leads to job creation. This however, fluctuates over time. These changes can be measured in terms of the employment elasticity of economic growth (also known as the employment coefficient or the employment-output ratio), which indicates how sensitive the labour market is in responding to changes in economic growth:

$$\frac{\%\ change\ in\ employment}{\%\ change\ in\ economic\ growth} = employment\ elasticity\ of\ economic\ growth$$

If the coefficient for elasticity is greater than one, it relates to a 1% increase in economic growth rate, which results in a more than 1% increase in the employment rate. On the other hand, the lower the elasticity, the lower the number of jobs will be, that will be created for every 1% increase in economic growth. These elasticities vary from sector to sector. In South Africa, the decline in elasticity of economic growth has been responsible for job declines in the agriculture and construction sectors, which are labour intensive sectors. On the contrary, highly skilled economic sectors have shown more economic growth than the labour intensive, low skilled sectors. Many factors influence the demand for skilled and unskilled labour (Barker, 2015:

238). Economic growth, which influences demand for labour, is difficult to forecast in itself. Yet, forecasts enable better labour planning and improved utilisation of skilled and unskilled labour.

4.2.2 Characteristics of the South African labour market

Janse van Rensburg, McConnell and Brue (2011: 546) state that the poorest developing countries in the world have the following three human resources characteristics in common: they are overpopulated, they suffer from unemployment and their labour productivity is low. The South African labour market, according to Barker (2015: 5-6) has exhibited these characteristics over the years, including: increase in supply of labour; slack increases in demand for unskilled and semi-skilled workers; unemployment; high labour costs and low productivity; and income inequality. Each of these will be discussed in more detail.

The *sharp increase in labour supply* was due to an increase in the participation rates of women, from the various groups of the South African population, in the labour force (Barker, 2015: 5-6; McConnell, Brue & Macpherson, 2003: 63; Mohr *et al.,* 2000: 376). According to Janse Van Rensburg, McConnell and Brue (2011: 193), the recent changes in the legislation has led to an impact on the labour market by increasing the pressure to create a more stable labour market and more employment in the country. However, discrimination in terms of gender and race also have an impact on wage differences and income distribution (Borjas, 2013: 368; Mohr *et al.,* 2000: 387).

The South African labour market experienced *low increases in the demand for unskilled and semi-skilled workers* in the mining and agriculture sectors, where growth has been limited. In other sectors, higher skilled workers have been employed at the cost of semi-skilled or unskilled workers. As a result, the informal sector has shown less growth compared to other developing countries. Two types of sectoral developments have been identified, namely, within sector developments and between sector developments. Within sector developments are mainly characterised by the need of employers to employ higher skilled employees. Between sector developments include growth of tertiary sectors, while primary sectors experience a decline in skilled labour (Barker, 2015: 5-6).

Unemployment is a serious factor in the South African labour market – especially amongst the female, as well as black population. In stark contrast with the need for highly educated workers discussed earlier, the unemployed in South Africa seem to be poorly educated youth, who live in rural areas. Another challenge is the increase in the unemployment of even better educated people. This unemployment contributes to inequality and poverty. Janse Van Rensburg (2011: 194) agree that with unemployment in South Africa reaching heights of 25 percent and more, the economy needs to grow at least 6 percent per year to absorb the unemployed into the labour market.

High labour costs and low productivity – The decline in labour intensity in terms of economic stagnation, has resulted in less job opportunities being created in all sectors of economic growth. Economic growth has therefore taken its toll on jobs, even though productivity may have increased. As detailed by Janse Van Rensburg *et al.* (2011: 18), advances in technology produce new and better goods and better productivity. Available resources are better utilised to produce more goods. The impact of labour productivity is profound in developing countries. According to Janse Van Rensburg *et al.* (2011: 549) the investment in workers and equipment is low, which results in low productivity. Poorer countries which do not invest in workers often also have high expenses for health and education, thus resulting in labour that is not prepared for industrialisation and the demands of economic growth. Mohr *et al.* (2000: 386) add that experienced workers are more productive than those without any experience. The demand for a particular experience or skills set may influence the wage rate offered.

Income equality – a high demand for highly skilled labour has resulted in interracial inequality, which is regarded as the most influential factor of the high inequality in South Africa (Barker, 2015: 5-6). Janse Van Rensburg *et al.* (2011: 55) add that a rise in income usually results in an increase in the demand for goods. The number of buyers in the market also increase product demand, which results in the higher demand for labour and productivity.

Following this discussion regarding the labour market, the sections ahead focus on the demand for labour, as well as labour supply. These sections are concluded by a discussion on the factors which may influence the supply of labour.

4.3 LABOUR DEMAND

According to Lipsey and Chrystal (2011: 206), organisations use “the services of land, labour, capital and natural resources as inputs”. Smith (2013: 68-69) describes the demand curve for labour, which illustrates the quantity of labour demand against the price for labour (i.e. the wage rate – see Figure 4.2 above). The position of the labour demand curve is determined by output or production. An increase in productivity would therefore lead to an increase in the demand for labour, while changes in revenue from production also have an impact on the demand for labour. Nonetheless, an increase in the number of employees does not necessarily lead to an increase in production, due to the labour skills and productivity that vary amongst employees. This is the basis of the law of diminishing marginal product. The marginal product of labour refers to “the change in production associated with employing one additional employee” (Barker, 2015: 55).

The short-term demand for labour dictates that as long as the wage rate of the additional worker is lower than the additional production (i.e. the marginal product), it is worthwhile to employ an additional worker. Over the short-term, demand for labour is therefore influenced by changes in wages (Barker, 2015: 55, Begg, 2013: 132; Borjas, 2013: 88). Demand over a longer term is largely determined by replacing labour with capital. This is influenced by two effects, namely, the output effect and the substitution effect. The output effect is the change in employment and output resulting from changes in the cost of production. The substitution effect relates to the change in employment when labour and capital are variables, and substituting labour for capital will not result in a change in production. The long term demand for labour will be more elastic to wages than it is in the short term (McConnell, Brue & Macpherson, 2003: 135).

According to Barker (2015: 49-50) and Smith (2013: 76-83), the demand for labour in the South African labour market is influenced by the following factors:

- The rate and nature of economic growth which have not been high enough to combat the high unemployment rate.
- Overall job losses which have been influenced primarily by the export of goods and focussing more on capital.

- Unskilled workers have been losing out to the demand for higher skilled jobs, which in part is due to trade liberations in South Africa.
- The demand for labour has been influenced by high wage increases, as higher wage rates results in higher unemployment.
- The bargaining council systems utilised by the South African labour market seem to have been largely ineffective.
- High incidents of strikes also have a negative impact on, especially, unskilled labour.
- Increases in labour costs can also be attributed to certain factors, such as new labour laws (Basic Conditions of Employment Act) which reduce the demand for labour, in terms of reducing labour flexibility and reducing labour productivity.
- The Skills Development Act, which will take many years to have an impact on the upgrading of skills in the South African labour market.
- The Employment Equity Act, which has not had the desired effect on the effective utilisation of labour.

4.4 WHAT IS LABOUR SUPPLY

Barker (2015: 9) states that the foundation for the supply of labour is based upon an individual's choice to work, and to work for a specific number of hours. Sapsford and Tzannatos (1993: 7) add that the total supply of labour is determined by the number of people willing to work (labour force) and the total number of hours they are willing to work (supply of effort). Ehrenberg and Smith (1997: 41) and Colander (2010: 431) state that the supply for labour, similar to the demand for labour, is linked to the wage rate in the market. In other words, labour supply is determined by the increase or decrease in wages. The preferences in the number of hours that an individual wants to work, relates to their willingness to sacrifice leisure time for wages, or vice versa. As wages increase, more work is usually substituted for leisure (known as the substitution effect). The opposite of this is the income effect which results in the

individual becoming richer due to higher wages, and can afford to take more leisure time. The working hours decline due to the higher income achieved.

When calculating the market supply of labour, all the individual supply curves need to be combined (see figure 4.2 above). As wage rates increase, new entrants might be interested in entering the labour market, while others might leave to join other labour markets that have increased wages. Higher wages usually result in a larger pool of workers. The manner in which the supply of labour reacts to changes in wages (known as elasticity) also plays a role. The more elastic the supply of labour (or responsive), the more the supply of labour rises, with the increase in the wage rate.

This supply of labour is affected by three main factors, namely: the population size, the population willing to work, and the number of hours worked by each individual. These factors, in turn, are influenced by economic forces (Lipsey & Chrystal, 2011: 206). This will be discussed briefly below:

a) Population size

The size of the population may be influenced by external economic factors such as immigration and birth rates (Lipsey & Chrystal, 2011: 213; McConnell *et al.,* 2003: 52). Barker (2015: 19) and Janse van Rensburg *et al.* (2011: 546) state that although the population of South Africa is on the increase, the effects of fertility rates and emigration, have an effect on the skilled population. The advantage of lower fertility rates is that it alleviates pressure on the already overwhelmed social services, environment and employment rates in South Africa. Janse van Rensburg *et al.* (2011: 548) state that higher incomes must first be attained for lower population rates to be achieved.

b) Labour force

The total labour force or economically active population (EAP) is defined as “the total number of people over the age of 15 years who present their labour for the production of economic goods and services, whether employed or not” (Barker, 2015: 10). The labour force participation rate is the proportion of the total population that is willing to work. This rate is influenced by a non-economic influence known as changes in attitudes and tastes, as well as changes in the economic factors, most

notably, the wage rate. Barker (2015: 9) explains that the labour force is the population of working age individuals who are working or interested in working (the unemployed). The factors influencing the labour force includes the proportion of the population that wants to work, the size of the population (which is influenced by fertility and mortality rates) and immigration figures. Changes in the economy (especially in wages and income) can also influence labour supply (Janse van Rensburg *et al.,* 2011: 197).

c) Hours worked

An increase in the demand for labour is accompanied by a rise in the wage rate, which ultimately leads to a rise in the number of people that are willing to work or the number of hours that labourers are willing to work (Janse van Rensburg *et al.,* 2011: 546; Lipsey & Chrystal, 2011: 213). The wage rate therefore influences the labour supply, so that a rise in wage rate also leads to a rise in the prices of goods and leisure (Lipsey & Chrystal, 2011: 213).

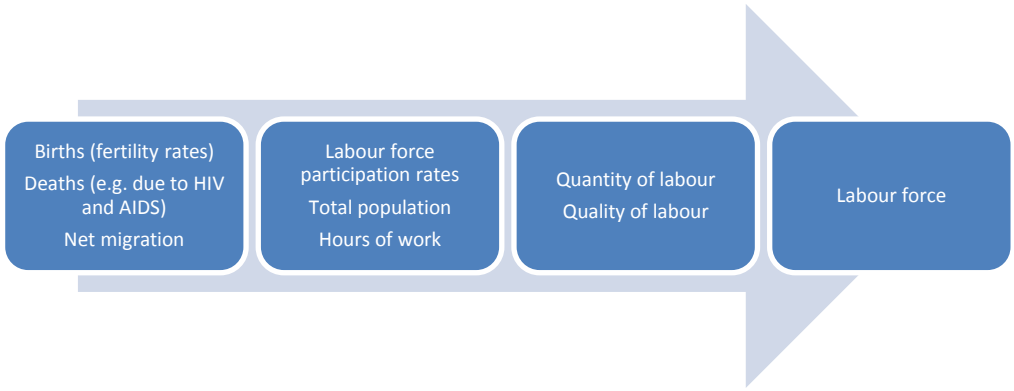


Figure 4.3 Determinants of the labour force

(Source: McConnell *et al.* (2003: 52)

Figure 4.3 above summarises the influences on the labour force. It also identifies three additional forces that influence the population, labour force participation and wage rate. These are subsequently reviewed.

4.4.1 The impact of HIV and AIDS on the total supply of labour

Barker (2015: 21-24) concludes that the effect of HIV and AIDS can be seen by looking at "the size of the population, the labour force, inequalities and productivity." The severe difficulty for economists when it comes to determining the impact of HIV and AIDS on mortality rates is that such data is not available, because the mortality rates are determined by the information noted on the death notification forms, which refer to the direct cause of death. Although much of the information on death notification forms may refer to HIV and AIDS related illnesses, it is difficult to determine, with high accuracy, the deaths related to HIV and AIDS. The supply of labour is ultimately decreased with HIV and AIDS, as the majority of individuals with HIV and AIDS are in their most productive years (20 to 40 years). Although unemployment may not increase due to HIV and AIDS, economic growth rates in South Africa will also not result in more jobs being created, which leads to further negativity. The medical and economic costs of HIV and AIDS are said to be so high that it will ruin the economy of the country long before the effects of the declining total population are experienced (Janse van Rensburg *et al.,* 2011: 195; Smith, 2013: 190).

4.4.2 The immigration and emigration of skilled people

The migration flows of unskilled or lower skilled workers also have an impact on wages and employment. Migrants increase the labour supply as well as the demand for labour due to an increase in the demand for goods and services. Even so, this does not seem to alleviate the impact on the supply of labour (Smith, 2013: 77). The original countries from which these workers migrate suffer from "brain drain", which is known as the loss of skilled workers. These countries lose their investments in education and training, and in terms of the economic contributions that such workers could make by implementing the education and training they received (Barker, 2015: 25). Thus, countries of origin lose out on a high volume of future entrepreneurs as they lose their educated and skilled workers.

Barker (2015: 26) states that the only way that South Africa can have access to a large pool of skilled workers, is to make changes to its immigration policy and to import skilled workers from outside the country. Due to the fact that South Africa no longer keeps record of immigration and emigration data (since 2003), it is difficult to

determine whether it is gaining or losing skills, and at what rate. The Clean Development Mechanism (CDM) (2010: 10) as cited in Barker (2015: 27) confirms that between 1989 and 2003, over 520 000 South Africans emigrated, with numbers growing by a staggering 9% per year. Of those individuals, approximately 120 000 had professional qualifications, totalling 7% of the total amount of professionals employed in South Africa and, more alarmingly, more than eight times the number of immigrants to South Africa in the same period. The failure to keep accurate records of emigration rates, and the high demand for skilled workers globally, are concerns for the supply of labour in South Africa in the future. The actual numbers of emigrants seems to be about two or three times higher than the official statistics available (Barker, 2015: 28). Janse van Rensburg *et al.* (2011: 549) discuss that the so-called "brain drain" contributes to the decrease of the overall skill levels and productivity of the labour force.

4.4.3 An individual's decision to work in the labour market

An individual must decide how much time they want to work, and how much time they want to dedicate to leisure (free) time. This decision is determined by two factors, namely: the individual's preference to work and leisure, and the income they will earn (which can be reflected in an indifference curve); and their budget constraints, which are the financial constraints imposed on an individual (Barker, 2015: 30-35; Smith, 2005: 307).

Following the discussion of labour demand and labour supply, presented in the sections above (sections 4.3 and 4.4), section 4.5 below presents an evaluation of the four main labour forecasting methods used in manpower forecasting.

4.5 LABOUR FORECASTING

Direct occupations in the tourism sector include hotel and restaurant employees, while indirect occupations include taxi drivers and tour guides (ILO, 2010: 13). The entry level requirements of these occupations vary according to the organisation, the requisite skills and experience, and seasonality. Therefore human resources planning is seriously affected by these factors. This process is known as manpower forecasting. The International Labour Organisation's Developments and Challenges in the Hospitality and Tourism Sector (ILO, 2010: 15) document states that most

unskilled or semi-skilled workers in the tourism industry are women, making up 60-70% of the labour force, who work in the most vulnerable jobs under challenging working conditions.

Clements (1989: 2) explains that forecasts are statements about the future, and therefore anything can be forecasted. Wong, Chan and Chiang (2004: 43) highlight that economic planners find value in the forecasting of labour, as this assists them to ensure the labour market is suitably filled. The authors summarised the assessment of the labour market as essential for addressing the differences between labour demand and supply, the demand for specific skills or to mitigate certain labour shortages (Wong *et al.,* 2004: 43). The facilitation of training is seen as the most important outcome of manpower forecasting, which results in the long-term investment in the economy. The ability to be flexible to meet new requirements of the labour market is vital in order for a specific country or industry to find the correct number of sufficiently skilled workers to fill the market. And although it may be difficult to forecast the future of the labour market, using historical patterns can assist in forecasting labour demand. Chan, Chiang, Mak, Choy and Wong (2006: 5) found that the most dominant method used to derive manpower forecasts is the top-down approach. The authors concluded that the manpower requirements of an industry are related to the output of the industry; therefore the growth of a certain industry will also influence the demand for each occupation within the industry (Chan *et al.,* 2006: 5).

According to Barker (2015: 37), the demand for labour is a derived demand, which means that the demand is dependent on the consumer demand for the product or service created by the labour. This is mainly influenced by factors such as: the price of labour; the fluctuation in demand for the product or services that are produced by labour; the market value of the product; and the productivity of the labour involved in creating the product or service (refer to section 4.3 above). For the newer fields in the tourism industry, such as medical and wellness tourism, the demand for skills and education is quite apparent. Thus, multi-skilling and improving of skills and qualifications become necessary (ILO, 2010: 47).

Several ways exist to assess the labour market and to forecast labour demand. According to Wong *et al.,* (2004: 44), certain forecasting approaches may only

generate long-term forecasts, while others only provide short-term forecasting of labour demands. Therefore the methods chosen may influence the results of the forecasts. Labour market forecasting may be classified according to geographic areas (such as national or local), by industry, or even at individual levels. This is also confirmed by Wong, Chan and Chiang (2005: 979-980) who state that the assessment of the labour market structure can improve training systems and meet the needs of the industry, by identifying future skills. They also conclude that although it may be difficult to assess the future labour market, using historical data can provide a more accurate overview of the future labour environment.

According to Barker (2015: 38-40), South African employment data is obtained from various sources, such as population census, samples and household surveys. This data is often unreliable, as it is not comparable over a period of time, creating challenges associated with measuring informal employment, small business enterprises and irregular forms of employment.

According to Wong *et al.* (2004) there are four major approaches to manpower forecasting, namely time-series projections, the bottom-up coefficient approach, the top-down approach and the market signalling approach. Each of these are reviewed below.

4.5.1 Time-series forecasts

Chapter three presented an evaluation of quantitative forecasting methods, in which time series forecasting was presented by means of an in-depth literature review. In section 3.4 of chapter three, the forecasting methods of quantitative forecasting were discussed according to the non-causal and causal methods, and other causal methods, providing an overview of various quantitative forecasting methods.

Wong *et al.* (2004) and Asteriou and Hall (2016: 15) confirm that time series extrapolations examine univariate relationships of the past, and then extrapolate these relationships into the future, to obtain time series forecasts. The series data is arranged in chronological order and it is possible to have several data intervals, such as weekly or monthly intervals. Due to the fact that previous data has an influence on future data, lags are common, as the time factor is an important variable in these types of data sets. The authors also suggest that although several methods of

extrapolation exist (linear and non-linear), the more complex extrapolation methods often yield the best results. Due to the fact that the univariate time series are more reliable, forecasting according to these methods can result in more accurate forecasts. This is because these methods take into account the characteristics of manpower forecasting, such as the season, trend, cycle and other patterns. Wong *et al.* (2004) also suggest the qualitative adjustment of time series forecasts, which is the method that will be followed in this study, to complement the accuracy of the quantitative forecasts used.

In short, time series forecasts use historical data of up to 20 years, to forecast using different techniques, as discussed in chapter three. The results of the time series forecasts are short term and produce an aggregated labour demand forecast (Wong *et al.,* 2004: 51). The aim of this study is to forecast the demand for qualified labour in the accommodation industry in South Africa, and therefore time series forecasts are useful in this study, in order to forecast this type of labour demand.

4.5.2 "Bottom-up" coefficient approach

The bottom-up coefficient approach, as one of the four methods of forecasting labour, uses simple labour multipliers to produce short-term forecasts. Chan *et al.* (2002) provide the basis for the recently developed "bottom-up" forecasting approach. In this approach, labour multipliers are employed, which state that for each type of project, the same level of labour per unit of projected expense will be required, and that these will follow a specific pattern in the future (Wong *et al.,* 2004: 45). The number of labourers for each trade per unit expenditure (i.e. labour multiplier) is collected from past projects (per daily labour deployment and expense). The estimated labour by type of project is then projected by multiplying the multipliers and estimated project expenses. Aggregating the manpower per project for future projects, leads to the overall forecast for future labour requirements.

The labour multiplier is defined as the man-days required per million expenditure:

$$L_{sx}^{J} = \frac{D_{sx}^{J}}{E_{X}^{J}} \qquad (4.1)$$

Were: L_{sx}^{J} = labour multiplier of trade s at stage x of project type

D^{J}_{sx} = labour deployment (man-days) of trade s at stage x of the project type j

E^{J}_{x} = project expenditure at stage x of the project type j

The estimated labour demand by occupation is then projected by multiplying the multipliers and estimated project expenditure:

$$\left(L^{D}_{S}\right) = \sum_{x}. E_{x(est.)} \quad (4.2)$$

Where,

L^{D}_{S} = total labour demand of trade s for a particular construction project

$E_{x(est.)}$ = estimated project expenditure at stage x

This forecasting method establishes fixed coefficients for different categories of building, housing and civil engineering. This allows different labour productivities to be more accurate, as several multipliers are used to reflect several components, such as different types of projects, and increases labour forecasting accuracy. This compares favourably with Chan's labour model, as discussed in Wong *et al.* (2007).

Fixed labour coefficients are used to obtain the current employment levels for various occupations, thus linking these jobs with their corresponding output levels. This is completed for each category and job level, until the various multipliers reflect the projected effects of these labour coefficients on every job level and category. This may increase the accuracy of the forecasted results, as the data used is extensive and current. This type of approach is popular in forecasts based on projects, such as the HSRC study mentioned in chapter two of this study, where labour demand in South Africa was forecasted in 1999.

Coefficients are used to determine labour elasticities, which may be short run or long run elasticities. Labour elasticities are also used to determine the changes between the explanatory variables and the dependent variables. They can also be used to accurately determine the percentage change in variables when another specific variable increases by a percentage. The bottom-up approach is used to determine such elasticities, by using data that is readily available.

Some of the disadvantages of using this approach include the following: (i) It requires considerable effort and expenses to continuously update the database of information; (ii) This time lag leads to a severe constraint on the data used; (iii) Updated coefficients are essential for providing accurate forecasts; (iv) This method also relies heavily on past data and the data's relationship between the variables and manpower demand; (v) Collecting past employment records and information about upcoming projects is labour intensive and time-consuming.

All in all, the bottom-up approach uses the labour data of returns and costs and estimated project costs, by using simple calculations to produce project based labour demand for specific occupations and totals all of these demands (Wong *et al.,* 2004: 51).

4.5.3 "Top-down" forecasting model

According to Hopkins (2002) as cited in Wong *et al.* (2004: 46), the top down approach is seen as the dominant approach to derive manpower. This method assumes that the manpower requirements, outputs of the industry and developments in the country's economy are related. The simulations of the top down model are obtained by means of using an input-output model to determine labour forecasts. Therefore, this method assumes that a particular industry's growth will lead to demands for each occupation within the same industry (Uwakweh & Maloney, 1991 as cited in Wong et al., 2004: 48; Willems & de Grip, 1998).

The manpower demand functions are stated below:

$$L_{ij} = \mathrm{f}\left(X, \frac{X_i}{X}, \frac{L_i}{X_i}, \frac{L_{ij}}{L_i}\right) \qquad (4.3)$$

Where:

X = output

L = labour force

i = economic sector

j = occupation

The top down approach also uses the multiplier model to determine the effects of a shock, due to changes in the economy, or as in this study, changes in the tourism or hospitality industries. To determine the shock, the Social Accounting Matrix (SAM) is used to determine linkages of expenses in a backwards manner. These changes in demand therefore determine inputs for further analysis.

The top-down model is able to create long term forecasts (up to 10 years) (Campbell, 1997, as cited in Wong *et al.,* 2004: 48). This model can also determine occupational and regional labour demand. According to Wong *et al.* (2004: 46), forecasting models may be accompanied by econometric and/or simulation methods. This is completed by means of first formulating equations that describe the relationship between the different sectors and variables. Secondly the scenario is estimated and the generated results display a multi-equation simulation model. This model shows the trends, economic developments and essential labour forecasting components, such as the economic growth rate of progress and price and wage-price mechanisms, including economic policies. Another method used to complement top-down forecasts, is the qualitative method of qualitative adjustment, using expert opinions to improve and explain manpower forecasting results.

Failures to accurately predict the growth rate and future events (technological and investment changes) will negatively affect the accuracy of the final forecast. Another problem in the "top-down model" is that it is based on productivity, interest rates and overall outputs, making it difficult to forecast labour demands. A solution may be to develop a range of scenarios rather than a fixed forecast (Wong *et al.,* 2004: 49).

In brief, the top down approach uses macroeconomic statistics and future growth projections to extrapolate econometrics data into long term labour demands and labour-productivity or expert opinions, to calculate occupation and geographic labour demand by extrapolation (Wong *et al.,* 2004:51). This method will be useful for this study, as it is able to forecast the future demand for accommodation in the South African context, using data that is readily available.

4.5.4 Market signalling approaches

Market signalling approaches are used as an alternative to complex long-term forecasts (Wong *et al.,* 2004: 49). In these approaches, job opportunities and skill

requirements are identified by the assessment of market signals, such as wages, enrolment data, education and training trends, skill and occupation, unemployment rates, and job vacancies. Middleton, Ziderman and Van Adams (1993) as cited in Wong *et al.* (2004: 49) states that these approaches focus on education and training qualifications, instead of occupation qualifications as the main manpower variable, as the focus is on the investment in specific skills and their forecasted economic return. This may lead to conclusions regarding mismatches between employer demand for qualifications, and the number of such graduates that may be available.

The market signalling approaches may be useful when data is not adequate to complete time series models or econometric equations. Moreover, they assist to conclude which skills and qualifications are required by the industry, so that educational institutions may better prepare graduates. The methods used for these approaches are simple to use. These include surveys, interview methods, etc. (Wong *et al.,* 2004: 50). However, the main drawback of this method is that the employers' view of the forecast for each individual occupation may not match the signals of the current labour market.

To summarise, the market signalling approaches use labour market signals such as trends in wages, employment, etc., through simple analysis, to produce signals and employers' views of occupations in the future (Wong *et al.,* 2004:51).

4.6 LABOUR DEMAND AND LABOUR SUPPLY IN THE HOSPITALITY INDUSTRY

Against the background labour demand and supply in South Africa this study, specifically focuses on the labour demand and supply in the accommodation industry as part of the hospitality industry. It is therefore necessary to understand the unique labour challenges that this industry faces. This section explores several literature reviews of the international evidence available on the demand for, and supply of labour, and addresses the skills and qualifications demands in the hospitality industry. Thus the discussion commences with a focus on the supply of labour in the international hospitality industry, followed by the demand and supply of labour, skills and qualifications demands in the South African hospitality industry context. This section concludes with a discussion of the supply of labour in the South African hospitality industry.

4.6.1 International evidence on the demand for and supply of labour in the hospitality industry

Worldwide, the hospitality industry is well known for being a labour intensive industry, largely characterised by a high demand for unskilled and low skilled labour (HSRC, 2008: 1). As indicated above (see figure 4.2), lower skilled workers receive a lower wage rate because the supply of these workers exceeds their demand. McIntosh and Steedman (2000: 13) support this finding in their research on Europe's Low Skills by stating that: "*Since, the beginning of the 1990's the gap between the earnings of high skilled and low skilled workers has widened and in many countries the unemployment rate for people without qualifications is four times higher than for university graduates."*

The factors that influence hospitality employment worldwide, include: skills demand, qualifications demand and the supply of labour in the international hospitality industry. These factors are considered below in detail.

4.6.1.1 Skills demand in the international hospitality industry

Research by Bowen and Ford (2004: 396) and Dawson *et al.* (2011: 290) shows that the skills of hospitality employees should be different skills to those of employees who sell goods, because the former sell services, and need to be "on stage" constantly. The industry is different to other industries due to the intangibility of the service being delivered. However, various studies around the world highlight that many of the employees in the hospitality industry do not have the necessary skills.

Enz (2004: 318) conducted a study amongst 448 restaurateurs. The majority of respondents said that their main obstacle was that employees did not possess the required skills. Respondents concluded that this recruitment problem existed at all job levels in their restaurants (Enz, 2004: 319). The study showed a correlation between the skills and abilities of the employees; and the poor performance and low service quality perceived by the restaurateurs (Enz, 2004: 328). According to Enz (2004: 332) the solution is a 360 degree change for the hospitality industry, starting with the human resources component.

The study by Lashley and Rowson in 2002 on skills shortages in the Manchester tourism sector, as cited in Lashley (2009: 347), pointed out three types of skill sets or

jobs required by the tourism sector, namely: specialist jobs; low-skilled and poorly paid jobs; and technically skilled jobs. In general, the more a job requires an employee to make decisions without a supervisor, the more formal training is needed for that employee (Lashley, 2009: 350). The size of the organisation also impacts on the demand for skilled and unskilled labour. Smaller organisations seem to have challenges when it comes to the skills that their organisation requires (Lashley, 2009: 350).

The study of Matic and Agusaj (2012: 20) on Croatia's hospitality industry focused on two areas: (i) the most important skills and competencies for entry-level hospitality positions, and (ii) the areas in which the most significant gaps are between the organisational needs and what the labour market offers. The outcomes of the study indicated that overall, the Croatian hospitality industry is able to find employees that it most requires. With respect to the skills and competencies required, the top findings were that students needed more technological training, cross-cultural competence. Another key finding was that training in specific hospitality areas had to be changed and students were to focus on a core set of skills and competencies which would create a better "all-round" graduate for the industry (Matic & Agusaj, 2012: 25). On the industry's side, the findings were that only 53% of respondents could find qualified applications for positions in their organisations. Respondents also indicated that the Croatian tourism and hospitality programmes do not satisfactorily prepare graduates for jobs within the industry (58% indicated that it was not adequate). Gursoy *et al.* (2012: 41) agree and state that for graduates to increase their employability, they need to perfect their skills and competencies to best meet the industry's needs.

Because of this general trend, Tesone and Ricci (2009: 78) state that many hospitality recruiters claim they "hire for attitude and train for skills". In the service industry, as staff interacts directly with customers, the staffing strategies will also be different (Bowen & Ford, 2004: 395). Research by Gursoy *et al.* (2012: 34) suggests that customer service can be enhanced by selecting employees who have certain characteristics or attributes that relate both to generic skills and hospitality specific skills. Employing staff who possess these specific attributes may be directly related to the success of an organisation, and according to Dawson *et al. (*2011: 290),

recruiting and retaining such employees should be a high priority. This will address the skills shortages in the industry.

Taking these service industry-related challenges into consideration, Baum (2002: 343) supports that the hospitality industry may be used as a case study when it comes to skills. He urges that the debate amongst economists and educational experts regarding skills and skills development is continuous. He states that the unique attributes of the hospitality sector include influences such as skills in the changing employment, technology and practical skills in developed and developing countries (Baum, 2002: 345; Baum, 2006: 127). Baum (2002: 346) mentions that there are two main types of hospitality skills, namely: horizontal (referring to the breadth of the sector) and vertical (which refers to the broad skills including technical, service and managerial, which are presented in one hospitality organisation) skills. Vertical skills are employed from unskilled to managerial employees.

A recent study completed in Australia's accommodation industry for four and five star hotels, shows that the shortage in labour may also be due to a lack of appropriate skills, which points to an inadequate education and training system (Davidson & Wang, 2011: 249). The same study concluded that when recruiting new employees, hotels pay more attention on the "soft" skills, such as dress code, customer skills and communication skills, than they do on experience, references and formal qualifications. Alonso and O'Neill (2011: 90) expressed that punctuality, accountability and reliability and other basic attributes are essential for students who are interested in working in the hospitality industry, and that educators should advise the importance of these qualities to students.

Nickson, Baum, Losekoot, Morrison and Frochot (2002: 39) agree that the skills profile of the hospitality industry is influenced by the available labour market and vice versa. The weak market imposes downward pressures on the skills expectations of employers, which influences the nature and level of graduates (2002: 39). Riley (1996: 18) also concluded that a weak-strong internal labour market model can be used to assess the human resources organisation, when it is related to educational requirements, entry points to the workforce, salaries and trade union membership. This type of labour market implements downward pressure on expectations of

employee skills (by their employers). This is also where the practice of de-skilling occurs, which is a direct effect of the expectations that employers have from their employees, and not so much the demands of the hospitality industry (Baum, 2002: 327).

Lashley (2009: 345) contributes to this by stating that the standardisation of service sector jobs has led to jobs that require little training or skill, which has been termed as “de-skilling”. According to Lashley (2009: 345) employers prefer to use this practice as they are able to recruit from a large, low cost, labour market. Employers seem to favour low skilled workers and look for the “soft skills” when recruiting unskilled employees (Lashley, 2009: 246). For many employers, if low barriers to entry exist, such as, low wages, minimal training and high levels of staff turnover, then they prefer to employee the unskilled (Lashley, 2009: 350).

According to Payne and Keep (2003) as cited in Lashley (2009: 343), there should be a paradigm shift by employers, towards creating a greater demand for skilled employees. This is because too many domestic policies focus primarily on the supply of employees without giving sufficient attention to the long term retention of employees in their organisations. Gleeson and Keep (2004: 46) confirm this by stating that too many employers generate profits with low-skilled employees, and therefore find such workers as easily replaceable. Lashley (2009: 346) points out that as consumers increasingly favour customised products, employers are forced to embark on the “up-skilling” or “re-skilling” of employees. The practice of “multi-skilling” through cross-training is also seen as a trend in the service sector.

According to Baum (2008: 725), the tourism and hospitality industries in developed countries seek short-term solutions to recruitment and “stop-gap” strategies to overcome the above-mentioned challenges in the labour market. This leads to a decline in the demand for unskilled or low skills workers. Another consideration is that of “external employees” or part-time employees. Hospitality organisations prefer to use external employees that allow a higher degree of flexibility for the hotels because they can be called at short notice, and are ideal for seasonal work (Buonocore, 2010: 378, 379). In a Taiwanese study from 2007, the government reported that in 2006, 94% of hospitality organisations had employed contingent workers. The study also reported that 97% of the employees in the hospitality service

sector in Taiwan are casual employees (Cheng-Hau *et al.,* 2009: 414). In a study of the services sector in the United States of America, Milman (2003), as cited in Cheng-Hau *et al.* (2009), states that there was an increase in the number of external employees, when compared to any other industry (except those managed by independent agents, such as finance, insurance and real estate) during a period of ten years, up until 2003. Baum (2008: 787) and Nickson *et al.,* (2002: 39) conclude that the features of a weak labour market force many hospitality and tourism organisations to compete for talent in the open labour market.

In the hospitality industry of developing countries, the skills gap seems to be worsened by the fact that employees lack cultural exposure and experience (Baum, 2006: 126). Ashley *et al.* (2000: 2) state that important skills for the tourism industry are language and an understanding of the customer expectations, which are very difficult to overcome when working with very poor employees that are unfamiliar with travel. This gap is clearly evident in the service industry, where guests expect staff to have certain interpersonal skills, and to be able to communicate about a range of topics. Guests therefore assume that staff hold certain cultural experiences and educational qualifications as part of their background (Baum, 2006: 129-130). Baum (1996: 208) came to the conclusion that in developing countries, hotels need to recruit employees with much higher levels of education and skills than in developed countries. Baum (1996: 209) further states that the definition of “skilled employees” may differ for developing and developed countries and that the emphasis should be on training and skills development for the service industry.

Baum (2002: 353) comments that it is important to consider that skills shortages in the hospitality industry are mainly concerned with generic skills (such as communication and information technology related skills), and not specific technical skills. Nickson *et al.* (2002:45) support this view, stating that a solution may be found in the generic course material that is offered by hospitality higher education institutions (2002: 48). Odgers and Baum (2001: 103) state that in the absence of experienced, qualified and skilled hospitality employees (in their study this is especially the case in Western Europe), many hotels recruit by looking at the more generic skills.

4.6.1.2 Qualifications demand in the international hospitality industry

Bardi (2007: 27) identifies that in order to be a successful hospitality employee, a sound foundation is important, which can be obtained through formal education. Bardi (2007: 28) further states *"Your educational experience will open the door to your career. You must apply your skills and knowledge after graduation to be an effective, successful employee in the hotel industry. Use your degree as a starting point for an exciting career in hospitality"*.

Baum (2002: 349) and Nickson *et al.* (2002: 41) state that the easy access to the hospitality industry can be illustrated by the ease of employment of someone with limited hospitality or business training at a senior management level, especially in SMME environments. This idea of formal qualifications being unnecessary in the hospitality industry is explored in a study in the USA by Tesone and Ricci *(*2009: 85), in which the perception of preparedness of 137 hospitality employees (managers and entry-level employees) was assessed. It was found that the majority of the respondents did not graduate from a hospitality management programme. The majority that did have college degrees, graduated in the arts and science fields. By contrast, all the entry-level employees were in possession of a hospitality management qualification. A study by Nickson *et al.* (2002: 27) into the skills, organisational performance and economic activity in the hospitality industry in the United Kingdom, also shows that only 3.4 percent of hospitality employees have a degree or equivalent qualification, compared to an industry figure of 16.9 percent. In addition, the Australian Bureau of Statistics (2006) as cited in Richardson (2009; 383), reveals that the hospitality and tourism industry in Australia has the least amount of employees with tertiary qualifications, when compared to other industries.

Baum and Devine (2005: 270) explain that skills demands need to be met and should overcome the challenges that relate to education, training and skills. In their study of the industry in Northern Ireland, they mention that hospitality skills shortages are evident especially for the positions of chefs which require language skills and front office personnel which require technical skills (Baum & Devine, 2005: 270). Their study explored the skills profiles of front office employees at four and five star hotels and found that 66% of respondents did not possess formal qualifications, and

therefore experienced challenges in performing their front office duties (Baum & Devine, 2005: 270).

Even in earlier studies amongst hospitality employees in the UK, such as those by Knight (1971) in O'Mahony and Sillitoe (2001: 22), only 15 percent of the employees possessed a formal hospitality qualification and could not advance in their careers. The same study highlights a report by a Hotel and Catering Industry Training Board (1983) which disclosed that men in the UK hospitality industry were twice as likely to have obtained a hospitality qualification as women. Even recently, it seems that formal hospitality qualifications have been proved to play an increased role in career advancement as well as in employment in the hospitality industry. In some cases, management personnel are more likely to have obtained further qualifications, as an indication of the precedence of further education for career advancement.

To this effect, Kim, Chun and Petrick (2009: 100) conducted a study on career paths of 33 Korean general managers at super deluxe hotels. Their finding regarding the education of general managers is that most of them had obtained a Bachelors' Degree (41.2%), 23.5% held Masters' Degrees, 14.7% were studying towards a Masters' Degree, 14.7% had a high school diploma and only 2.9% were PhD students (none had obtained PhD degree's) (Kim *et al.,* 2009: 104). Compared to an earlier study by Kim (1994), in which 102 Korean general managers where studied, it was interesting to note that the typical general manager in 1994 was a 45 year old male, with 2 year degree experience at junior college. Kim *et al.* (2009: 100) concluded that the higher the level of education of the general manager, the more job satisfaction they perceived themselves to have.

In contrast to this 1994 study, Ladkin (2000: 233) found that the level of education had no bearing on the time it took to become a general manager. She suggested that education was not a success factor in career advancement. However, in Ladkin (2002: 380), she concludes that although education was not necessarily a success factor in career advancement, it was observed that holders of masters' degrees took shortest time to become general managers than the less qualified personnel. Ladkin (2002: 379) also states that most entrants into the hospitality market have a vocational qualification, personal mobility is important to career advancement and that food and beverage experience is essential in order to become a manager.

Chang and Chien (2012: 253) analysed hotel training in Taiwan and support the importance of qualifications, with 32.8% of the departmental managers obtaining general business qualifications and 31.3% having majored in hospitality and tourism.

Ricci (2010: 223) undertook a study of 317 lodge managers in the USA. He found that the majority held a bachelor's degree (62.15%), although only 30.6% of them held a hospitality related bachelors' degree. 90% of those managers responded that they were insufficiently prepared for the hospitality industry, even after acquiring such a degree. Ricci (2010: 228) concluded that more is expected in the hospitality industry from employees who have obtained a bachelor's degree. This higher expectation seems to arise from the perceptions of employers that such candidates possessed higher management education.

Guerrier and Deery (1998: 151) argue that many hospitality managers are not adequately equipped with the requisite knowledge or skills to fulfil the demands of the hospitality industry. Ineson (2011: 10-11) conducted a study to determine the "ideal" recruitment profile for hotel management in Bulgaria and Romania. They concluded that, as far as academic qualifications are concerned, a postgraduate degree in hotel or hotel management in Bulgaria is essential; while for Romania, a business management postgraduate degree would suffice. However, the difference is that in Romania, there are very few institutions that offer hospitality management, even though the industry is in need of personnel with hospitality management qualifications.

Kwok, Adams and Price (2011: 374) completed a study to analyse the factors that influence recruiters' decisions when they select graduates for entry-level management positions. Their study of 70 hospitality recruiters/managers in the USA reveals that hospitality recruiters search for well-rounded graduates, and therefore consider the entire profile of the graduate, not just one particular factor. It was also found that recruiters paid more attention to the quality of the hospitality programme that the graduate undertook, rather than their individual results. From this study, it appears that the problem seems to lie with a mismatch between the qualification and the skills demanded by industry. The following studies reiterate this point.

A Ugandan study by Tukamushaba and Xiao (2012: 336) indicates that although there is a fast-growing hospitality and tourism sector in Uganda, the available

workforce is not well trained for these opportunities. The same study quotes the Ugandan Investment Authority (2009) which states that, more than 1 000 graduates are produced annually but more than 80% of them are unemployable, due to their lack of expertise, knowledge and skills in practice. One reason for this gap may be attributed to the inadequate education of the staff in the hospitality and tourism programmes which renders them unable to bestow the necessary education and experience to students (Tukamushaba & Xiao, 2012: 339). The other reason seems to be that courses were structured for spas, resorts, theme parts, leisure and recreation centres, which Uganda has not developed yet. Consequently, graduates did not possess even the basic skills necessary for basic hospitality positions such as waitering (Tukamushaba & Xiao, 2012: 351). Thus, graduates are unprepared for the hospitality industry. The researchers reiterate the importance of focussing on practical skills that would assist the industry, although it is lamented that employers prefer cheap labour, which is easily replaceable (Tukamushaba & Xiao, 2012: 355).

A Slovenian study by Rok (2012: 80) focused on the evaluation of assessment and validation of Slovenian qualifications in the tourism and hospitality industry, and the relationship between employee qualifications and available vacancies. The study identifies skills shortages in occupations such as waiters, cooks, bartenders, and room attendants (Rok, 2012: 84). This is comparable to the skills shortage in South African industry (see chapter two, section 2.5.2.1). The qualifications offered in Slovenia, however, do not compare to the vacancies, creating a "gap" in the industry. It is suggested that the labour market must lead the way for the qualifications that are offered (Rok, 2012: 84).

Even in a study about India's hospitality graduates, Kavita and Sharma (2011: 34) mention that the Indian labour market fluctuates between the prevailing skills shortage and a large number of graduates who do not find employment. One of the reasons cited for this challenge is that graduates do not have the appropriate skills, are ill prepared and lack the competencies and behaviours demanded by the industry.

Sheldon *et al.* (2008), investigated the employee skills that would be required in the hospitality industry in the future. The results of their surveys and discussions amongst 45 senior hospitality educators and industry experts, identify four important

focus areas for the future, namely: destination stewardship skills, political and ethical skills, enhanced human resource skills and dynamic business skills. Sheldon *et al.* (2008: 63) also mention that the key jobs in 2015 may not even exist then in 2000, and much of the information taught to hospitality students may become redundant by the time they have graduated.

4.6.1.3 Supply of labour in the international hospitality industry

According to Gee (1994: 311), the supply of labour in the hospitality industry is influenced by several conditions and events at both micro and macro levels, which are, mostly, beyond the industry's control. Such factors include demographic trends, industrialisation, competition among other sectors, economic trends that affect labour demand, and labour legislations. Regrettably, as found by Enz (2001: 43), in incidences of high levels of unemployment, the hospitality industry is even less attractive to prospective employees, due to its reputation for low wages, seasonality and long working hours.

For the industry, labour concerns include its low status image, negative cultural perceptions, non-competitive wages and employment (Gee, 1994: 311). The industry has tried to combat such concerns by developing recruitment and retention programmes in order to address turnover and develop training programmes for scarce hospitality skills. According to Gee (1994: 285), when potential candidates are screened for hospitality vacancies, the type and length of their experience and training is an important factor to consider.

Mkono (2010: 858), in a Zimbabwean context, reiterates that although the hospitality industry has many opportunities for admission to entry level jobs, the wages are poor; and it would take a graduate several years to progress to management level. On the positive side, Mkono (2010: 860) reports that hotel managers identified a number of attributes of the industry that they enjoyed. These include: interacting with different people; working in a nice environment; the perks; challenging and stimulating work; the glamour/prestige; the global nature of the industry and mobility; the networking; growth and opportunities; the creativity involved; and working with a diverse workforce.

Brien (2010: 168) interviewed 20 senior hotel managers in New Zealand to ascertain how they managed contingent/part-time labour, and concludes that one of the main problems in the hospitality industry was with retaining and developing employees, due to its negative image. He also found that budget constraints were often the main concern when employing labour in the industry. Thus, Enz (2001: 44) concludes that the hospitality industry must be made more attractive, in order to attract and retain good quality employees.

According to a Nobscot Corporation study of 2006 (as cited in Kalargyrou and Woods, 2011: 2), the costs of training in the hospitality industry are very high, and often ineffective, with a staff turnover of 56.4% in the accommodation and food services sector and 52.2% in the leisure and hospitality sector. The high staff turnover may be related to a decline in hospitality profits, which in turn leads to an increase in training expenses. As a result developing countries, unlike developed countries, place much more emphasis on education and training in the hospitality industry, as employees need additional assistance in these fields in order to interact successfully with the often widely travelled, sophisticated and educated international guests (Baum, 2006: 132).

Another one of the most critical challenges facing the industry, as stated by Blomme *et al.,* (2009: 6), is that of retaining highly-educated and highly-skilled employees. Their research mentions that 70% of the graduates from The Hague Hotel School leave the hospitality industry within six years of graduating. This means that a large number of highly skilled and educated employees are leaving the hospitality industry on a consistent basis. In a study by Johns and McKechnie (1995), cited in Barron (2008: 732), reveals that the early nineties already saw 50% of hospitality graduates choose careers outside the hospitality industry. The literature on the reasons for this is extensive (usually alluding to the above-mentioned challenges that the industry faces). However, Blomme *et al.* (2009: 6) attribute this challenge to the fact that students' expectations of the industry often do not match their actual experiences of the industry. Barron (2008: 733) adds that the high turnover associated with this challenge can also be related to work-family conflicts, poor working conditions, and emotional labour from customer contact.

In a study of the concerns of 170 lodging managers in 25 different countries, it was agreed that the biggest obstacle facing employers was attracting the right employees, especially when it comes to middle level management (Enz, 2001: 43). Enz (2001:44) also found that the management education and training programmes in the hospitality industry were inadequate, which forced employees to leave the industry. Without leaders to encourage employees to remain in the industry and advance in their careers, talented employees leave the industry for good.

Besides the normal labour market turnover, the ILO asserts that HIV and AIDS is impacting negatively on the labour productivity, especially in African countries, resulting in the proliferation of labour costs in the global tourism industry (CATHSSETA, 2014a: 10). The indirect impacts of the tourism industry are influenced by the fact that many qualified employees are exported to other countries (Vellas, 2011: 8). In fact, the tendency is that as the tourism industry grows and local employees are not found with the proper skills to fill jobs, countries begin to look beyond their borders for employees who are in possession of such skills (Kaplan, 2004: 217).

Odgers and Baum (2001: 21) and Baum (2006: 125), state that when there is a shortage of skilled, experienced and qualified employees, hotels employ staff with more generic attributes (such as communication and information technology skills) and then build on further hotel-specific training during induction. This results in a skills gap between the demands of the industry and the supply of skills and qualifications that are available from the current workforce.

Barron (2008: 734) investigated the supply of future talent for the hospitality industry and concludes that the difficulty in recruiting and retaining hospitality employees is worsened by the recent trend in demographics that has led to a reduction in entrants to the overall labour supply in developed nations. In other words, the labour pool is consistently shrinking. Generation Y seems to have created their own challenges for the hospitality industry. These employees were born between the years 1979 and 1994. Their attitudes, behaviour, expectations, motivations, among other things, have led to shifts in the human resources practices of many industries. This generation is renowned for their search for job satisfaction, fulfilment and fast career advancement. Their focus is primarily on interest and opportunity, rather than

financial gains. This generation also expects to work for several employers during their lifetime, which leads to the high rate of staff turnover (PwC, 2013: 19).

These trends also coincide with a reduced emphasis on practical skills in the hospitality industry and a concentration on more reflective and theoretical subjects (Barron, 2008: 735). Barron thus projects that fewer Generation Y students will be deciding on hospitality as a career, due to the high staff turnover in the industry, the poor conversion rate from student to hospitality manager, the students' limited commitment, their needs for constant praise and feedback and the desire for new challenges. In light of this, to Solnet and Hood (2008: 61) state that the difference between Generation Y and the hospitality and tourism industries are a cause for concern. The reason why many Generation Y students choose not to enter the hospitality industry is that they perceive the industry as failing to focus on their own values and behaviours. Barron *et al.* (2007:129) confirm that most of the Generation Y population want to open their own businesses, and are independent and self-reliant. Murray and Baker (2011: 60) add that the new generation is more technologically savvy than past generations, such that the competition for such employees is fierce. Attracting Generation Y employees is increasingly becoming difficult. Thus, understanding this group of employees is an advantage for recruitment.

From the discussion of the supply of labour internationally, there are several challenges facing hospitality employment. However, there are also several opportunities that may be used to South Africa's advantage.

4.6.2 The demand and supply of labour in the South African Hospitality Industry

It would appear that most developed countries experience the same general issues around human resources, as shown above, in the UK, Korea, Taiwan, Australia, and the USA. It may therefore be assumed that these challenges may also prevail in developing countries such as South Africa. South African employment was previously discussed in section 2.5.1, while employment in the South African tourism industry was previously discussed in section 2.5.2 of chapter two.

A study by HSRC (1999) investigating the *SA Labour Market Trends and Future Workforce Needs (1998-2003)* highlights the importance of human resources or manpower forecasting in order to analyse and forecast demand on an occupational level for the South African labour market. The purpose of this type of forecasting is based on the need for an analysis of the variables that may influence the demand for labour in a particular occupation, and how this category may react to certain external and internal influences. The issue of labour demand and supply, and the gap that it often leaves, is a serious concern to policy makers, industries and employment seekers. Therefore forecasting such demands may impact positively on the number of entrants to the market, the courses that higher education institutions offer and the decisions of policy makers and the tourism industry.

Although Timothy and Wall (1995: 65) conclude that hotels represent the untainted vision of tourism and bring to life tourism in the city, Rogerson (2010, 426); Rogerson and Kotze (2011: 13523) and Rogerson (2014: 182), and conclude that the hotel sector in South Africa is often overlooked, with little research available on the sector, and the tourism industry in general. It has also been indicated that although there has been an increase in tourism research, the management and production of accommodation management has been overlooked (Rogerson & Kotze, 2011: 135324).

The following sections review the empirical and theoretical literature on the demand and supply of labour in the South African hospitality industry. The profile of the current hospitality workforce in South Africa was previously discussed in chapter two, section 2.5.2.1, and will be elaborated on in the following two sections.

4.6.2.1 Skills and qualification demand in the South African hospitality industry

One of the main factors that hinder growth in the South African tourism industry is the lack of adequately skilled tourism employees (Kaplan, 2004: 217). According to PwC (2013, 24), the strong economic growth in Africa has had many positive effects, but has also led to a shortage of skills, especially for managerial and specialist positions. Although 40% of the population in Africa is under the age of 15, which will make up the majority of the workforce over the next decade, the need for better

education and training cannot be overlooked (PwC, 2013: 24). Continuous training is vital to assisting the youth to secure permanent employment (Vellas, 2011: 9).

Whiteford, van Zyl, Simkins and Hall (1999), produced a pioneer report on the South African labour market trends and future workforce needs from 1998-2003. This report presents the employment forecasts for 36 economic subsectors in South Africa, showing that the accommodation (as part of the trade, catering and accommodation sector) was expected to be the fastest growing sector and the largest contributor of employment. Woolard *et al.* (2003: 459), conducted a study regarding the demand for high-skill South African human resources over the period 2001 to 2006, forecasting new positions and replacement demand. The researchers used sectoral forecasts and elasticities to obtain changes in occupational demand in each sector and to consider replacement demands (2003: 464-465).

Although several other African countries maintain databases of their hospitality sectors, South Africa does not possess an adequate database of such service providers (Department of Tourism, 2011: 15). The research by Rogerson and Kotze (2011: 13527) on the hospitality industry for the period 1990 to 2010 indicates that during this time, there was little change in the total number of hotels in South Africa, from 1 003 hotels in 1990 to 1 165 in 2010. Their study also shows that by 2010, 77% of the graded hotels were three, four or five star hotels, the majority of which were large, ranging from 51 to 500 rooms. According to Guerrier and Deery (1998: 154), much of the research focus has been on certain job levels in hospitality, particularly, on restaurant and kitchen workers, and general managers. Occupations such as corporate hospitality managers, room attendants, receptionists, and other staff, have largely been ignored.

Moolman and Wilkinson (2014: 257) developed a framework of generic attributes of hospitality management graduates, which may enhance graduates' employability. After taking 21 generic skills frameworks, 17 hospitality related research studies and six curricula of local and global hospitality programmes into account (Moolman & Wilkinson, 2014: 271), the study identifies specific attribute domains that are essential for hospitality graduates. These include: fundamental; people; thinking; personal; and other generic attributes. In a study by Rogerson (2010: 435) on the boutique hotel industry in South Africa, it was established that the hotel managers of

boutique hotels are recruited due to their personalities and communication skills, rather than their formal tourism qualifications.

An article by Saayman and Geldenhuys (2003: 83) highlights the skills required by the travel sector of the tourism industry, concluding that general education and business education were rated equally important by travel agents, tour operators and tour guides. Due to the fact that tour guides are not actively employed in the hospitality sector, this was the only division of tourism specific education that the above three groups did not deem to be essential (Saayman & Geldenhuys, 2003: 93). Therefore only the tourist guiding sector preferred a generic course, as there are several general skills which are required by all three sectors. Moreover, the travel sector at that time preferred to employ high school graduates and provide them with the relevant on-the-job training, instead of graduates with basic entry level skills, (Saayman & Geldenhuys, 2003: 86).

Another pertinent study was undertaken by CATHSSETA on the skills expectations of learners versus employers. In the study, Zwane (2012: 101) reveals that the tourism, travel and hospitality sub-sectors require the same skills. The study concludes that the expectations of employers are much higher than what the employees can deliver, such that despite several training and education opportunities, graduates are “still not yet competent in the workplace” (Zwane, 2012: 101). Therefore, one of the recommendations of the study is that the focus should be on the quality attainment of qualifications and skills due to the high investment that organisations such as CATHSSETA have made into education and training programmes.

Many scarce and critical skills exist in the tourism industry, which further projects the plight of the unskilled and uneducated workforce in South Africa. However, with no qualified and experienced candidates to fill the vacancies that currently exist, the tourism industry continues to face challenges. Scarce skills refer to occupations in which there is a scarcity of qualified or experienced employees (currently and in the future), whereas critical skills refer to specific key, generic or “top up” skills within an occupation (CATHSSETA, 2014b: 37). In South Africa, it is estimated that the current occupations in the tourism and travel sector that fall under the scarce and critical skills (*Critical Skills List*) will increase to 303 by the year 2015 (CATHSSETA, 2014a:

86-87). Therefore, adequate training and recruiting of the workforce will become essential in filling these scarce and critical skills vacancies.

According to the British Council (2014: 5), there is a linear progression for employability, which refers to a person possessing the relevant knowledge, skills and attributes which assists them in gaining employment. The linear progression is identified as:

i. University study.

ii. Enhanced graduate attributes.

iii. Employment.

The largest challenge seems to be the "gap" which exists between the skills that graduates possess, and the relevant skills that are required by the industry, which may pose a challenge between stages (ii) and (iii) (British Council, 2014: 5). This gap may refer to lack of information technology (IT) skills, personal skills and transferable skills. Another challenge may arise from external factors affecting (iii), such as the environment in which the graduates are raised, their secondary education, the availability of jobs, the graduates' own networks and possible discrimination in the job market (British Council, 2014: 5). Watson (2008: 776) states that student and industry expectations must be aligned with skills and career opportunities; and that industry and education should increase their cooperation to manage human resources. Murray and Baker (2011: 61) also refer to the skills gap, and conclude that the demand for skilled and qualified employees will only increase in the coming years.

Kaplan (2004: 218) cites a study conducted by Inskeep (1994) which suggests that the ideal starting point of tourism education strategies is to complete a needs analysis of the human resources planning and training in the industry. Inskeep (1994) combined an analysis of current gaps in the industry, the subsequent training requirements and an analysis of future requirements. The study also considered the number of staff required in each category as well as the qualifications that they would need to possess. This was followed by an education training programme to develop human resources skills for the present and future (Inskeep, 1994: 218).

Doswell (2000: 57) completed a similar study which focussed more on the planning of human resources.

For the most part, research in the field of the knowledge, skills and values that graduates possess as well as should possess to increase their employability, is lacking in South Africa (British Council, 2014: 7). Given the substantial budget of the government is earmarked for tertiary education, and the several educational policies and procedures that are currently in place, it is essential for studies, such as this one, to be undertaken in order to analyse and forecast the labour market needs of the future accommodation sector. This will ensure that graduates are educated for the needs of the market (this is known as "targeting skills"), which is essential in assisting them to be employable. Students in secondary education can be informed of career opportunities and with the assistance of government bursaries and loans, might be assisted in developing their skills and aptitudes for the accommodation industry. The British Council (2014: 11) admits that although it may be difficult to predict the needs of an ever changing job market, industry, universities and graduate attributes, play a vital role in ensuring a positive outlook on the future of the economy and society. The role that skills development plays in minimising poverty and creating jobs, has elevated the importance of skills development in the development of an economy (Kaplan, 2004: 217).

The focus of this study on the demand for qualified labour in the accommodation industry, uses the study of Woolard ***et al.'s*** (2003) as a starting point, l building upon the labour demand model and the background employed in their study. Although their study was based on all the sectors, in the South African economy, covering 81 occupations, this study focuses on the accommodation industry, as part of the hospitality and tourism industry in South Africa.

4.6.2.2 The supply of labour in the South African hospitality industry

The National Development Plan (NDP) (2013: 54) aims to decrease the unemployment rate to 14 percent by 2020 and 6 percent by 2030, which requires the addition of 11 million new jobs. This means that employment would rise from 13 million to 24 million by 2020. To this effect, the NDP (2013: 38) aims that by 2030, the educational system must provide high quality early-childhood, primary level, further and higher education and training to enable employees to reach their

potential. It also aims to provide a higher education sector which contributes to increase in income, productivity and knowledge.

Stats SA (2013a: 3) supports the fact that education has a vital role to play in ensuring that people are able to actively participate in the employment opportunities that may be created. The ILO, quoted in Stats SA (2013a: 3), reinforces this by stating that "*an increasingly important aspect of labour market performance and national competitiveness is the skill level of the workforce. The level of educational attainment is one indicator of labour force skill levels. These are important determinants of an economy's capacity to compete successfully in world markets and to make efficient use of rapid technological advances; they are also among the factors determining the employability of workers*."

The main concerns regarding the upgrading qualifications of the workforce in South Africa, seems to stem from whether Africa's universities are able to produce graduates who can contribute to the growth of the region (British Council, 2014: 2). According to a United Nations study, quoted in the British Council document (2014: 2), tertiary enrolment in Sub-Saharan Africa more than doubled, between 2000 and 2010, from 2 344 000 to 5 228 000. In context, the higher education system in the region has doubled over the past forty years, compared to the global rate (British Council, 2014: 2). With the increase of enrolments into secondary education, it can be assumed that tertiary enrolment will also increase in the future. Of the four countries that were examined, namely; Ghana, Kenya, Nigeria and South Africa, South Africa had the highest rate of tertiary enrolment (18%), compared to the rest of Sub-Saharan Africa (7%). Notwithstanding, this is still alarmingly low when compared to the global average of 30% (British Council, 2014: 4). The British Council (2014: 2) reiterates that the investment in highly skilled workforce contributes to long term economic growth, and to this end, universities need to play a leading role in economic and social development.

O'Mahony and Sillitoe (2001: 24) conclude from their study in 2001 of 150 hospitality employees, that non-manual employees are usually oriented towards studying at a university, when compared to manual employees who will usually enrol for Further Education and Training (FET) colleges. FET is a band of the South African education system, which follows general education and training but precedes higher education

and training. The findings of their study clearly shows that no formal qualification was necessary to work in the hospitality industry (and many skills could be obtained on the job), except where employees wanted to advance to management level. This is reinforced by Baum *et al.* (2001: 106) who also found that career progression can only be made by means of training and education.

The debate in hospitality education centred on the fact that the industry did not recognise formal qualifications, and in the case of the study, also favoured graduates from certain institutions over others (O'Mahony and Sillitoe, 2001: 26). Echtner (1995: 121) claims that developing countries have in the past, focussed too much on developing "hardware" for the industry, such as infrastructure, without placing emphasis on the "software" or staff. In this context, O'Mahony and Sillitoe (2001: 27) identifies several benefits of hospitality education, namely; career advancement, productivity increase, standards and status for the industry and overall reduction in staff turnover.

The challenge is to recruit the correct employees who possess the correct skills and attributes, and are prepared for the demands of the industry. This would ensure that higher education is able to cope with the demands of the industry, by supplying capacity for students to be trained in these disciplines. Tourism related courses and programmes (including hospitality management) are already offered at 13 higher education institutions in South Africa (HSRC, 2008: 54).

As indicated above, it is not only university education that is important. In 2012, according to the DHET (2012c: 45), CATHSSETA targeted to place 405 unemployed persons in learnerships, internships and skills programmes, and exceeded this target by placing 1 415 people in total. During the same year, CATHSSETA certified 3 823 unemployed persons with SETA-supported learning programmes, which again exceeded the target they had set of 203 persons. Experience seems to be a better predictor of unemployed persons being able to obtain employment (Stats SA, 2014b: 13).

Baum (2007: 1390) supports this view by stating that, in order to encourage transfer, mid-life entry and re-entry into the tourism sector, life-long education and training, in the classroom and on-the-job, is essential. Woodley, Wagner, Slowey, Hamilton and Fulton (1987) presented four adult student motivators for adults to enter into formal

study, namely; to carry out a job more effectively, to gain promotion, to change jobs and to enable them to re-enter the job market.

Besides the lack of qualified employees that constrains employment in the hospitality industry, a number of other factors also influence the supply of labour. CATHSSETA (2014a: 9) identifies HIV and AIDS as a threat to the growth and development of South Africa. According to its data, in 2011, 399 182 people died of HIV and AIDS related infections, and projected an increase to 427 916 in 2015 (a 7.2% increase over four years) (CATHSSETA, 2014a: 9). The infections of HIV and AIDS were also projected to increase by 0.41% in 2015, compared to the 0.88% increase in 2011 (CATHSSETA, 2014a: 9). CATHSSETA also presents findings of a Grant Thornton and Prodigy Business Services study conducted in 2002/2003, which concluded that 17% of the CATHSSETA workforce is HIV positive (resulting in 1 in every 8 employees in the sector) (CATHSSETA, 2014a: 9). Secondly, although a large portion of the population in South Africa comprises of “youth” and part of the Generation Y generation, these do not seem to pursue careers in the hospitality industry (see section 4.6.1.3 above).

In spite of the challenges described above, the lack of adequately skilled employees (also in terms of cultural exposure), the high cost of training and education in South Africa, the demands of the millennial generation and employee replacement challenges due to retirement and HIV/AIDS, requires the tourism industry stakeholders to focus on training and developing their own qualified employees and offering them the opportunity to gain experience. This will ensure the sustainability of adequately trained, educated and experienced employees in the industry.

4.7 CONCLUSION

The aim of this chapter, in line with objective four of this study, was to evaluate the different methods used in manpower forecasting. Labour forecasting has the main purpose of forecasting the needs of future skills (Wong *et al.,* 2004: 52). Although these forecasts may have been deemed to be of subjective nature in the past, the development of various labour models using econometrics modelling methods, have increased the statistical accuracy of forecasting labour needs. The development of not only ways to accurately forecast labour, but also ways to forecast the types of labour, production output and costs, specific occupations and skills levels, is

becoming increasingly important in an economy where resources are scarce. The latter includes money for training, labour retention, and upskilling employees. The labour market thus consists of the labour demand and labour supply. Equally important is the relationship between the wage rate (the price of labour) and the output, or production levels.

To this end, four main methods of manpower forecasting were presented in this chapter. These are: the time series forecasts, the bottom-up approach, the top-down approach and market signalling approaches. The time series forecasting method uses historical data to produce an aggregated labour demand forecast. The bottom-up approach uses labour data of returns and costs to predict labour demand for specific occupations. The top down approaches rely more on macroeconomic statistical data and forecasts of future growth, to extrapolate data into long term forecasts. By contrast, the market signalling approaches are used specifically to produce signals for forecasting and rely more on trends and simple evaluations of such trends to forecast.

These four methods will be implemented in chapter five in order to forecast the labour demand for various job levels and their associated qualification requirements in the South African context, by using these quantitative methods, combined with qualitative adjustments, in chapter seven of this study. This will enable both accuracy from the quantitative forecasts, as well as expert opinions regarding the qualitative aspects of this study.

Generally, forecasts produced by bottom-up and top down approaches are considered more reliable than market signalling approaches, due to their ability to use labour market determinants and their use of econometrics modelling methods to obtain more accurate forecasts (Wong *et al.,* 2004:52). Top down forecasts offer the greatest potential for reliable labour forecasts, based on the economic considerations and econometric modelling followed. The top down approach is the dominant forecasting method in labour forecasting (Wong *et al.,* 2004:52). However, using a combination of methods will increase the accuracy of such labour forecasts, as data that is used from other models may complement data from the top down approach. Medium to short term forecasts are also deemed to be more accurate for labour forecasting.

The demand for skills in the South African labour market is an important consideration. Barker (2015: 44) confirms that the sharpest decline in employment in the country has taken place with the demand for unskilled labour. The sections of the South African economy that have shown the most growth are those that are more skills intensive, such as the financial and business services. According to chapter two of this study, which displayed an in-depth literature review of qualification levels and current qualifications of employees in the industry, four main levels of skills exist in the formal South Africa labour market, namely; highly skilled, skilled, semi-skilled, and unskilled; as well as the informal labour category. Due to the fact that many jobs have been lost in the low skills and education sectors, this had a negative impact on entry level job seekers. The fact that these job seekers are new to the labour market and most have no work experience at all, does not count in their favour.

In this chapter, a detailed discussion was also provided on labour demand forecasting, including the demand and supply of labour, both internationally and in a South African context. Understanding how the South African labour market operates, is vital when forecasting labour data, which will follow in chapter five. For this study, namely the time series method, as well as the bottom-up and top down approaches (as discussed in depth in this chapter) for labour forecasting will be employed. Chapter five, therefore, presents a methodology of the hospitality and tourism data from the South African context, which, together with the labour forecasting methods discussed in this chapter, will be used to determine the accuracy of labour demand forecasts in the accommodation industry of South Africa.

CHAPTER FIVE

METHODOLOGY

5.1 INTRODUCTION

According to PwC (2016), within the next five years, a total of 2 600 new hotel rooms will be added to the already growing South African accommodation market. In this report, an 8.1% increase was reported for accommodation in 2015, which also shows an increase in the actual number of nights, as well as average room rates, reflecting a 6.5% rise (yielding a total income of R14.2 billion) (PwC, 2016). However there was a decrease in international arrivals, by 6.8% in 2015. This could be attributed to the introduction of new visa regulations, as well as the requirement of unabridged birth certificates for travelling children under the age of 18. Several international visitors experienced difficulties obtaining visas and unabridged birth certificates and were forced to cancel their trips into the country. During 2016, there was an increase in international arrivals again - an indication of the eventual relaxing of visa regulations in October 2015, which had a positive impact on international tourists to South Africa.

The increase in the number of accommodation units available necessitates an increase in the number of staff required in order to, among other things, service these rooms and attend to guest needs. In order for accommodation management and the human resources department to ensure that an adequate number of staff are available to meet the guests' needs and expectations, manpower forecasting plays an important role (refer to chapter four, section 4.6). Wong (2004: 43-44) confirms that forecasting manpower has a significant effect on training, and an increase in skills, which in turn lead to an impact on the economy. Forecasting the quantity of jobs that will be available also assists to prepare suitable candidates for the future and to offer the industry an opportunity to adapt in advance, ensuring that the manpower requirements of the industry are met.

This study aims to address the demand for labour in the accommodation sector of South Africa, over different levels of education, for the next five year period. For this reason, chapter three presented a discussion of quantitative and qualitative forecasting methods; chapter four, provided a detailed discussion of labour demand

forecasting, including the demand and supply of labour, both internationally and in a South African context; and therefore this chapter presents the three main methods used to forecast labour demand according to the manpower forecasting methods. The latter include: time series, bottom-up as well as top-down approaches. A discussion will be presented of how these models were developed using South African data. To this end, the discussion provides the utlitised data, an explanation of the development of the labour forecasting models. A discussion on ex-post forecasting accuracy is also presented at the end of this chapter. The forecasting methods in this chapter will be used in chapter six to forecast jobs, job levels and required qualifications for the South African accommodation industry. The qualitative forecasts conducted after the quantitative research was concluded, is further discussed in chapter seven, from section 7.1.

5.2 DESCRIPTION OF DATA USED

Data for this time series forecasting (refer to section 3.4.1), the bottom-up approach or elasticity (refer to section 4.5.1) and the top-down approach (refer to section 4.5.2) to manpower forecasting was obtained from Quantec and Stats SA as secondary data sources. These sources are described below. While it would have been ideal to use one data source only, such as a source is not available.

Consequenlty, annual data was used, since it is the most complete data set available, which means that the forecasts do not to take seasonality into account.

5.2.1 Labour data obtained from Quantec

The South African labour statistics were obtained from the 2016 Quantec database. The annual data was obtained from 1970 until 2014. All the data is for Tertiary SIC 6-9, SIC 64: Catering and Accommodation Services. This includes all the catering and accommodation labour data in South Africa. The Quantec data is used in the time-series forecasts as well as in the bottom-up approach to manpower planning.

This data series includes informal labour employment and formal labour employment, which includes highly skilled labour employment, skilled labour employment, and semi-skilled labour employment. In addition, the following time series are available for SIC 64 from the same database: fixed capital stock, employment output ratio (including informal sector), unit labour cost, labour

productivity (including informal sector), demand with final consumption expenditure by households, and demand output (=input) at basic prices.

Figures 5.1 to 5.4 below, provide a graphical view of the data series and highlight some of the key characteristics of the Quantec data.

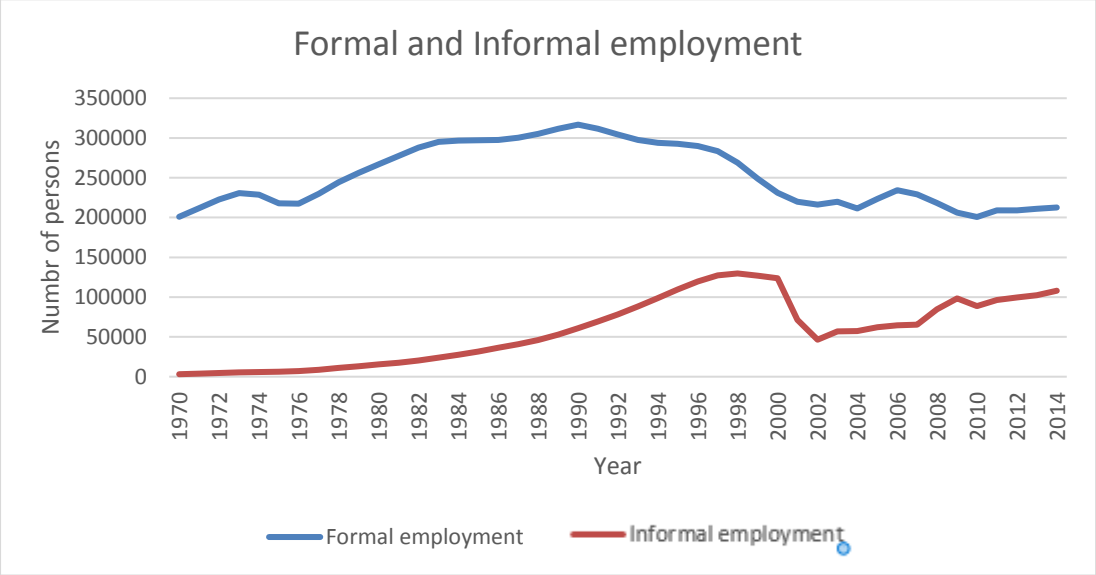


Figure 5.1 Formal and Informal Labour employment: Catering and Accommodation Services

(Source: Quantec, 2016)

Figure 5.1 illustrates the formal and informal labour working in the catering and accommodation services sector. The formal labour employment in the accommodation services sector reached a pinnacle in the early 1990's and started to decline up to the year 2004. There was a slight change in the trend during 2005-2006 with the formal employment of more labourers in the industry. On the other hand, the informal labour employment peaked in the late 1990s to 2000s, before dropping steeply in 2001 and 2002, after which it has been increasing steadily again since then. This may be attributed to formal employees being replaced by more informal employees, due to seasonal work, and labour regulations.

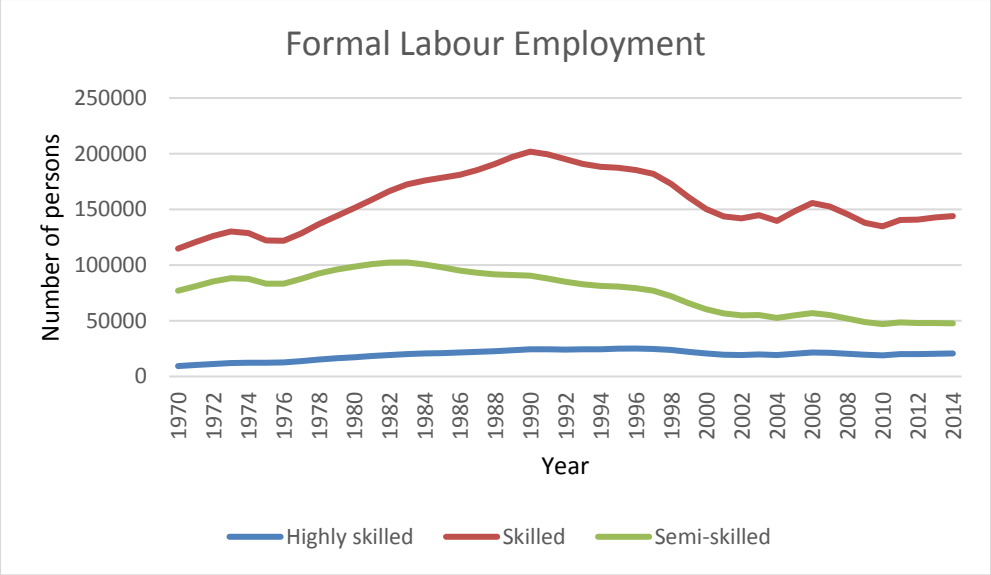


Figure 5.2 Formal Labour employment according to skill levels: Catering and Accommodation Services

(Source: Quantec, 2016)

As can be seen from the formal labour employed at different skill levels in the catering and accommodation services sub-sector in Figure 5.2, the industry predominantly employs skilled labour, followed by semi-skilled labour. Only a small percentage highly skilled labour is required, although this has increased over time, perhaps due to the ease of employees being able to access further higher education opportunities easier than in the past. The use of semi-skilled labour shows a declining trend.

Moreover, skilled labour experienced a sharp increase in 1990 at the start of South Africa's democracy, but has since declined. However there was a short spike in the demand for skilled labour in 2007, and a decrease in 2010 which may be attributed to the 2010 FIFA World Cup held in South Africa with the employment of more unskilled or semi-skilled people for the duration of the event.

The Quantec definition for semi-skilled labour or unskilled jobs is "elementary jobs that are neither highly skilled nor (medium) skilled". The description of semi-skilled and unskilled labour by Quantec corresponds with the definition of low skilled jobs by Stats SA. For these lower level skills, NQF levels 1-2 are required.

Quantec also defines skilled labour as employees who are deemed to have completed further education and training, such as grades 10 to 12, short courses and workplace certificates, and having attended FET colleges. Examples of skilled jobs are: clerical occupations; sales occupations; transport, delivery and communications occupations; and service occupations.

Highly skilled labour comprises of employees that are deemed to have completed higher education and training, such as certificates, diplomas, degrees, higher diplomas, master degrees, doctorates. Examples of highly skilled jobs are: professional, semi-professional and technical occupations; and managerial, executive and administrative occupations.

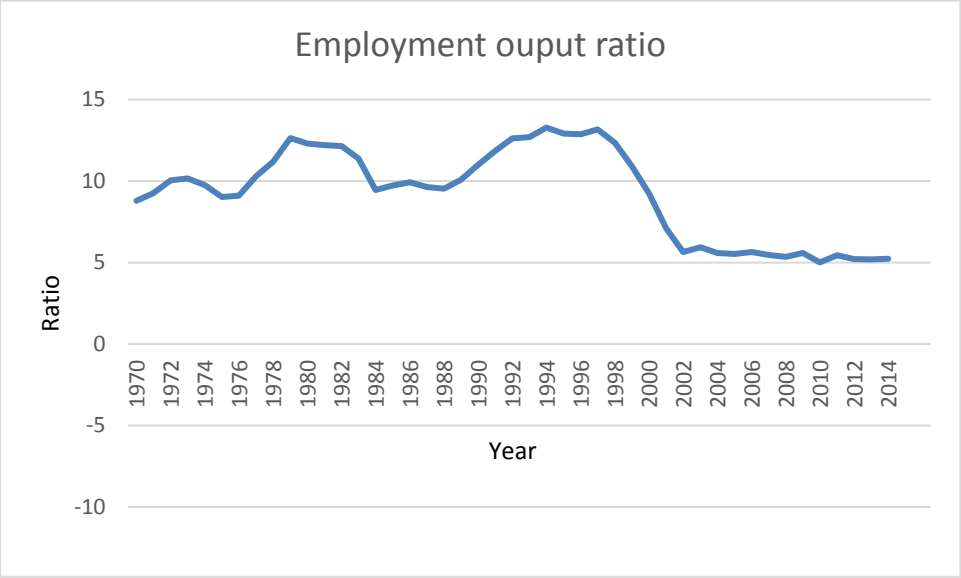


Figure 5.3 Employment output ratio (including informal sector): Catering and Accommodation Services

(Source: Quantec, 2016)

Figure 5.3 above indicates the ratio of the number of employees relative to output in the catering and accommodation industry (in Rand million). While no clear trend is visible in the early years of the data, it is evident that the employment-output ratio started to decline sharply after 1997, before it stagnated in 2002. This decline in labourers per unit of output is also visible in figure 5.4 below and is indicative of the higher productivity as well as higher skills levels that is required from employees.

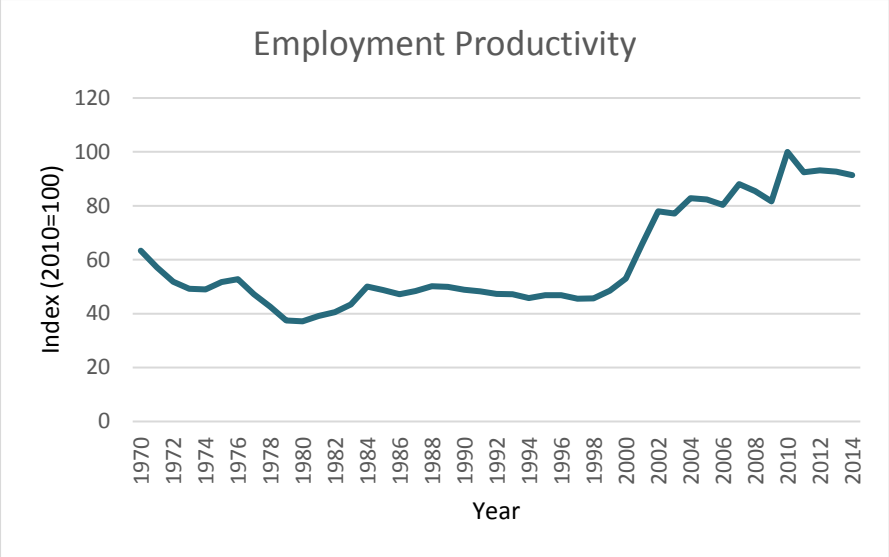


Figure 5.4 Employment productivity

(Source: Quantec, 2016)

Figure 5.4 above indicates the labour productivity, including the informal sector, which increased sharply in 2000 and stabilised towards the period of 2014.

From the employment productivity featured in Figure 5.4 above, where productivity is seen as output per employee, compared to Figure 5.3 where output per unit is displayed, it is clear that when the output increases but employment remains the same, the employee-output-ratio usually decreases (Figure 5.3), while productivity increases (Figure 5.4). The remuneration per employee increases but also corresponds with higher productivity, while employment stagnates.

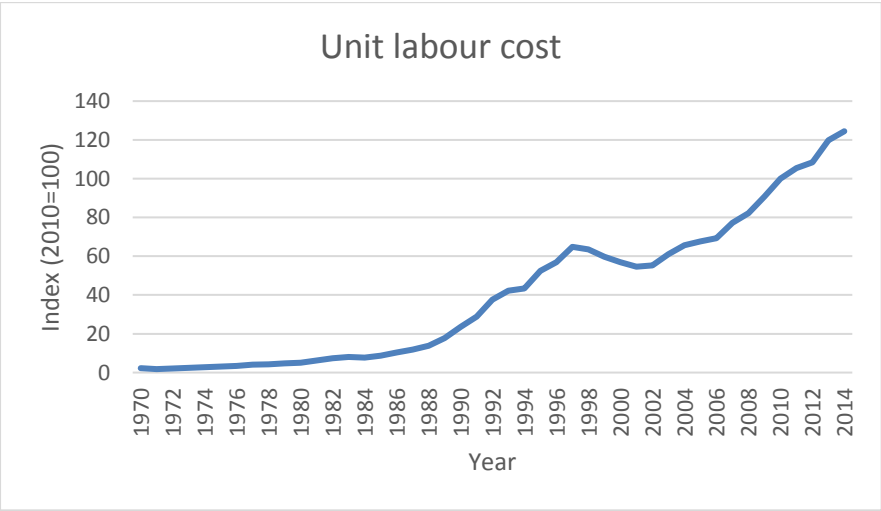


Figure 5.5 Unit labour cost: Catering and Accommodation Services

(Source: Quantec, 2016)

Figure 5.5 indicated unit labour cost per year in the accommodation and catering sub-sector. This unit labour cost per year includes all labour, including formal and informal labour categories. The labour cost indicates an index, the base year of which was 2010 (2010=100). The unit labour cost started to increase sharply during the late 1980's, with only a slight change in trend from 1997 to 2002 and subsequent rise thereafter. Thus, as the remuneration per employee increases, it can be expected that the productivity of the employee also increases, and so should the output of the organisation.

Figure 5.6 below indicates the Quantec output data (in constant 2010 prices) for the accommodation and catering subsector. This data will also be used in the forecasting models for the bottom-up approach.

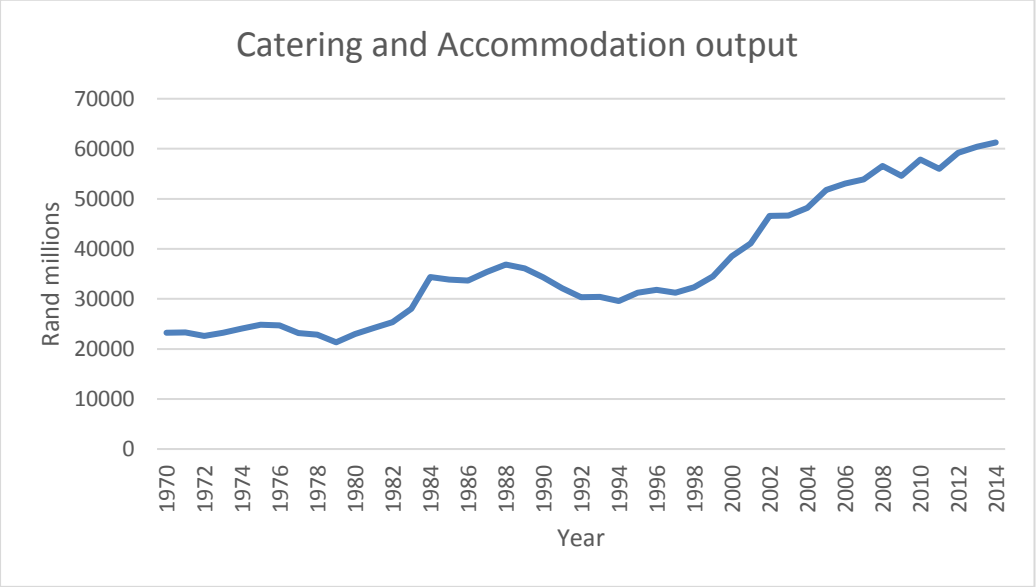


Figure 5.6 Output in the Accommodation and Catering industry

(Source: Quantec, 2016)

5.2.2 Output data obtained from Stats SA

The data on total income for the accommodation industry was obtained from Stats SA for the period September 2004 to May 2016. The various data series that are available from this database include: total income for the accommodation industry; and income from the various accommodation units, namely, hotels, caravan parks and camping sites, guest houses and guest farms, and other accommodation. All data series are available at current prices.

Similar to the accommodation data, Stats SA also has data on the food and beverage industry. The data series that are available include the total income for the food and beverage industry, income from restaurants and coffee shops, take-away and fast food restaurants, and income from catering services, for 2014.

Since the data from Stats SA is only covers a short period of time, it was not used in the forecasting of manpower demand, but in determining the section of the catering and accommodation output that belongs to the accommodation industry or to the catering industry. Figures 5.7 and 5.8 provide a brief summary of the data (in Rand million).

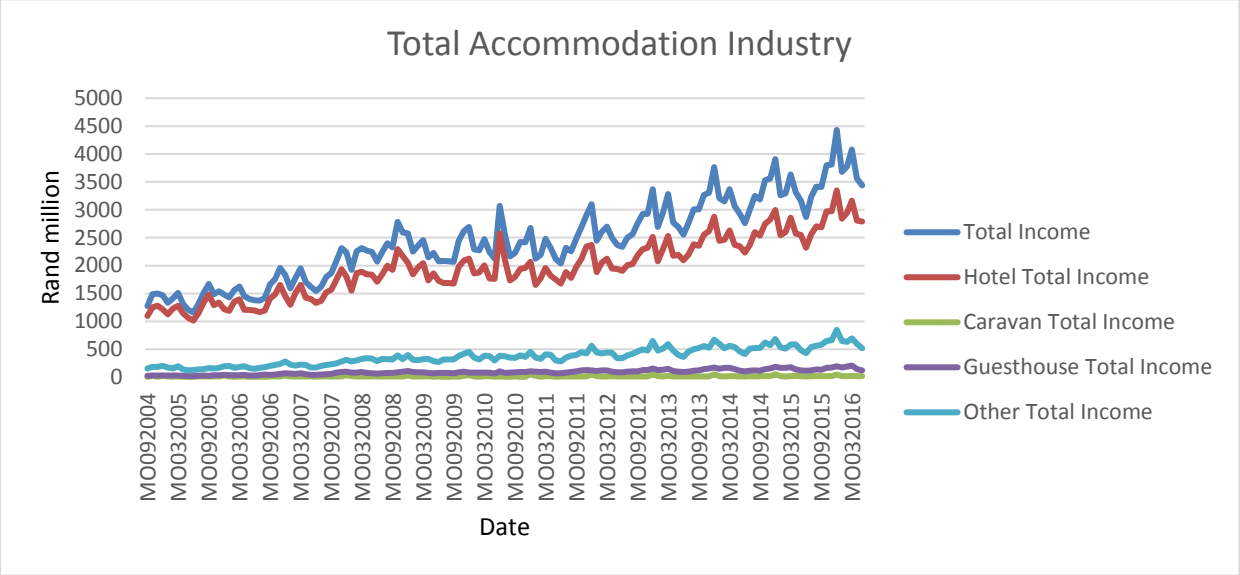


Figure 5.7 Total Income for Total Accommodation Industry

(Source: Stats SA, 2016)

Figure 5.7 above indicates that the income for the accommodation industry is mainly driven by total hotel income, which is the largest contributor in this industry. Due to the fact that this is monthly data, seasonal spikes are common as a result of the peak season and off-peak season variations in the hospitality industry. In addition, total guesthouse and caravan income accounts for the smallest section of the total accommodation industry. During 2010 when South Africa hosted the 2010 FIFA World Cup, the total income for the accommodation industry increased. However, the decline in 2014 and 2015 may be attributed to the visa regulations, specifically the mandatory requirements for unabridged birth certificates, and the decline in the national economic growth. In general, the decline in income for the accommodation

industry, as illustrated in these figures, may be attributed to domestic and international tourists opting to stay with relatives and friends. This is especially true for domestic tourists, and has an impact on the economy and job creation.

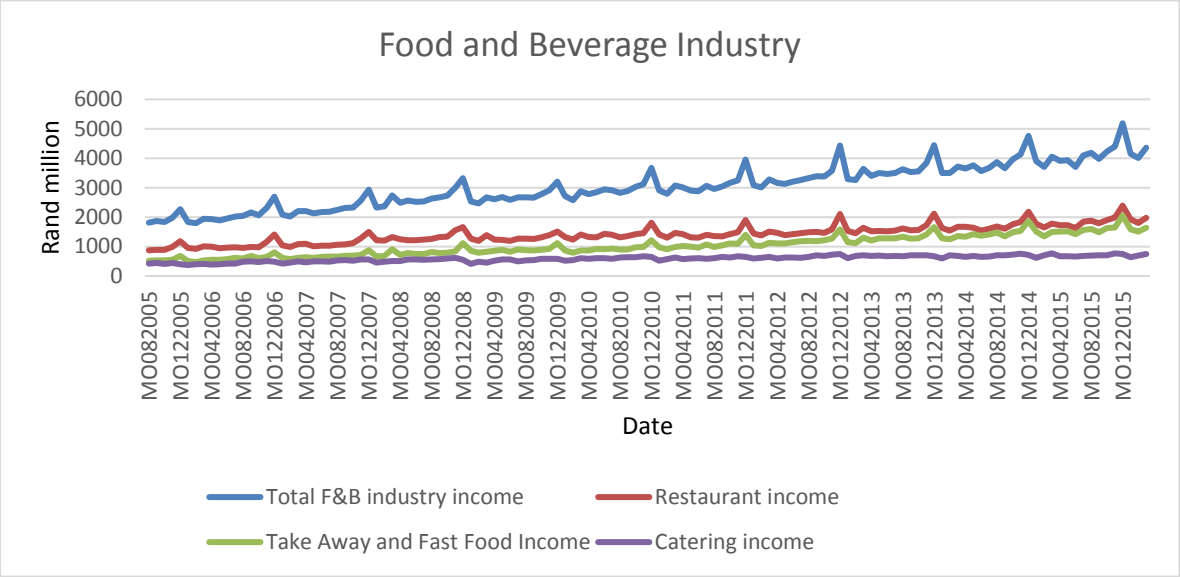


Figure 5.8 Total Income for Food and Beverage Industry

(Source: Stats SA, 2016)

Figure 5.8 above, indicates the total income for restaurants, take away and fast food, and catering in South Africa. These series mainly determine the trends in total income of the food and beverage industry. The data sets are from the period 2005 to 2015, monthly. Compared to the other two series, the income from catering seems to be more stable. The food and beverage industry also experiences variations in terms of seasonality and income increase during months the months with holidays or public holidays. The food and beverage industry also contributes significantly to job creation and plays an important role in generating income as both domestic and international tourists partake in the consumption of food and beverages on a daily basis.

5.2.3 International and domestic tourism data obtained from Statistics South Africa

In modelling manpower from a top-down approach, it is assumed that there is an increase in the demand for a destination. To derive estimates of the future demand for South Africa, both international and domestic tourism (with their subsequent

spending) should be forecasted. To this end, international and domestic tourism numbers were sourced from Stats SA. The data for international arrivals was obtained from Stats SA's Publication P0351 from 2016 (Table 4 in the publication), which illustrates the number of tourists visiting South Africa by country of residence, for each month of the year. The annual data was obtained by calculating the totals for all international arrivals per year. The annual data for international arrivals was used from 1980 to 2015. The total arrivals are illustrated in Figure 5.9 on the total international arrivals from 1980 to 2014. The graph reflects some form of structural break in the data during the year 2009. This is as a result of a change in the methodology of data collection for African visitors used by Stats SA.

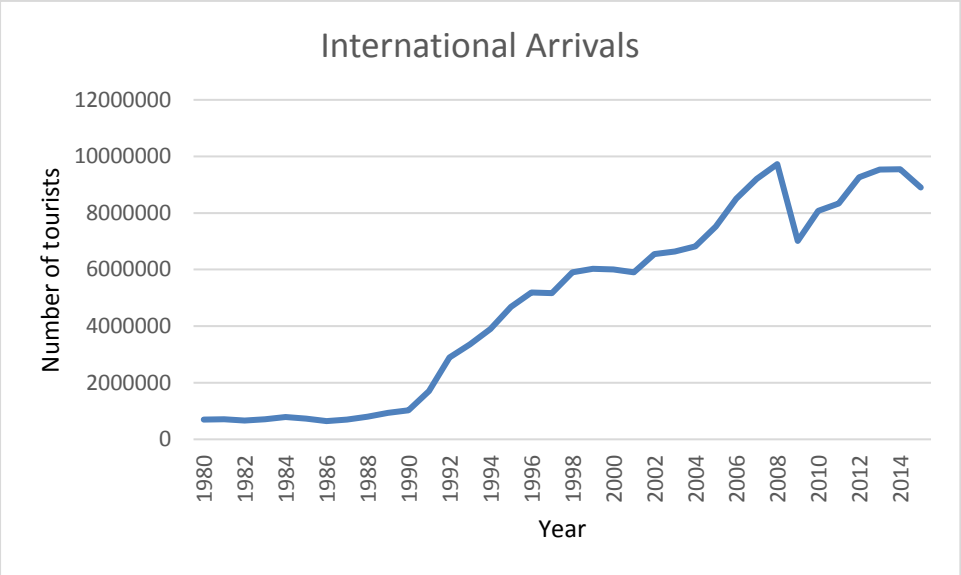


Figure 5.9 International Arrivals

(Source: Stats SA, 2016)

According to Figure 5.9, international tourist arrivals started to increase sharply from 1990, which can be attributed to the political transitioning of the country in this period and its democratisation from 1994 onwards. International tourism showed a steep rise until 2008, followed by a sharp decline as a result of the change in methodology used by Stats SA used to capture data, rather than a decrease in visitors. The time series increased again steadily with the hosting of the 2010 FIFA World Cup, which attracted many international tourists. Another decrease occurred in 2014 due to the change in visa regulations which was implemented from 01 June 2015. Nevertheless, these visa regulations were relaxed on 23 October 2015. Decreases in international tourism may also be attributed to concerns about the Ebola virus.

The data for domestic arrivals was obtained monthly from Stats SA Domestic Tourism Surveys (P0352.1) from January 2010 until June 2015. The number of overnight trips (thousands) taken by domestic tourists were taken from the overnight monthly totals.

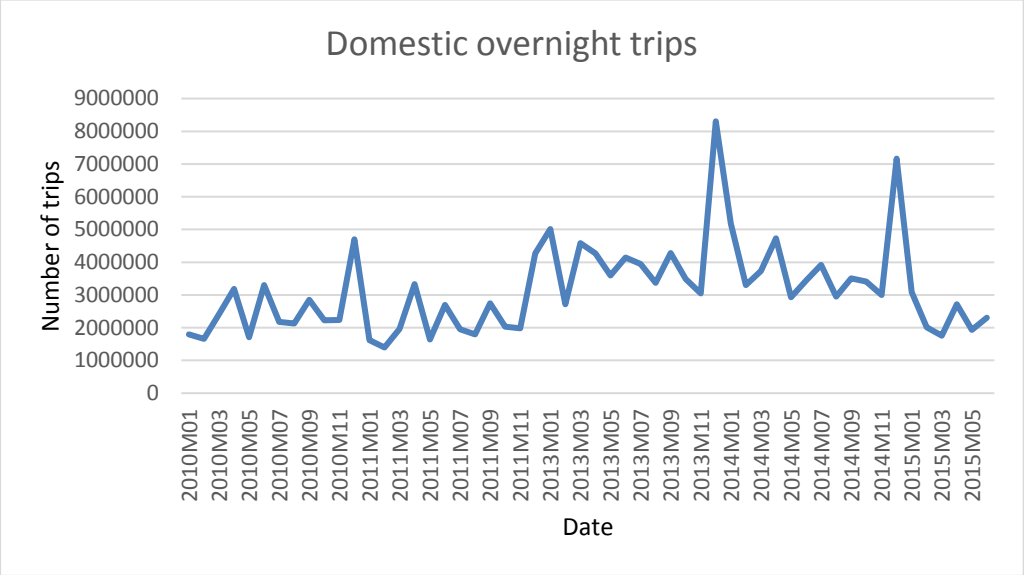


Figure 5.10 Domestic Overnight Trips

(Source: Stats SA, 2016)

Figure 5.10 above, indicates domestic overnight trips. Stats SA (2014) defines an overnight trip as a trip that is outside the respondent's usual environment, where he/she spends one or more night. The usual environment is defined as a place that is 40km or more from the respondent's usual environment. Since this is monthly data, it is evident that domestic tourism in South Africa is very seasonal, with peaks in December, over the summer holiday. The trends were on the rise until 2014, which saw a sharp decline that may be attributed to South Africa's deteriorating economic situation. The decline may also be as a result of the prioritisation of consumer spending by most people during that time.

5.2.4 Tourism spending data from Statistics South Africa

For the top-down approach, the spending of tourists needs to be modelled. For this reason, the data on tourism spending was sourced from the Tourism Satellite Accounts of Statistics South Africa.

The total expenditure on domestic overnight trips and international trips per year, was obtained from Stats SA, with the annual data extracted for the years 2005 to 2014, for the relevant spending categories. These categories included accommodation, food and beverages, domestic transport, recreation and culture, shopping and others. Since the data is in current prices, it was converted to real spending using the relevant Consumer Price Index (CPI) category, obtained from the South African Reserve Bank.

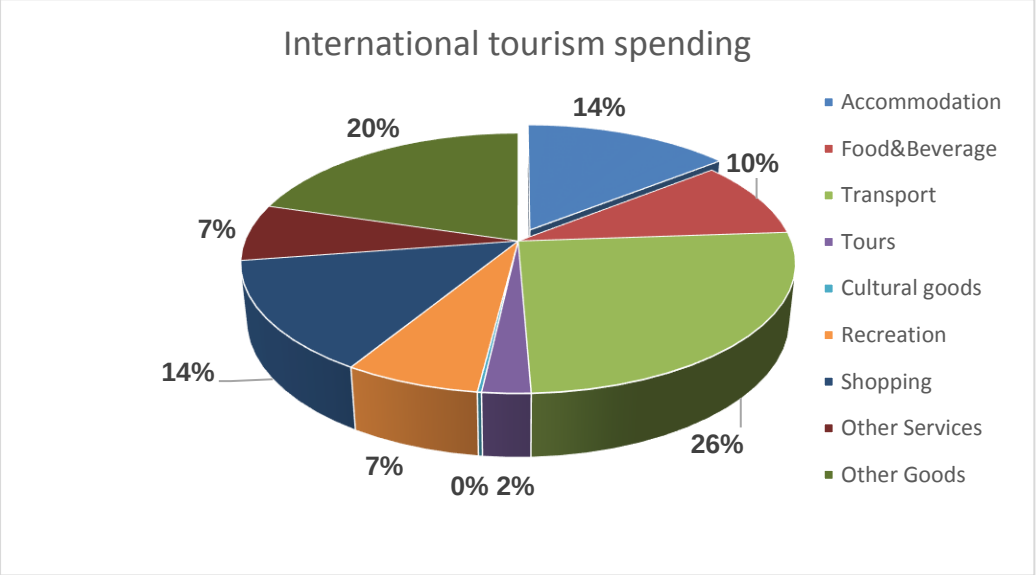


Figure 5.11 Breakdown of Total International Spending (Average from 2005-2014)

(Source: Stats SA, 2016)

Figure 5.11 above indicates that international tourists (between 2005 and 2014) spent an average of 14% of their budget on accommodation, 10% on food and beverages, 26% on transport, 2% on tours, and little, if anything, on cultural goods. The average international tourist spent 14% of his/her budget on shopping, 7% on recreation and other services and 20% on other goods.

The amount of money spent by an average international tourist is derived from the average spending per tourist. In turn, the average spending per tourist is calculated by dividing the total spending of tourists, as per the tourism satellite account obtained from Stats SA, by the number of international tourists per year (see section above). Using the real values (i.e. 2010=100), the average international tourist spent a total of R7 818 on his/her trip to the country between 2005 and 2014. This translates into R1 124 spent on accommodation per person, R749 per person spent

on food and beverages and almost R2 000 per person spent on transport. Other large categories include shopping, with an average spending of R1 083 per person and other goods with an average of R1 579 per person.

A similar approach was followed to derive domestic tourist spending. Again, the aggregates of the Tourism Satellite Account were deflated using the appropriate CPI (with 2010=100). This delivered real spending on various spending items at constant 2010 prices. The average spending over the years 2005 to 2014 were subsequently calculated.

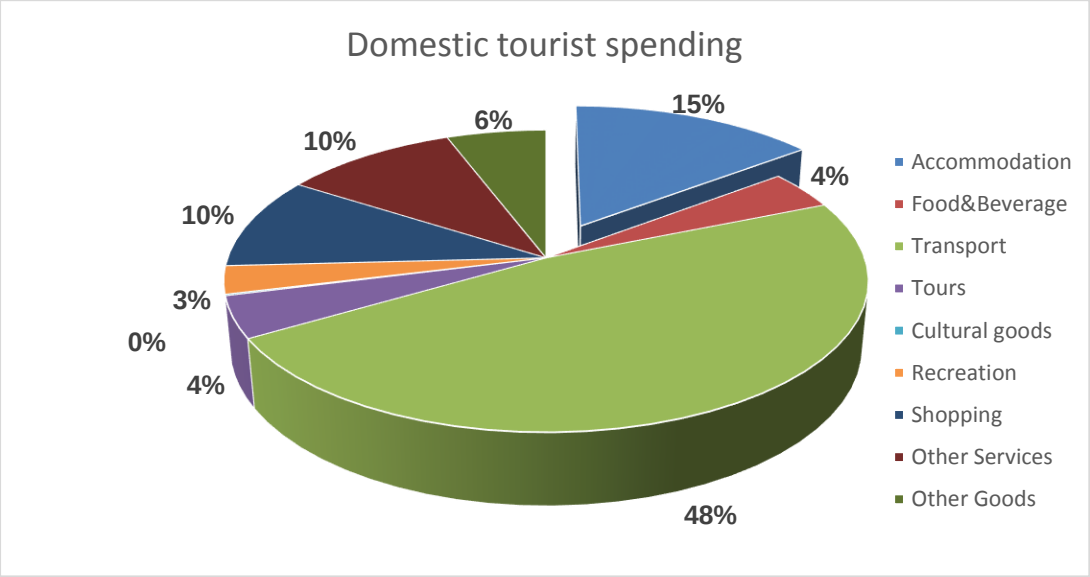


Figure 5.12 Breakdown of Domestic Spending (Average 2005-2014)

(Source: Stats SA, 2016)

Figure 5.12 above, indicates that on average (between 2005 and 2014), a domestic tourist spent 48% of his/her budget on transport, 4% on food and beverages and 15% on accommodation. An average of 10% is spent on shopping and other service respectively, with 6% spent on other goods, 4% on tours and 3% on recreation and sport. Similar to international tourists, spending on cultural goods is almost negligible.

Since there is only consistent data available for the domestic trips of 2013 and 2014, only the average spending per domestic trip over these two years could be determined. The total spend per trip is calculated by dividing the real spending of domestic tourists by the number of trips for 2013 and 2014, and calculating the

average revealed that a total spend per trip of R2 851.40. Of this amount, R419 is spent on accommodation, R120 on food and beverages, R1 288 on transport and R281 on shopping. Another high spending category is other services, with R360 spent on average on these services, while only an average of R4 is spent on cultural goods during a domestic trip.

Thus, this section gave an overview of the data that will be used in developing the models for forecasting the demand for labour in South Africa's tourism accommodation industry. It is evident that the data is not perfect, with labour data only available for the larger industry – SIC64 – which includes catering. The data sources also differ, with some of the series obtained from the Quantec database, while others are from Stats SA. The Quantec data will be used in the first two methods, that is, time series forecasting and the bottom-up approach. Some sectoral data from Stats SA will be used to split the results of the SIC64 sector. The Stats SA data on international and domestic tourist arrivals and spending, will be used in the top-down approach, although some time-series forecasts of this data is also necessary to determine the growth in the industry. Therefore, using this data, the next sections will explain the models developed in each of the methods, i.e. time series forecasts, bottom-up approach and the top-down approaches. Prior to the modelling, it is necessary to test the properties of the time series data to ensure that the results are not spurious. To this end, the segment that follows commences with a discussion of the stationarity properties of the various data series.

5.2.5 Unit Root Analysis

Wooldridge (2013: 641) states that testing for a unit root in time series is a common practice. If a series has a unit root, the large sample normal approximations become redundant. A unit root process is a long lasting process. The augmented Dickey-Fuller test is the most popular method used in inspecting the stationarity of a time series. Asteriou and Hall (2016: 348) state that the test for the existence of unit roots is necessary on any time series. Apart from the visual inspection of the data (as illustrated in Figure 5.1), the Augmented Dickey-Fuller test is a formal procedure that can be followed to test for non-stationarity. The null hypothesis of the test is that the series contains a unit root. Rejection of the null indicates that the series is stationary. Therefore modelling can continue.

The data was read into EViews 9.5 and the augmented Dickey-Fuller test was conducted to test for unit roots. According to Gujarati and Porter (2010: 383), the Dickey-Fuller test is also known as the Tau test. Gujarati and Porter (2009: 757-767) confirm that the Augmented Dickey-Fuller test uses lagged values of the dependent variable to obtain error terms without autocorrelation. The results of the unit root test are summarised in Table 5.1.

Table 5.1 Unit Root Test Results

	Level series			First differenced series		
	Assumption			Assumption		
Series	None	Constant	Trend	None	Constant	Trend
Total labour employment (LNLST)	0.8438	0.2873	0.7069	0.0004***	0.0060***	0.0227**
Formal labour employment (LNLSF)	0.6190	0.5225	0.6313	0.0018***	0.0274**	0.0836*
Informal labour employment (LNLSI)	0.9611	0.2586	0.8212	0.0012***	0.0053***	0.0112**
Highly-skilled labour employment (LNLSHS)	0.8637	0.155	0.6274	0.0051***	0.0509*	0.1026
Skilled labour employment (LNLSS)	0.7304	0.3495	0.7099	0.0026***	0.0365**	0.1040
Semi-skilled labour employment (LNLSSEMI)	0.2062	0.8965	0.4315	0.0035***	0.0246**	0.0864*
SIC64 output (LNOUTPUT)	0.9977	0.9676	0.4544	0.0001***	0.0003***	0.0020***
Fixed capital stock (LNFCS)	0.9815	0.7535	0.0008***	0.0395**	0.0653*	-
International tourist arrivals (LNARRIVALS)	0.9652	0.6717	0.9797	0.0021***	0.0090***	0.0298**

* indicates significance at a 10% level, ** is significant at a 5% level and *** significant at 1% level.

(Source: Compiled by author from EViews Unit root test results)

Note that natural logs of all the data were taken because the data is in different denominations. The natural logs of all the data, was also taken to linearise the trends. The results show that when the level series are considered, the null hypothesis of no unit root can be rejected for all the time series, using all test assumptions. The only exception is the fixed capital stock, which is trend stationary. The series are therefore all non-stationary in levels. First differences were taken. The

results further confirm that all the series are integrated in order one, i.e. I(1), seeing that the first differenced data is stationary. The null hypothesis of a unit root is rejected in all instances.

This implies that models that require stationary data have to be estimated using the first differenced time series. This is especially relevant for ARIMA (see section 3.4.1.2 in chapter three) and VAR models (see section 3.4.2.2 in chapter three).

From the above, the different methods are as follows: method 1 is the time series forecasts will be discussed, method 2 is the bottom-up approach and method 3 is the top-down approach.

5.3 METHOD 1: TIME SERIES FORECASTS

As discussed in chapter three (section 3.4.1), time series methods are used to analyse cycles and patterns in time series data. Therefore, these methods rely on past information to forecast trends in the future. These forecasting methods, were implemented in order to evaluate the forecasting accuracy of the various methods and to select the most suitable time-series forecasting method for this study. A description of the process followed to select the most accurate forecasting method and the reasons for selection of the most accurate forecasting methods are given below.

The aim of this study is to forecast the demand for qualified labour in the accommodation industry in South Africa. Therefore, the various forms of labour employment are the series that will be forecasted as sourced from Quantec and discussed in section 5.2.1. Secondly, some of the forecasting methods make use of multivariate models (such as VAR models). As a result, the output and fixed capital stock (also from Quantec) are also used in these models.

For the top-down method, a view on the future demand for South African accommodation is needed and therefore international tourism arrivals will also be forecasted using univariate time-series methods, which serve as input into the simulations for the top-down method (see chapter three section 3.4.1).

Since the data for this study is annual data, which is used to complete long-term forecasts, it is not necessary to take seasonality into account. Five time series

forecast models were developed (also refer to chapter three, section 3.4.1), namely; Naïve, Naïve 2, ARIMA, the Holt-Winters exponential smoothing approach, and vector auroregession (VAR) models, which are reviewed below briefly. The models are developed for each of the time-series under investigation, using a development sample. The forecasts are then completed using a 1-year up to 5-year forecasting horizon and compared to the actual series values (ex post forecasting). The models are compared and the most suitable for forecasting ex ante will be those with the smallest forecasting errors, as measured using the MAPE and RMSPE (see chapter three, section 3.7).

The benchmark forecasting model is usually the naïve models, which is also the approach followed in this study. The ARIMA model is one of the most popular approaches to forecasting, while the Holt-Winters approach is used to remove irregular and cyclical components. All five of these forecasting models are univariate. The causal method of VAR was also developed, due to its system of equations which simulate cause and effect.

5.3.1 Naïve

The naïve model or no change model is the simplest model and is used as the benchmark forecast. The basis of this model is that the value for the period that is being forecasted is equal to the last period of historical data available. It does not show any trend or pattern (see section 3.4.1.1 of chapter three). The model was done in excel. For international arrivals, annual data from 1980 until 2010 was used as the development sample, with ex-post forecasts for 2011 to 2015. The actual value in the 2010 year, is used to estimate for the next five years.

In the same manner, from the Quantec labour survey data, the actual annual data from 1972 until 2009 was used as the development sample, to forecast for 2010 until 2014. Therefore, the 2009 values of each of the series are considered in the forecast until 2014.

5.3.2 Naïve 2

The Naïve 2 model is known as the constant growth rate model (see section 3.4.1.1 of chapter three). This model is used as a benchmark when the data series exhibit

an upwards or downwards trend. For this model, the last available value is multiplied by the growth rate between the current value and the previous value.

For the forecasts for international arrivals, a ten year growth average rate is used to determine the trend (i.e. average annual growth from 2000 to 2010). This was used instead of a one year annual growth rate due to the fact that structural breaks were evident (see Figure 5.5).

In the same manner, from the Quantec labour data employment data series, the average 10-year growth rate was considered to be the trend. Therefore the average growth between 1999 and 2009 was calculated and the values forecasted from 2010 to 2014. Again, these forecasts were completed in Excel.

5.3.3 ARIMA

ARIMA is an abbreviation for autoregressive integrated moving average model (see section 3.4.1.2 in chapter three). The Box-Jenkins approach of identification, model development and diagnostic testing were followed for the ARIMA method. The most appropriate model was based on the principle of parsimony. Given that the ARMA models can only be fitted on stationary data, all the models were developed using the first differenced time series (therefore all the models are ARIMA models, with I=1).

For this study, automatic forecasting was completed in EViews 9.5. The Akaike (AIC) was chosen as the benchmark for choosing the best model, as it is slightly more lenient than the Schwartz Criterion. The most appropriate models identified by the automatic procedure in EViews were as follows:

- For international arrivals (LNARR), the ARIMA (0,1,1) model.
- For the Quantec labour data for total employment (LNLST), the ARIMA (0,1,3) and the ARIMA (4,1,0) model were used.
- For the Quantec labour survey data for formal labour (LNLSF), the ARIMA (1,1,1) was used.
- For high skilled (LNLSHS), skilled (LNLSS), and semi-skilled (LNLSSEMI) all identified the ARIMA (1,1,1) model.

- For the Quantec labour data for informal labour (LNLSI), the ARIMA (0,1,1) and the ARIMA (1,1,0) models were identified.
- For the Quantec output data (LNOUTPUT), the ARIMA (3,1,2) model was identified.

The model diagnostics are summarised in Table A1 in Appendix A. It is clear from these diagnostics that the null hypothesis of normality is rejected by most of the ARIMA models. This is because the models do not control for outliers in the data. Once there are some dummy variables included to account for these outliers, the null of normality cannot be rejected. However, these dummy variables do not influence the forecasts generated by the ARIMA models.

The diagnostics also show that the models have a reasonably good fit, with R-squares above 0.5 for almost all the ARIMA models. The Q-statistic further shows that the models do not suffer from any autocorrelation.

5.3.4 Holt-Winters approach

In chapter three (section 3.4.1.3), several smoothing methods are discussed, which are utilised to average out the irregular components of time series models. This is used in cases where the time series is unstable and reflects a trend, seasonality or cyclical effects. The Holt-Winters method is known as the triple exponential smoothing technique as it takes into consideration: one equation for the level, one for the trend and the last one for the seasonality or cyclicality.

The Holt-Winters method in EViews 9.5 was used. It uses an algorithm that determines the smallest MAPE by varying the smoothing constants. The model with the smallest MAPE is then selected. Forecasts for future periods are obtained by varying the number of time periods ahead that need to be forecasted.

Three Holt-Winters methods are available in EViews 9.5. The first is the standard Holt-Winters method with a constant or permanent constant (labelled HW1). The second has an additive smoothing method or linear trend (labelled HW2), while the last allows for a multiplicative seasonal variation (labelled HW3). Similar to the previous models, the data points from the last 5 years were excluded when the models were developed, to allow for ex post forecasting 5 steps into the future.

The Holt-Winters output are shown in Appendix A, Table A2, where the various smoothing parameters can be found.

5.3.5 VAR

Contrary to the above models, the Vector Autoregressive (VAR) Model is a causal method of forecasting, as it simulates cause and effect. It is a multiple equation regression model. In a VAR, all variables are treated as endogenous. For the VAR, each variable in the system of equations is explained by its lag or past values as well as that of the other variables in the system (see chapter three, section 3.4.2.2).

As discussed in chapter four, output is a function of capital and labour. VAR is used as it can calculate the capital, labour and output data as a system, and is more accurate when used for short term forecasts.

Thus *Y* = output, but both *L* (labour) and *K* (capital) are also influenced by *Y* (output). Three different VAR models were specified, based on various labour definitions. The vector of variables for each of the three models is defined as follows:

Model 1: $Z_t = (Y_t, K_t, Lt_t)$

This model only includes aggregate labour, i.e. LNLST, together with output (LNOUTPUT) and fixed capital stock (LNFCS).

Model 2: $Z_t = (Y_t, K_t, Li_t, Lf_t)$

This model includes a more disaggregate labour employment by considering both formal and informal labour (i.e. LNLSF and LNLSI) together with output and capital.

Model 3: $Z_t = (Y_t, K_t, Li_{It}, Lhs_t, Ls_t, Lsemi_t)$

In this last VAR model, the most disaggregate labour definitions are used, namely, informal labour (LSLSI), semi-skilled labour (LNLSSEMI), skilled labour (LNLSS) and highly-skilled labour (LNLSHS), together with output and fixed capital.

Since VAR models can only be fitted using stationary data, all the variables included in the models were first differenced, based on the unit root results. The optimal lag lengths for each model were based on the Schwartz Criterion:

- Model 1 had 2 lags.
- Model 2 had 3 lags.
- Model 3 had 2 lags.

Since all the variables are I(1), all the VAR models were estimated using first difference variables, but the possibility of cointegation was also considered. The Johansen cointegration test showed no cointegration for all models, except for 1. However, the VAR model provided more accurate forecasts than the subsequent Vector Error Correction Model (VECM) and therefore the VECM results are not included. Similar to the procedures above, the models were developed by excluding the data for the last five years in order to allow for ex post forecast evaluation.

The VAR models are shown in Appendix A, Tables A3 to A5, together with the model diagnostics in Table A1.

5.3.6 EX-POST FORECASTING ACCURACY EVALUATION

An ex-post forecast is a forecast that is completed for past periods, when the actual current data is available. The methods described in section 4.3 above, namely; Naïve1, Naïve2, ARIMA, Holt-Winters approach and the VAR models were used to create forecasts over a 5-year time period, i.e. 1-step ahead, 2-steps ahead, 3-steps ahead, 4-steps ahead and 5-steps ahead. For each of the models, the forecasting errors were evaluated with the aim of identifying the method with the lowest forecasting error, as the method that will then be used to forecast ex ante in chapter six.

To evaluate the forecasting accuracy, two measures were used namely the MAPE (mean average percentage error) and the RMSPE (root mean squared percentage error). Both the MAPE and RMSPE can be compared across time series, and are the most popular methods utilised in tourism forecasting research. These methods were explained in detail in chapter three, section 3.7. However for purposes of this section a brief overview is provided below.

5.3.6.1 MAPE

The MAPE is a sum of absolute errors for each time period, divided by the actual value for the period, and divided by the number of periods, in order to obtain a mean value. This is then converted to a percentage amount. Frechtling (2001: 25-27) states that the MAPE method is the simplest and clearest method. It is calculated by totalling the absolute errors for each time period, and then dividing by the actual value for the time period. This total is then divided by the total number of periods, thus resulting in a mean value. Multiplying this with 100 will result in a percentage term. This is easy to compare across different data and all percentages are given the same weight. The lower the MAPE percentage, the better, as this indicates smaller percentage errors. As discussed in detail in chapter three, section 3.7, the formula for MAPE is:

$$MAPE = 100 * \frac{\sum_{t=1}^{N} \left| \frac{E_t}{Y_t} \right|}{N}$$

According to Lewis (1982: 40) as sited in Frechtling (2001: 26), the following is a good interpretation:

- Less than 10 percent is highly accurate forecasting.
- Between 10 and 20 percent is good forecasting.
- Between 20 and 50 percent is reasonable forecasting.
- Greater than 50 percent is inaccurate forecasting.

Usually the MAPE is a better indicator of accuracy than the RMSPE (root mean square percentage error).

5.3.6.2 RMSPE

Frecthling (2001: 26-30) states that RMSPE is an accurate method over time series and quantitative forecasting methods. It computes an average percentage error and is useful to compare actual change rates over historical data. RMSPE is however a method that is less accurate when the time series has large values or when it has a structural break.

The formula for RMSPE is:

$$RMSE = \sqrt{\frac{\sum_{t=1}^{N} E_t^2}{N}}$$

5.3.6.3 Forecasting comparison: International Arrivals

Table 5.2 below shows that forecasting accuracy for international arrivals were compared according to the MAPE and RMSPE of the forecasts created, using the methodology discussed in the above section (section 5.3.1 to 5.3.4).

Table 5.2 International Arrivals

MAPE						
	NAÏVE 1	NAÏVE 2	ARIMA	HW1	HW2	HW3
2011	3.19	0.27	16.99	2.83	2.61	3.20
2012	8.00	3.87	15.83	7.50	6.33	7.00
2013	10.45	5.07	17.61	9.80	8.53	9.27
2014	11.70	5.00	21.13	10.90	11.19	11.94
2015	11.22	5.04	27.65	10.25	10.49	11.32
RMSPE						
	NAÏVE 1	NAÏVE 2	ARIMA	HW1	HW2	HW3
2011	3.19	0.27	16.99	2.83	2.61	3.2
2012	9.77	5.57	15.77	9.25	7.68	8.31
2013	12.14	6.34	17.97	11.44	9.96	10.69
2014	13.12	5.96	22.54	12.25	13.11	13.83
2015	12.49	5.82	31.01	11.51	12.27	13.03

(Source: Own calculations from estimated output)

Table 5.2 above shows that the Naïve and Holt Winters methods deliver very accurate forecasts, especially in the short- to medium-term, with forecasting errors below 10% for the forecasts of the first three years. The least accurate method is the ARIMA model, with acceptable forecasts in the first 3 years, but large errors in the 5-year term. It is evident that both the MAPE and RMSPE show similar results, with the Naïve 2 method giving the most accurate forecast of international tourist arrivals over all the time periods under consideration. This implies that an extrapolation of the growth trend in international arrivals will be the most accurate way to forecast ex ante.

5.3.6.4 Labour Forecasts

Table 5.3 below shows the forecasting accuracy for total labour employment in the accommodation and catering sub-sector according to MAPE and RMSPE, in line with the methodology discussed in sections 5.3.1 to 5.3.5 above.

Table 5.3 Total Labour

MAPE								
	NAÏVE 1	NAÏVE 2	ARIMA	ARIMA2	HW1	HW2	HW3	VAR
2010	5.12	2.92	5.27	3.37	6.17	5.26	5.17	6.45
2011	2.71	3.67	3.30	2.20	3.93	2.73	2.73	4.51
2012	2.24	4.90	2.53	1.98	3.18	1.90	1.94	3.50
2013	2.43	6.38	1.98	2.27	2.63	1.65	1.66	2.80
2014	2.94	8.01	1.72	2.56	2.13	1.46	1.48	2.83
RMSPE								
	NAÏVE 1	NAÏVE 2	ARIMA	ARIMA2	HW1	HW2	HW3	VAR
2010	5.12	2.92	5.27	3.37	6.17	5.26	5.17	6.45
2011	3.53	3.79	3.75	2.44	4.42	3.63	3.57	4.82
2012	2.95	5.32	3.08	2.16	3.70	2.93	2.88	3.98
2013	2.96	7.21	2.65	2.46	3.21	2.55	2.51	3.43
2014	3.51	9.29	2.36	2.79	2.84	2.28	2.25	4.05

(Source: Own calculations from estimated output)

Table 5.3 displays that for total labour employment in the accommodation and catering sub-sector, the most accurate forecasts for the first year were delivered by Naïve 2 forecasts. This was followed by the ARIMA (4,1,0) model, obtaining the most accurate forecasts for the second year, while for the 2012-2014 period, the ARIMA (4,1,0) and Holt-Winters 2 (additive) fared the most, in predicting total labour demand for the relevant period. The VAR forecasts also did well, especially in the medium to longer term. The least accurate method of forecasting over the medium and longer term is the Naïve 2 model, revealing large errors from 3-steps ahead.

Although the MAPE and RMSPE show varying results, the ARIMA model seems to give the most accurate forecast of total labour over all the time periods under consideration when RMSPE is the evaluation criteria, while for MAPE the most accurate seems to be the Holt-Winters 2 (additive). This implies that an extrapolation of the growth trend in total labour will be the most accurate way to forecast total labour demand in the accommodation and catering sector, ex ante.

Table 5.4 below shows the forecasting accuracy for formal labour employment according to MAPE and RMSPE, using the methodology discussed in sections 5.3.1 to 5.3.4 above.

Table 5.4 Formal Labour

MAPE							
	NAÏVE 1	NAÏVE 2	ARIMA	HW1	HW2	HW3	VAR2
2010	2.68	0.77	1.23	3.03	1.75	1.77	0.98
2011	2.05	2.91	4.11	7.54	5.27	5.30	3.75
2012	1.81	4.18	5.34	10.65	7.42	7.46	5.14
2013	1.95	5.50	6.32	13.57	9.54	9.59	6.45
2014	2.16	6.74	7.05	16.28	11.85	11.89	7.57
RMSPE							
	NAÏVE 1	NAÏVE 2	ARIMA	HW1	HW2	HW3	VAR2
2010	2.68	0.77	1.23	3.03	1.75	1.77	0.98
2011	2.12	3.68	5.11	8.95	6.46	6.49	4.75
2012	1.88	4.94	6.17	12.25	8.62	8.66	6.03
2013	2.03	6.42	7.09	15.51	10.99	11.04	7.41
2014	2.26	7.82	7.79	18.53	13.71	13.75	8.58

(Source: Own calculations from estimated output)

For the formal labour employment in the accommodation and catering sub-sector forecast in 2010 (1-step ahead), the Naïve 2 was the most accurate, while the Naïve was a better model for the rest of the years, i.e. 2011 to 2014. The least accurate method of forecasting formal labour employment is the Holt Winters methods, with a low forecasting error in the first year, but larger errors in the following four years (i.e. 2 to 5 steps ahead).

It is evident that both the MAPE and RMSPE show similar results, and that the Naïve method seems to give the most accurate forecast of formal labour over all the time periods under consideration (2011 to 2014), with Naïve 2 performing best in the first year (2010). This implies that overall, the ‘no change’ in formal labour employment will be the most accurate way to forecast ex ante.

Table 5.5 below shows the forecasting accuracy for highly skilled labour according to MAPE and RMSPE metrics, using the methodology discussed in sections 5.3.1 to 5.3.5 above.

Table 5.5 Highly Skilled Labour

MAPE							
	NAÏVE 1	NAÏVE 2	ARIMA	HW1	HW2	HW3	VAR3
2010	1.86	0.57	1.47	3.01	0.66	1.04	4.94
2011	2.41	2.98	4.52	7.52	3.43	3.79	10.73
2012	2.81	4.39	5.85	10.61	4.85	5.18	15.89
2013	3.45	5.81	6.83	13.51	6.30	6.62	20.29
2014	4.10	7.13	7.51	16.20	8.02	8.31	23.73
RMSPE							
	NAÏVE 1	NAÏVE 2	ARIMA	HW1	HW2	HW3	VAR3
2010	1.86	0.57	1.47	3.01	0.66	1.04	4.94
2011	2.50	3.93	5.57	8.95	4.51	4.79	12.44
2012	2.94	5.31	6.73	12.26	5.81	6.08	18.44
2013	3.74	6.89	7.67	15.53	7.42	7.67	23.38
2014	4.53	8.38	8.28	18.57	9.52	9.75	27.03

(Source: Own calculations from estimated output)

Table 5.5 above shows highly skilled labour employment in the accommodation and catering sub-sector forecasting errors for 1- to 5-steps ahead (2010 to 2014). Highly skilled labour forecasts were also dominated by the Naïve 2 which was superior in the first year and the most superior for the 4 years (2011-2014) that followed, indicating the most accurate forecasts for highly skilled labour. The least accurate method of forecasting is the VAR model, with acceptable forecasts in the first year, but larger errors in the following four years.

It is evident that both the MAPE and RMSPE show similar results, and that the Naïve method seems to give the most accurate forecast of highly skilled labour in the accommodation and catering sub-sector over the time periods under consideration (2011 to 2014), with Naïve 2 performing slightly better in the first year (2010). This implies that assuming no change will be the most accurate way to forecast ex ante.

Table 5.6 below shows the forecasting accuracy for skilled labour employment in the catering and accommodation sub-sector according to MAPE and RMSPE, using the methodology discussed in sections 5.3.1 to 5.3.5 above.

Table 5.6 Skilled Labour

MAPE							
	NAÏVE 1	NAÏVE 2	ARIMA	HW1	HW2	HW3	VAR3
2010	2.45	0.89	1.23	3.03	1.57	1.65	4.95
2011	2.15	2.85	4.11	7.55	5.18	5.26	10.68
2012	2.10	4.03	5.34	10.66	7.40	7.49	15.73
2013	2.40	5.28	6.29	13.59	9.59	9.68	19.97
2014	2.74	6.46	7.00	16.30	11.95	12.04	23.25
RMSPE							
	NAÏVE 1	NAÏVE 2	ARIMA	HW1	HW2	HW3	VAR3
2010	2.45	0.89	1.23	3.03	1.57	1.65	4.95
2011	2.16	3.53	5.12	8.96	6.44	6.51	12.34
2012	2.11	4.72	6.17	12.28	8.69	8.77	18.14
2013	2.47	6.14	7.07	15.55	11.13	11.22	22.86
2014	2.89	7.48	7.74	18.59	13.93	14.00	26.27

(Source: Own calculations from estimated output)

Table 5.6 indicates that, for skilled labour forecasts, the Naïve 2 outperforms in the 1-step ahead forecasts and with naïve performing best in the following years (2011-2014). This indicates the most accurate forecasts for skilled labour employment in the accommodation and catering sub-sector. The least accurate method of forecasting is the VAR model, which displays the largest forecasting errors for all the forecasting horizons.

It is evident that both the MAPE and RMSPE show similar results, and that the Naïve method seems to give the most accurate forecast of skilled labour. This implies that the no change model will be the most accurate way to forecast ex ante.

Table 5.7 below shows the forecasting accuracy for semi-skilled labour in the accommodation and catering sub-sector according to MAPE and RMSPE, using forecasts from the methodology discussed in sections 5.3.1 to 5.3.5 above.

Similar to the other skill-level forecasts of labour, the Naïve 2 method has the lowest forecasting error for the first year and Naïve performing best in all the following years. Also similar to the other skill level labour forecasts, the least accurate method is the VAR model. Again, both the MAPE and RMSPE show similar results, and therefore the Naïve or no change method seems to be the most accurate way to forecast semi-skilled labour ex ante.

Table 5.7 Semi-skilled Labour

MAPE							
	NAÏVE 1	NAÏVE 2	ARIMA	HW1	HW2	HW3	VAR3
2010	3.67	0.59	1.43	3.01	1.38	1.12	5.19
2011	2.10	2.98	4.43	7.52	4.47	4.18	11.11
2012	1.94	4.38	5.79	10.61	6.20	5.90	16.34
2013	1.84	5.79	6.88	13.51	7.95	7.64	20.71
2014	1.86	7.10	7.72	16.20	9.92	9.57	24.02
RMSPE							
	NAÏVE 1	NAÏVE 2	ARIMA	HW1	HW2	HW3	VAR3
2010	3.67	0.59	1.43	3.01	1.38	1.12	5.19
2011	2.58	3.88	5.43	8.88	5.51	5.26	12.75
2012	2.30	5.22	6.62	12.13	7.18	6.91	18.68
2013	2.14	6.75	7.66	15.30	9.08	8.79	23.42
2014	2.10	8.18	8.45	18.23	11.36	11.02	26.77

(Source: Own calculations from estimated output)

Table 5.8 below shows the forecasting accuracy for informal labour according to MAPE and RMSPE, using the methodology discussed in sections 5.3.1 to 5.3.5 above.

Table 5.8 Informal Labour

MAPE									
	NAÏVE 1	NAÏVE 2	ARIMA	ARIMA2	HW1	HW2	HW3	VAR2	VAR3
2010	10.63	7.82	17.68	24.13	27.44	19.23	14.27	0.86	10.62
2011	6.36	5.43	18.01	25.54	31.45	18.54	13.40	10.10	5.46
2012	4.66	6.48	20.24	28.76	37.94	20.32	14.99	18.32	5.53
2013	4.55	8.26	23.13	32.55	45.61	26.23	20.62	25.84	6.56
2014	5.43	10.59	25.81	36.02	53.42	31.97	25.94	33.48	7.90
RMSPE									
	NAÏVE 1	NAÏVE 2	ARIMA	ARIMA2	HW1	HW2	HW3	VAR2	VAR3
2010	10.63	7.82	17.68	24.13	27.44	19.23	14.27	0.86	10.62
2011	7.38	5.76	18.05	25.71	32.04	18.51	13.37	14.24	7.21
2012	5.93	6.94	20.75	29.56	40.03	20.65	15.31	23.91	6.69
2013	5.50	9.30	24.38	34.23	49.77	29.15	23.76	34.79	8.39
2014	6.49	12.67	27.77	38.56	59.97	36.96	31.00	42.33	9.29

(Source: Own calculations from estimated output)

In terms of informal labour forecasts, the Naïve 2 model shows superior forecasting results for the shorter term (first two years) of the forecast, with the basic Naïve being the most superior for the following years (2012 – 2014). The VAR forecasts perform much better when informal labour is considered and has the lowest

forecasting error for the 1-step ahead forecasts. Even the longer term forecasts are quite accurate in the VAR 3 model specification (refer to section 5.3.5 above).

Similar to the other skill level forecasts, both the MAPE and RMSPE show similar results, and the Naïve methods are difficult to outperform. This implies that an extrapolation of the growth trend or a no change model will be the most accurate way to forecast informal labour demand ex ante.

Table 5.9 below shows the forecast accuracy for output in the accommodation and catering sub-sector using the MAPE and RMSPE, according to the methodology discussed in section 5.3.6 above.

Table 5.9 Quantec Output

MAPE										
	NAÏVE 1	NAÏVE 2	ARIMA	ARIMA2	HW1	HW2	HW3	VAR1	VAR2	VAR3
2010	5.67	1.24	10.09	6.58	4.99	2.79	2.51	3.83	0.58	4.08
2011	4.13	4.01	10.94	5.00	3.08	1.53	1.26	2.19	3.16	2.52
2012	5.37	4.58	14.08	6.16	4.01	3.17	2.94	2.66	3.18	2.85
2013	6.45	5.57	16.71	7.06	4.76	4.16	3.93	2.82	3.57	3.15
2014	7.35	6.86	18.77	7.61	5.35	4.91	4.66	2.75	4.01	3.31
RMSPE										
	NAÏVE 1	NAÏVE 2	ARIMA	ARIMA2	HW1	HW2	HW3	VAR1	VAR2	VAR3
2010	5.67	1.24	10.09	6.58	4.99	2.79	2.51	3.83	0.58	4.08
2011	4.45	4.80	10.94	5.29	3.68	2.02	1.81	2.78	4.02	3.01
2012	5.88	5.15	14.95	6.59	4.56	4.16	4.02	3.09	3.75	3.19
2013	7.10	6.23	18.05	7.57	5.34	5.13	4.95	3.14	4.04	3.45
2014	8.09	7.85	20.32	8.11	5.92	5.84	5.62	3.02	4.47	3.56

(Source: Own calculations from estimated output)

From the above, it is clear that output in the accommodation and catering sector can be forecasted quite accurately with the methods used in this research. All the forecasting errors (except for the one ARIMA model) are exceptionally good, showing errors less than 10% even for the 5-step ahead forecasts. Overall, the VAR models perform the best for the output forecasts.

Again the MAPE and RMSPE show similar results, and that the VAR 2 model (see section 5.3.5 and Table A4 in the Appendix) seems to give the most accurate forecast of output in this sector. This implies that output forecasts should be conducted using a VAR model, with output, formal and informal labour and capital formation to obtain the most accurate forecast ex ante.

Thus, the forecast evaluations were completed and the best methods were selected. These methods are to be implemented in chapter six for the ex ante forecasts of labour demand in the accommodation and catering sub-sector. These forecasts are used in all three methods of manpower forecasting. Firstly, the labour demand is forecasted ex ante, using the most appropriate models identified in this section. Secondly, the output forecasts feed into the bottom-up approach (see section 5.4 below as well as section 4.5.1 in chapter four). Finally, the international arrival forecasts are used in the top-down approach (see section 5.5 below).

5.4 METHOD 2: BOTTOM-UP APPROACH

The above discussion dealt with the models that were developed for the time-series forecasting approach to manpower planning. These forecasts also feed into the other two approaches (see section 4.5 above), namely, the bottom-up coefficient approach and the top-down forecasting approach. This section focuses on the bottom-up approach and the models that were estimated to determine the labour coefficients, as is required by this method. In chapter six, the results of the forecasts up to 2019 will be presented, based on coefficients derived in this section as well as the output forecasts done according to the best time-series models identified above.

Frechtling (2001: 172) states that an elasticity is used to illustrate the relationship between the percentage changes in the explanatory variable, and the changes this produces in the dependent variable. According to Wooldridge (2013: 841), elasticity is defined as the percentage change in one variable while there is a 1% increase in another variable. Labour and price elasticities are measured in the same manner. Demand is said to be elastic if the quantity that is demanded declines by more than 1%, if the price changes by 1%. Similarly, if output increases by 1% and demand for labour increases by more than 1%, it indicates an elastic demand. Inelastic labour demand therefore has a coefficient less than 1.

Using this bottom-up coefficient approach, elasticities were estimated using data obtained from Quantec for the hospitality and catering sub sectors.

The three most important factors for production are labour, land and capital (Mankiw, 2001: 414) (see chapter four, section 4.2, where labour demand was discussed in detail). In the elasticities model, the question is: how does the demand for labour

react to changes in output? However, the demand for labour is not only a function of output, but also of the price of labour. Therefore both output and labour cost (unit labour cost, sourced from the Quantec database and discussed in section 5.2.1) are used in the modelling process.

As indicates above, five time series are available for the labour employed in the catering and accommodation industry, namely total formal labour, informal labour, highly-skilled labour and skilled and semi-skilled labour. Since formal labour employment consists of highly-skilled, semi-skilled and skilled labour, the approach followed is to use the disaggregate series in determining the labour coefficients. Therefore, labour elasticities are derived for informal labour, highly-skilled labour, skilled labour and semi-skilled labour.

Since labour demand is not only a function of current production, but also of past production, and since there is inertia in employment levels (Gujarati & Porter, 2010: 372), autoregressive distributed lag models were estimated to take these truisms into account. Autoregressive models were discussed in chapter three, section 3.4.1. According to Gujarati and Porter (2009: 617), an autoregressive model is a model for time series data used for regression analysis, and the model includes one or more lagged values of the dependent variable as explanatory variables. Distributed lag models are named due to the fact that the unit change in value of the explanatory variables is distributed over several time periods (Gujarati & Porter, 2010: 372). An ARDL combines the autoregressive model with the distributed lag model. Therefore:

$$Y_t = \mu + \sum_{i=1}^{n} a_i Y_{t-i} + \sum_{j=0}^{m} b_j X_{t-j} + u_t$$

Where a_i indicates the autoregressive coefficients and b_j the distributed lag coefficients. To determine the number of autoregressive and distributed lag terms, the automatic ARDL procedure in EViews 9.5 was used, where model selection was based on the Akaike Information Criterion (AIC).

For highly skilled labour, skilled labour and semi-skilled labour, the models with the lowest AIC were all ARDL (2,3,0), which indicates two autoregressive terms, 3 lags of output and 0 lags of unit labour cost. For informal labour, an ARDL (2,1,1) was identified as the best model, indicating 2 autoregressive terms, 1 lag of output and 1

lag of labour unit cost, which should be used together with the contemporaneous variables.

Since all variables were I(1), the models were estimated using differences of all variables (refer to unit root tests results in Table 5.1 of this chapter). In all models, a dummy variable was coded as a control for a large structural break in the data in year 2001 (see Figure 5.5). In order to ensure white noise error terms, the demand for informal labour required two additional dummy variables that control outliers in the data. The model results are displayed in Tables B1 to B4 in Appendix B.

Four diagnostic tests were conducted to test the validity of the models, namely: the Q-statistic and the Serial Correlation Breusch-Godfrey Test, both used for autocorrelation; the Breuch-Pagan Godfrey for heteroscedasticity; and the Jarque-Bera Normality Test. The results of these tests are summarised in the Appendix B, Table B5. It shows that none of the assumptions of the classical linear regression model are violated. The coefficient of the contemporaneous variable, LNOUTPUT, is the short-run labour coefficient, since it indicates the immediate reaction of labour demand to a change in output. To derive the long run coefficient, the sum of the distributed lag terms should be divided by 1 minus the sum of the autoregressive terms, i.e. (Asteriou & Hall, 2016):

$$\theta_j = \frac{\sum_{j=1}^{q} b_j}{1 - \sum_{i=1}^{p} a_i}$$

Where a_i and b_j correspond to the autoregressive and distributed lag coefficients respectively. The resultant labour coefficients are summarised in Table 5.10 below.

Since the models are estimated using natural logs of all variables, the coefficients derived can be interpreted as labour elasticities. The short run elasticities are quite low, indicating that employment is slow to react to changes in output. The highest elasticity is for skilled labour, 0.072, while semi-skilled labour demand has the lowest short-run elasticity of 0.01.

The long run elasticities are still all far below unity, although they are much higher than the short-run elasticities. It indicates that labour demand is output inelastic and that a 1 percent change in output will lead to a 0.146% change in demand for informal labour; a 0.17% change in demand for highly skilled labour, a 0.289%

change in demand for skilled labour and a 0.046% change in demand for semi-skilled labour. Again, the skilled labour shows the highest elasticity, with the semi-skilled labour showing the lowest elasticity.

Table 5.10 Elasticities

Data	Short run coefficient	Long run coefficient
Informal labour	0.036	0.146
Highly skilled labour	0.035	0.170
Skilled labour	0.072	0.289
Semi-skilled labour	0.010	0.046

(Source: Own calculations from estimated output)

These elasticities will be applied to the output forecasts to be generated in chapter six from the time-series models described above in section 5.3. Following the forecasts, the data will be split using ratios of catering versus accommodation, in order to obtain accommodation labour demand forecasts according to skill levels.

5.5 METHOD 3: TOP-DOWN APPROACH

The dominant forecasting method for manpower requirements is the top-down approach (Wong, 2004: 46). In this approach, manpower requirements are related to the output of the industry and to other economic factors. This method is therefore based on the fact that growth in demand for manpower and job levels is directly related to the growth in the industry. Wong (2004: 44) used time series forecasting in order to extrapolate industry growth and subsequently derive manpower levels. The forecasted change in the industry is typically simulated using some form of input-output model to derive manpower requirements (see also chapter four, section 4.5.2). A similar approach is followed in this study where tourism demand is forecasted and simulated using input-output methodology in order to derive manpower demand.

To forecast the growth in the industry, both domestic and international tourism spending needs to be forecasted. Using the international arrivals data and that of the domestic and international tourist spending from Stats SA (see section 5.2.3 and 5.2.4), two scenarios are created. In the first scenario, both real domestic and real international tourism spending was forecasted, in aggregate. Since the data available is only for 10 years, the Naïve 2 method was followed and the average 10-

year growth rate was used to forecast total spending on the various spending categories listed in section 5.2.4. The resultant growth in the industry is therefore the sum of the growth in both the domestic and international tourism industry.

In the second scenario, international spending per person was forecasted using the Naïve 2 method with a 10-year average growth rate as the trend. This spending per person was then multiplied with the forecasted number of international tourists derived according to the models explained in section 5.3. in the absence of sufficient data for domestic trips, the domestic growth in demand was modelled similar to scenario 1. Therefore, the sum of international growth and domestic growth is the total growth in spending on accommodation and food and beverage (catering).

The two scenarios are summarised in table 5.11 below:

Table 5.11 Cumulative change in Tourism Spending (in ZAR million)

Scenario 1		
Year	Accommodation	Food and Beverage
2015	5 524	2 820
2016	11 849	6 107
2017	19 091	9 940
2018	27 384	14 411
2019	36 881	19 629
Scenario 2		
Year	Accommodation	Food and Beverage
2015	3 764	1 622
2016	9 881	4 736
2017	16 892	8 374
2018	24 930	12 625
2019	34 146	17 593

(Source: Own calculations from estimated output)

Using the 2012 Social Accounting Matrix (SAM) for South Africa, the output effect was calculated using multiplier analysis and the effect on labour, for both accommodation and catering subsections using labour multipliers.

According to Bijker (2013) a multiplier model is used to derive the impacts of a shock. A shock might arise due to investments in the economy or increase in exports, or in this case, an increase in demand due to tourism (Bijker, 2013: 8). The SAM model implements backward linkages of expenditure. This means that changes in demand provide inputs for the rest of the analysis. Direct impacts indicate that revenue has a direct impact on inputs; whereas indirect impacts refer to relationships

between production sectors. Induced impacts also occur where production increases, which increases household income. Therefore this induces households to spend more; increasing spending and thus also increasing demand. The SAM model reflects a transaction (payment for goods and services, or distributions) between the sector that pays and the sector that receives payment.

The SAM model therefore indicates linkages between different sectors and their functional relationships (Bijker, 2013: 30). A shock typically shows increases in demand for commodities. For example, an increase in the production results of one sector is an increase in demand for all of its inputs. In the same manner, an increase in demand for inputs also increases demand for labour and capital. This results in an increase in household wages, which in turn result in another increase in demand for commodities. Impacts on outputs are used to determine impacts on variables such as income, employment, capital, tax and imports (Bijker, 2013: 54). The results of this simulation process will be shown and discussed in chapter six.

5.6 CONCLUSION

The aim of this research is to determine, using manpower forecasting techniques, the future demand for various job levels and their relevant qualifications, as required by the accommodation industry in South Africa. This is to be completed using the three most prominent manpower forecasting methods, namely time-series forecasts, the bottom-up coefficient approach and the top down approach. Furthermore, these quantitative forecasts are to be combined with qualitative forecasting methods, as discussed in the methodology chapter (see chapter three).

The goal of this chapter has been to develop the models that will be used in forecasting the demand for job levels and qualifications in the South African accommodation industry. The chapter commenced with a description of the data that was utilised, namely; sectoral labour and output data from Quantec; output data from Stats SA; international and domestic tourism data also obtained from Stats SA; and finally tourism spending data from Stats SA.

The unit root test results were also presented for time series models, and the time-series methods for forecasting were reviewed, namely the Naïve, Naïve 2, ARIMA, Holt-Winters, and VAR approaches. This was followed by an evaluation of the ex

post time series forecasting results for the accommodation industry (using MAPE and RMSPE), with the aim of identifying the most suitable method for the ex ante forecasts that are to be completed in chapter six. The results showed that total labour forecasts should be completed using the Naïve 2 and ARIMA methodologies. The results further showed that all formal labour employment should be forecasted using Naïve 2, while informal labour forecasts should also use the Naïve model. Furthermore, output forecasts that are needed for the bottom-up approach should be done using the VAR forecasts, while the Naïve 2 model should be used to forecast international arrivals for the top-down approach.

The bottom-up approach was subsequently reviewed and the models developed to determine the labour coefficients. Using Quantec data, including various labour employment, output and unit labour cost series, ARDL models were estimated and the subsequent short- and long-term labour coefficients were derived. These coefficients will be applied to the output forecasts in chapter six in order to derive ex ante forecasts of labour demand in the South African accommodation and catering industry.

Finally, the top down approach was reviewed and the two simulations that are to be used in deriving the future demand for labour were explained. One simulation uses Naïve 2 forecasts of domestic and international tourism spending to determine the future change in demand for accommodation and catering services. The second simulation uses forecasts of arrivals and combines it with forecasts of tourist spending. Results of these simulations are discussed in chapter six.

Thus in chapter six, the selected methods will be implemented, where the results of the ex-ante labour forecasts in the catering and accommodation sector will be presented. The demand for all skills levels of labour will be discussed according to the three forecasting methods discussed in this chapter. Chapter six will also provide a detailed analysis of the educational and employment profiles of the accommodation versus catering industries, before it will conclude on the quantitative forecasts of labour demand for the accommodation industry, which is a key aspect in achieving the main goal of this study.

CHAPTER SIX

RESULTS OF THE LABOUR DEMAND FORECASTS

6.1 INTRODUCTION

The main objective of this study is to forecast labour demand for the accommodation sector with a specific focus on the different levels of education required, over the next five years, in the South African context. Chapter two provided a background to the tourism industry and the employment opportunities it presents in South Africa. Chapter three dealt with the quantitative and qualitative forecasting methods, including a description of forecasting accuracy. Chapter four elaborated on the methods of labour demand forecasting, during which four methods of labour demand forecasting were identified. These are, the time series forecasts, the bottom-up coefficient approach, the top-down forecasting model, and the market signalling approaches.

In chapter five, the first three labour demand forecasting methods were developed into models for this study. These were developed using South African data since this study is based on the accommodation industry in the South African context. Chapter five addressed objectives five and six of this study. With respect to objective five quantitative forecasting methods are implemented in order to forecast future turnover (output) in the accommodation industry and to evaluate the accuracy of these forecasts. Objective six determined the output elasticity for various job levels and qualifications. In this chapter, these two concepts are linked. This chapter presents the change in qualifications relative to the changes in output levels, resulting in forecasts of various levels of qualified labour, for the accommodation industry in South Africa. The labour forecasting methods used in chapter five were also selected due to the fact that they complement each other in terms of obtaining accurate results, and are recognised as a standard benchmark for forecasting.

Chapter six therefore uses these three forecasting methods to forecast specific jobs in the accommodation industry, their relevant job levels and the qualifications required for the South African accommodation industry, for the period 2015-2019. The results of these quantitative forecasts are presented in this chapter, and will be adjusted by means of qualitative adjustments in chapter seven.

6.2 FORECASTS FOR LABOUR DEMAND IN THE HOSPITALITY INDUSTRY

In chapter four, the four methods that are recognised for manpower planning were discussed and in chapter five, the models that best suited the South African catering and accommodation data were identified. This section builds onto chapter five and presents the results of the forecasts of labour demand in the South African catering and accommodation industry according to each of the three approaches.

6.2.1 Time series forecasts

In chapter three, section 3.4.1, non-causal methods of forecasting were discussed as part of a comprehensive literature study of time series forecasts. Chapter five, section 5.3, then considered the models that are best suited to forecast labour demand in the South African Catering and Accommodation industry. This entailed the comparison of the forecasting accuracy of the various methods which established that the Naïve models were quite difficult to outperform when the various labour supply series were considered.

The best forecasting models for total labour input in the catering and accommodation industry were identified in section 5.3.6.4. The results show that for one year (2015) forecasts, the Naïve 2 model outperformed the other methods, while the ARIMA (4,1,0) model was the best forecast for the remaining four years. Therefore, the ARIMA (4,1,0) will be used in this chapter to forecast total labour demand.

Table 6.1 below, shows the results of the forecasts of the total labour employment in the catering and accommodation industry, which includes the formal employees (also divided into highly skilled, skilled, semi-skilled employees and informal employees). Table 6.1 indicates the annual change in demand as well as the cumulative change in labour demand over the five year period (2015-2019).

From Table 6.1 below, the ARIMA model shows that annually, the percentage increases in labour demand indicates a stable, but increasing trend for the first 3 years, until it tapers down to annual increases of less than 1%. This results in a cumulative change of a little more than 5% over the forecasting horizon (i.e. 2015-2019). This means that the ARIMA model is less optimistic about the increase in total labour input for the catering and accommodation industry as time progresses, over the next five years. This may also be due to the fact that the ARIMA model analyses

and forecasts data according to the univariate time series data that is spaced out equally, and uses past and present values to forecast future values.

Table 6.1 ARIMA forecasts for total labour in Accommodation and Catering Industry

	Annual change		Cumulative change	
Forecast horizon	Number of labourers	Percentage increase	Number of labourers	Percentage increase
2015	4 577	1.4%	4 577	1.4%
2016	3 895	1.2%	8 472	2.6%
2017	6 411	1.9%	14 884	4.6%
2018	486	0.1%	15 370	4.8%
2019	1 320	0.4%	16 690	5.2%

(Source: Compiled by author)

When the labour series were separated into the various skills levels of formal employees, i.e. highly skilled, skilled and semi-skilled; as well as informal employees, the best forecasts came from the no change model (Naïve 1 – see section 5.3-5.3.1). In the short-run (i.e. 1-year forecasts), the Naïve 2 model outperformed the Naïve 1 model for these data series, but in both cases, this points to a decline in labourers in the catering and accommodation industry. Given that the total forecasts indicate an increase in labour demand, but the disaggregate series forecasts do not indicate any increase, the aggregate forecasts in Table 6.1 were disaggregated using the proportional composition of total labour demand.

To determine the proportional composition, the 5-year average were used, i.e. the average of formal labour demand, as a percentage of total labour demand over the past 5 years (2009-2014). This was used, since the proportions stabilised over the years (refer to Figure 5.1). This implies that total labour demand in the catering and accommodation industry can be split into formal and informal according to a 68:32 ratio. Of the formal employees, 9.6% are highly skilled, 67.4% are skilled and 23% are semi-skilled. Using this breakdown and the ARIMA (4,1,0) forecasts for total labour demand over 5 years (shown in Table 6.1), Table 6.2 shows a summary of the forecasts per skill level.

As can be seen from Table 6.2 below, the forecast shows that the largest percentage of the total employees employed in the industry is for formal labourers that are skilled. This is followed by informal labourers and then semi-skilled employees.

Over the following five years (2015-2019), it is forecasted that 11 317 new formal labour job opportunities (cumulatively calculated) will be created in the accommodation and catering industry. This Figure only indicates the number of new jobs that will be created without taking into consideration retirement or retrenchment. Of the 11 317 total formal jobs that will be created, a cumulative total of 1 090 of these jobs will be for highly skilled employees, 7 630 for skilled employees and 2 598 for semi-skilled employees.

Table 6.2 Breakdown of labour forecasts according to skills level

	INFORMAL LABOUR (LSI)		**FORMAL LABOUR (LSF)**		**HIGHLY SKILLED (LSHS)**		**SKILLED (LSS)**		**SEMI-SKILLED (LSSEMI)**	
	Annual change	*Cumulative change*	*Annual change*	*Cumulative change*	*Annual change*	*Cumulative change*	*Annual change*	*Cumulative change*	*Annual change*	*Cumulative change*
2015	1 473	1 473	3 104	3 104	299	299	2 092	2 092	712	712
2016	1 254	2 727	2 641	5 745	254	553	1 781	3 873	606	1 319
2017	2 064	4 791	4 348	10 092	419	972	2 931	6 804	998	2 316
2018	157	4 948	330	10 422	32	1 004	222	7 026	76	2 392
2019	425	5 373	895	11 317	86	1 090	603	7 630	205	2 598

(Source: Compiled by author from forecasting results)

In contrast to the large number of total jobs that are forecasted to be created by formal labour over the next five years, a total of 5 373 new jobs will be created for informal labour. This is in line with industry's labour trends discussed in chapter four, section 4.2, where less growth has occurred in job opportunities for informal labour in the South African accommodation industry.

While this research focuses on labour demand in the accommodation industry, the results above are for both the catering and accommodation industry. Therefore, the results will have to be refined and discussed in section 6.3 below.

Besides the labour forecasts, two additional time series forecasts were completed as input into the bottom-up and top-down approaches to labour demand forecasting. These are the total output in the catering and accommodation industry (used in the bottom-up approach) and the international tourist arrivals (used in the top-down approach). The results of these are discussed below.

Section 5.3.6.4 in chapter five showed that the output in the catering and accommodation industry could be forecasted quite accurately, with few errors, using the various VAR models as well as the Holt-Winters methodology. The Naïve 2

model again proved to be the most efficient for 1-year forecasts. Since there is little to choose between the various methods, the results of the forecasted change in output in the catering and accommodation industry are shown for all these models, in Table 6.3 below. In addition, the table includes the forecasts by Quantec as a benchmark for the forecasts developed in this study. This forecasted increase in output serves as an input into the bottom-up approach, which is discussed in section 6.2.2 below.

As can be seen in Table 6.3 below, it is apparent that the Naïve 2 model shows the largest increase in output over the 5-year forecasting horizon. This is due to the fact that Naïve 2 is a constant growth rate model. Thus the forecast value is calculated as the current value multiplied by the growth rate between the current and previous values. Cumulatively, output is forecasted to grow over the 2015-2019 period, using 2014 data as the basis. The Naïve 2 cumulative forecasts show a 4.7% growth in 2015 (using 2014 as the base figure), increasing to 9.6% in 2016, 14.8% in 2017, 20.1% in 2018 and 25.8% in 2019.

Also from Table 6.3, it is evident that the Holt-Winters 3 and VAR1-model reflect similar results, which are also comparable with VAR3 forecasts (refer to chapter five, sections 5.3.4 and 5.3.5 for definitions of the various VAR and Holt-Winters models). The Holt-Winters exponential smoothing technique uses a growth factor or trend to employ single exponential smoothing to adjust for the trend. VAR, with its linear relationship of variables and endogenous treatment of these variables, are usually capable of better accuracy when it comes to medium and long-term forecasting, as each variable is explained by its lag or past values, as well as that of the other variables present in the system. Cumulatively, the forecasts for Holt-Winters 3 are 4.5% for 2015, 4.7% for 2016, 5.7% for 2017, 8.5% for 2018 and 10.7% for 2019. Annually, the forecasts for VAR1 are 1.1% for 2015, 3.7% for 2016, 6.2% for 2017, 7.4% for 2018 and 9.7% for 2019.

VAR2 output forecast results are comparable to those of the Naïve 2 model, reflecting the highest of all the forecasts generated, while the Quantec data show the lowest forecasts. For VAR2, cumulatively, the forecasted change in output are 2.8% for 2015, 7.4% for 2016, 11.7% for 2017, 16.6% for 2018 and 21.0% for 2019.

Table 6.3 Summary of output forecasts (Rand million in constant 2010 prices)

	Naive2		HW3		VAR1		VAR2		VAR3		Quantec	
	Annual change	Cum. change	Annual change	Cum. change	Annual change	Cum. Change	Annual change	Cum. change	Annual change	Cum. change	Annual change	Cum. change
2015	2 876	2 876	2 760	2 760	671	671	1 734	1 734	1 491	1 491	1 333	1 333
2016	3 011	5 888	134	2 894	1 584	2 256	2 823	4 556	1 335	2 827	-213	1 120
2017	3 153	9 040	599	3 493	1 506	3 762	2 624	7 181	1 516	4 343	471	1 591
2018	3 301	12 341	1 718	5 211	1 377	5 139	3 006	10 187	1 583	5 925	1 015	2 606
2018	3 456	15 797	1 316	6 527	1 435	6 573	2 705	12 892	1 583	7 508	1 381	3 987

(Source: Compiled by author from forecasting results)

The final time-series forecasts are those of international tourist arrivals. These forecasts are used in the top-down approach and the evaluation of the various models indicates that the Naïve 2 model provides the most accurate forecasts (see section 5.3.2 in chapter five). Figure 6.1 below shows the forecasted number of tourists to visit South Africa according to this method. Since the data for 2015 was already available, the forecasts are for 2016-2019. The Naïve 2 model used the base figure of 9 364 869 for 2015, as the starting point for the forecast of international tourist arrivals.

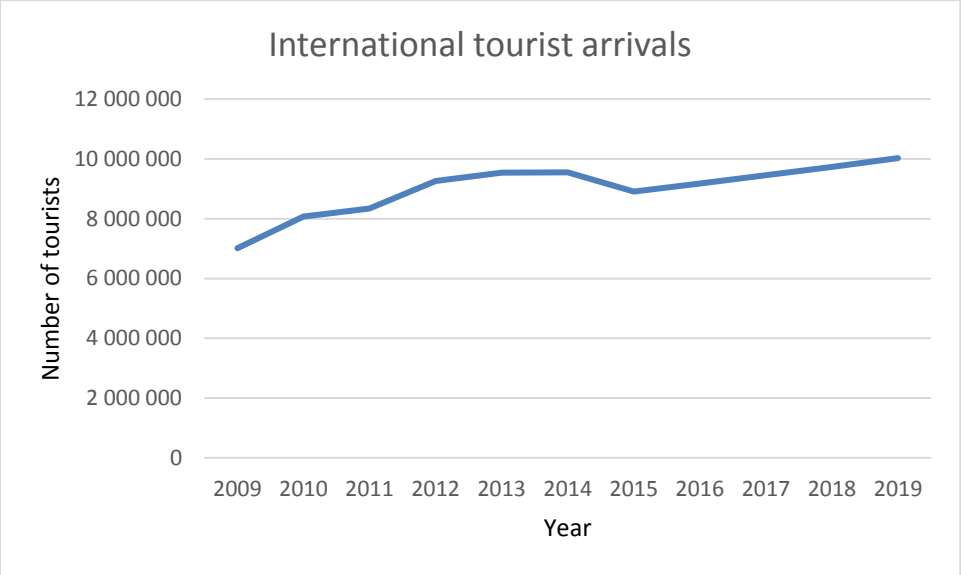


Figure 6.1 International tourist arrivals

(Source: Own compilation from CATHSSETA data)

For international tourist arrivals, based on 2015 data as the base figure, it is forecasted that by 2019, a total of 10 025 910 international tourists will visit South Africa. The cumulative changes are as follows: 3.0% for 2016, 5.9% for 2017, and

8.8% for 2018, resulting in a cumulative total of 11.5% more tourists by 2019. Thus the Naïve 2 forecasts for international tourist arrivals result in an 11.5% cumulative growth of international tourist arrivals over the period of 2016-2019. This is in line with the forecasted growth trends discussed in chapter five, where following a decrease in international arrivals in 2015, a growth in these arrivals is forecasted for the period until 2019.

The figure (Figure 6.1) above indicates the decrease in international tourism arrivals, starting in 2008, which, as discussed in chapter five (section 5.2.3), may be attributed to a change in the methodology followed by Stats SA in obtaining this data. This was followed by an increase in international arrivals for the FIFA World Cup in 2010, and a subsequent decrease in 2015 due to changes in visa regulations about unabridged birth certificates and the outbreak of the Ebola virus. The forecasts, however, shows an increasing trend.

6.2.2 Bottom-up approach

The second approach to forecasting labour demand is the bottom-up approach. This approach, as discussed in chapter four, section 4.5.1, uses forecasts of output and the resultant labour elasticities to forecast labour demand. In this research the output elasticity of labour demand was estimated using the autoregressive distributed lag methodology (refer to section 5.4). This allowed the calculation of both short-run and long-run elasticities as indicated in Table 5.10 in chapter five.

Once the elasticities are determined, the researcher has to forecast change in output in the industry in order to derive the resultant labour demand. Section 6.2.1 above shows that various forecasts for output were generated. Since the models all show very low forecasting errors, this research applies three scenarios on what is expected of output in the catering and accommodation industry. These are called the low, middle and high scenarios. Also, because both short-and long-run elasticities were calculated, labour demand for both the short and long run were determined. The results are discussed below.

6.2.2.1 Short run labour demand

For the low scenario, the Quantec forecasted change in output is used, for the middle scenario, the VAR3 change in output and for the high scenario, the VAR2 change in output is used (see Table 6.3 above). Since the elasticity is, per definition, the change in labour demand due to a change in output, the following formula is applied to forecast the change in labour demand according to the various skills levels:

$$\%\Delta labour = elasticity \times \%\Delta output$$

The cumulative change from 2014 was used and is displayed in tables 6.4 to 6.6 below. Table 6.4 to 6.6 shows the results of the three scenarios when the short run elasticities (see Table 5.10) are applied. The short run elasticities indicate the immediate change in labour demand and are therefore not the full change in demand. This is represented by the long-run results discussed below.

Note that the formal labour employment forecasts are, however, the sum of the forecasts of the highly skilled, skilled and semi-skilled labour. The total forecasted labour demand is therefore the sum of the informal and formal labour demand. Since this is also based on the Quantec data, it represents the demand for labour in all of the catering and accommodation industry.

The low scenario forecasted change in output, formal labour, informal labour, highly skilled labour, skilled labour and semi-skilled labour employment as shown in Table 6.4 below. The sum of the highly skilled, skilled and semi-skilled labour demand is taken as the change in formal labour demand, to ensure consistency of results. The change is again cumulative, starting with 2014 as the base year. Therefore, all the numbers should be considered as the change, compared to 2014.

Based on the labour elasticities presented in Table 5.10 in chapter five, the short run change in labour demand is caused by a change in output in the low scenario. In total, 340 more labourers are demanded in 2015, 279 in 2016, 397 in 2017, 650 in 2018 and 995 labourers by 2019 (compared to 2014). It is clear that a decline in labour demand is forecasted during 2016, but this is forecasted to change quickly during 2017 and 2018.

Similar to the definitions used previously, formal labour (LSF) is the sum of the highly skilled (LSHS), skilled (LSS) and semi-skilled (LSSEMI) forecasts. Of the 340 new job opportunities in catering and accommodation forecasted for 2015, 225 is formal employment and 85 are informal. This trend is evident for all the years. It is also shown in Table 6.4 that most of the formal job opportunities are for skilled labourers, followed by highly-skilled labourers and lastly semi-skilled labourers.

The change in informal labour demand (LSI) is 85 labourers for 2015, 70 labourers from 2014 to 2016, 99 by 2017, 162 by 2018 and 248 more labourers in 2019, compared to 2014.

Table 6.4 Low Scenario: forecasted cumulative change in labour demand in the short run

Year	Change in Output (Rmillion)	Change in LSF (number)	Change in LSI (number)	Change in LSHS (number)	Change in LSS	Change in LSSEMI
2015	1 333	255	85	16	228	11
2016	1 120	210	70	13	188	9
2017	1 591	298	99	19	266	13
2018	2 606	488	162	30	436	21
2019	3 987	746	248	46	668	32

(Source: Compiled by author from forecasting results)

The middle scenario change in output and demand for formal, informal, highly skilled, skilled and semi-skilled labour is shown in Table 6.5 below. Again, the cumulative change is shown, with 2014 as the base year.

Table 6.5 shows the short run change in labour demand caused by a change in output, for the middle scenario, based on the labour elasticities presented in Table 5.10 in chapter five. The forecasted change in output for 2015 is R1 491 million, which will result in a total increase in labour demand of 380. By 2016, 703 additional labourers will be required in this scenario, 1 081 more labourers by 2017, 1 474 by 2018 and 1 868 by 2019, compared to 2014.

Again, formal labour demand is determined as the sum of the highly skilled, skilled and semi-skilled forecasts. Similar to the low scenario, it is evident that formal labour demand exceeds informal labour demand by a big margin. While 1 401 formal job opportunities are forecasted to be created by 2019, only 467 additional informal jobs are forecasted. The most opportunities are also for skilled workers, while the demand for semi-skilled workers is the lowest.

Table 6.5 Middle Scenario: forecasted cumulative change in labour demand in the short run

Year	Change in output (Rmillion)	Change in LSF (number)	Change in LSI (number)	Change in LSHS (number)	Change in LSS (number)	Change in LSSEMI
2015	1 491	285	95	18	255	12
2016	2 827	528	176	33	472	23
2017	3 493	811	270	50	725	35
2018	5 211	1 106	368	69	990	48
2019	6 527	1 401	467	87	1 254	60

(Source: Compiled by author from forecasting results)

The high scenario change in output and demand for formal, informal, highly skilled, skilled and semi-skilled labour is shown in Table 6.6 below. A similar process was followed as explained above, where formal labour demand is the sum of the various skill-level demands, while all the figures displayed are cumulative changes from the base year 2014.

Based on the labour elasticities presented in Table 5.10 in chapter five, the short run change in labour demand is a result of a change in output, for the high scenario, as summarised in the table. In total, according to the high scenario, 441 additional labourers will be required in accommodation and catering in 2015, 1 129 in 2016, 1 780 in 2017, 2 525 in 2018 and 3 196 in 2019, compared to 2014.

Formal labour, which includes highly skilled, skilled and semi-skilled labour, is forecasted to have the highest increase. Similar to the other scenarios, the demand is mainly for skilled labourers. The demand for informal labour is also more substantial, with almost 800 more job opportunities in this industry on an informal basis by 2019.

Table 6.6 High Scenario: forecasted cumulative change in labour demand in the short run

Year	Change in output (Rmillion)	Change in LSF (number)	Change in LSI (number)	Change in LSHS (number)	Change in LSS (number)	Change in LSSEMI
2015	1 734	331	110	21	297	14
2016	4 556	847	282	53	758	36
2017	7 181	1 335	445	83	1 195	57
2018	10 187	1 894	631	118	1 695	81
2019	12 892	2 397	798	149	2 145	103

(Source: Compiled by author from forecasting results)

From all the scenarios presented above, it can be concluded that the short run labour employment is slow to react to changes in output. The highest elasticity, of 0.072, is for skilled labour, while semi-skilled labour demand has the lowest short-run elasticity of 0.01. The elasticity for informal labour is 0.036, with highly skilled labour at 0.035.

If one compares the various scenarios, it is evident that there is great variability with the low scenario predicting less than 1 000 additional job opportunities, and the high scenario predicting almost 3 200 additional job opportunities. Because of this variability in the results, there are uncertainty and therefore, this study validates the results through interviews with industry (qualitative adjustments) that will be shown in chapter seven.

6.2.2.2 Long run labour demand

The previous scenarios took into account the immediate change in labour demand due to a change in output only, and not the total change in equilibrium. This section therefore uses the long-run elasticities to generate forecasts of labour demand using the same scenarios described above.

For the low scenario, the Quantec forecasted change in output is again used; for the middle scenario, the VAR3 change in output (refer to Table 6.2 above) and for the high scenario, the VAR2 change in output is used (see Table 6.2 above). The forecasted percentage change in labour demand is again calculated as the elasticity multiplied by the forecasted percentage change in output. The base year for the forecasts is 2014 and therefore the numbers generated are compared to the 2019 figures.

Tables 6.7 to 6.9 show the results of the three scenarios when the long run elasticities (see Table 5.10) are applied. These long run results are used in the remainder of this study, as the results take the full effect on labour demand into account, due to industry growth. However, these results still do not account for replacement demand and retirement.

It must be noted that, to obtain consistency, the formal labour supply forecasts are the sum of the highly skilled, skilled and semi-skilled forecasts. Therefore, the total forecasted labour demand is the sum of the informal and formal labour demand.

Since this is also based on Quantec data, it represents the demand for labour in all of the catering and accommodation industry.

The low scenario change in output, with the resultant change in demand for formal, informal, highly skilled, skilled and semi-skilled labour are shown in Table 6.7 below. The change is again cumulative and calculated as explained above, with 2014 as the base year.

The change in output in this table corresponds with that of Table 6.3. However, when taking the long run elasticities into account, the change in total labour demand is 1 375 for 2015, 1 131 from 2014 to 2016, 1 607 by 2017, 2 632 by 2018 and 4 026 additional job opportunities in catering and accommodation by 2019.

The demand is mainly for formal employment and for skilled labour. In fact, by 2019, the demand for formal labour will be 3 times that of informal labour. It is also evident that the demand is mainly for workers that have skills, with both skilled and highly skilled labour demand exceeding that of semi-skilled labour demand.

Table 6.7 Low Scenario: forecasted cumulative change in labour demand in the long run

	Change in output (Rmillion)	Change in LSF (number)	Change in LSI (number)	Change in LSHS (number)	Change in LSS (number)	Change in LSSEMI
2015	1 333	1 031	344	77	905	49
2016	1 120	848	283	64	745	40
2017	1 591	1 205	402	90	1 058	57
2018	2 606	1 974	658	148	1 733	93
2019	3 987	3 020	1 006	226	2 651	143

(Source: Compiled by author from forecasting results)

The middle scenario is indicated in Table 6.8, with the change in output similar to the middle scenario in Table 6.5. Table 6.8 also shows the results for the cumulative change in demand for formal, informal, highly skilled, skilled and semi-skilled labour.

Based on the labour elasticities presented in Table 5.10 in Chapter five, the equilibrium change in total labour demand due to a change in output, for the middle scenario, is 1 539 labourers in 2015, 2 848 labourers in 2016, 4 374 labourers in 2017, 5 969 labourers by 2018 and 7 563 additional labourers by 2019. The demand for formal labour increases by 5 672 labourers by 2019 and the demand is mainly for skilled labour, followed by highly skilled labour. The demand for informal labourers

are also substantial over the next five years, reaching 1 890 additional opportunities by 2019.

Table 6.8 Middle Scenario: forecasted cumulative change in labour demand in the long run

	Change in output (Rmillion)	Change in LSF (number)	Change in LSI (number)	Change in LSHS (number)	Change in LSS (number)	Change in LSSEMI
2015	1 491	1 154	385	86	1 013	55
2016	2 827	2 136	712	160	1 875	101
2017	3 493	3 281	1 093	246	2 880	155
2018	5 211	4 477	1 492	335	3 930	212
2019	6 527	5 672	1 890	425	4 980	268

(Source: Compiled by author from forecasting results)

The high scenario is indicated in Table 6.9 and the change in output is also higher than the middle scenario in Table 6.7. The table also shows the results for the cumulative change in demand for formal, informal, highly skilled, skilled and semi-skilled labour.

Based on the labour elasticities presented in Table 5.10 in chapter five, the equilibrium change in total labour demand due to a change in output, for the high scenario, is 1 789 labourers in 2015, 4 572 labourers in 2016, 7 205 labourers in 2017, 10 222 labourers by 2018 and 12 936 additional labourers by 2019. The demand for formal labour increases by 9 703 labourers by 2019 and is mainly for skilled labour, followed by highly skilled labour. The demand for informal labourers is also substantial over the next five years, reaching 3 233 additional opportunities by 2019. The change is cumulative, starting with 2014 as the base year.

Table 6.9 High Scenario: forecasted cumulative change in labour demand in the long run

	Change in output (Rmillion)	Change in LSF (number)	Change in LSI (number)	Change in LSHS (number)	Change in LSS (number)	Change in LSSEMI
2015	1 734	1 342	447	100	1 178	63
2016	4 556	3 429	1 143	257	3 010	162
2017	7 181	5 404	1 801	405	4 744	255
2018	10 187	7 667	2 555	574	6 731	362
2019	12 892	9 703	3 233	727	8 518	458

(Source: Compiled by author from forecasting results)

Although the long run elasticities are still all far below unity, they are much higher than the short-run elasticities, such that the resultant change in labour demand

significantly higher. It still indicates that labour demand is output inelastic and that a 1 percent change in output will lead to a 0.146% change in demand for informal labour; a 0.17% change in demand for highly skilled labour, a 0.289% change in demand for skilled labour and a 0.046% change in demand for semi-skilled labour. Again, the skilled labour showed the highest elasticity, while the semi-skilled labour showed the least elasticity.

If one compares the various scenarios, it is evident that there is great variability with the high scenario forecasting small changes in demand for informal, highly skilled, skilled and semi-skilled labour. The largest change in demand is in the skilled labour category. This study will therefore validate the results through interviews with industry (qualitative adjustments) that will be shown in chapter seven.

6.2.3 Top-down approach

In chapter four, section 4.5.2 the top-down forecasting model was discussed as a method of labour forecasting. In chapter five, section 5.5, the methodology of the top-down approach used in this study was discussed. In chapter five, section 5.5, it is confirmed that the top-down approach for labour forecasting is the most prevalent approach as it utilises the output of the industry to forecast labour demand, and takes other economic factors into account also. Therefore, the input-output methodology is employed in order to forecast labour requirements in this method.

Growth in the accommodation industry was forecasted according to two scenarios (chapter five, section 5.5) but summarised here briefly for clarity of the following section. Scenario one involves the aggregate forecasting of real domestic and international tourism spending. Due to the fact that ten years of data was the only available data set to be used, and in order to accurately forecast tourism spending over several categories, the Naïve 2 model was implemented to calculate the average growth rate over this ten year period. The growth forecasted in chapter five (section 5.5) was thus based on the sum of growth in both the domestic as well as international tourism spending.

Scenario two involves forecasting the international spending per person, using the Naïve 2 model for the same reasons. As discussed in scenario one, the growth rate of a 10 year period was used. The spending per person was multiplied by the

forecasted number of international tourists (discussed in section 6.2.1 above). For domestic spending per person, this growth was modelled as explained in scenario one, due to the fact that insufficient data is available for domestic spending per person. The growth forecasted in chapter five (section 5.5) was again calculated as the sum of the international and domestic tourist spending growth.

As discussed in chapter five, section 5.5, the following is the summary of the international tourism spending, for both scenarios one and two, as also described above.

Table 6.10 Cumulative change in international and domestic tourist spending (in ZAR million)

Year	Scenario 1		Scenario 2	
	Accommodation	Food and Beverage	Accommodation	Food and Beverage
2015	5524	2820	3764	1622
2016	11849	6107	9881	4736
2017	19091	9940	16892	8374
2018	27384	14411	24930	12625
2019	36881	19629	34146	17593

(Source: Own calculations from estimated output)

To simulate the models, the cumulative change in economic activity in the accommodation and catering industry was calculated (see Table 5.11 and Table 6.10 above). Using the 2012 Social Accounting Matrix (SAM) of South Africa, the change in output for each sector was determined using multiplier analysis. The change in output was then linked to a change in labour demand using labour/output ratios, based on the data from Stats SA data.

Table 6.11 below indicates the labour impact due to an increase in demand for the accommodation and catering industry, based on the forecasts as described in scenario 1 above and the SAM calculations. Again, the forecast is cumulative over five years (2015-2019). Table 6.11 indicates that the labour impact on the accommodation and catering sector was 67 009 in 2015, forecasted as a steady increase to 144 184 in 2016, 233 088 in 2017, 335 526 in 2018 and 453 584 in 2019. This results in a high labour impact year on year due to increased spending by domestic and international arrivals.

Table 6.11 Labour impact according to the top-down approach: Scenario 1

Labour impact					
Sector	**2015**	**2016**	**2017**	**2018**	**2019**
Agriculture	1 177	2 532	4 095	5 896	7 973
Mining	130	280	453	653	883
Manufacturing	2 662	5 729	9 264	13 338	18 035
Electricity & water	157	337	545	785	1 061
Construction	1 099	2 365	3 823	5 502	7 437
Trade	429	922	1 491	2 146	2 900
Accommodation & Catering	67 009	144 184	233 088	335 526	453 584
Transport & communication	1 122	2 415	3 905	5622	7 600
Financial & business services	4 379	9 420	15 223	21 904	29 600
Government	11	24	39	56	75
Personal & social services	6 785	14 619	23 666	34 117	46 194
Total	84 960.76	182 829.2	295 591.6	425 544.2	575 341.9

(Source: Compiled by author from forecasting results)

Table 6.12 below indicates the labour impact using the top-down forecasting approach according to scenario 2 described above. Similar to scenario 1, the SAM was used to determine the total change in output due to an increase in spending by tourists on accommodation and food and beverages. The change in output resulted in a change in labour demand, which is based on the labour ratios as described above. The forecast is cumulative over five years (2015-2019).

Table 6.12 indicates the labour impact of the accommodation and catering industry as 43 353 in 2015, forecasted as a steady increase to 117 493 in 2016, 203 003 in 2017, 301 650 in 2018 and 415 485 in 2019. Similar to scenario 1, this forecasting method results in much higher forecasted labour impact year to year, compared to the other methods used above. This method therefore seems to produce inflated results, so that the data is neither split further according to formal and informal labour, nor is it based on various skills levels.

Table 6.12 Labour impact according to the top-down approach: Scenario 2

Labour impact					
Sector	**2015**	**2016**	**2017**	**2018**	**2019**
Agriculture	758	2 060	3 562	5 296	7 297
Mining	84	228	394	586	808
Manufacturing	1 717	4 662	8 060	11 982	16 509
Electricity & water	101	275	475	706	972
Construction	713	1 929	3 332	4 949	6 815
Trade	278	753	1 300	1 930	2 658
Accommodation & Catering	43 353	117 493	203 003	301 650	415 485
Transport & communication	725	1 967	3 400	5 052	6 960
Financial & business services	2 850	7 696	13 281	19 720	27 145
Government	7	20	34	50	69
Personal & social services	4 291	11 796	20 474	30 511	42 125
Total	54 877	148 877	257 313	382 433	526 843

(Source: Compiled by author from forecasting results)

This section concludes the forecasts for labour demand in the hospitality industry over the time period 2015 to 2019, where the three models best suited to labour forecasting in the South African context, were utilised to forecast labour demand.

These three methods may be summarised as follows:

a) Time series method

The labour data from Quantec was used to forecast labour demand over five years, using the ARIMA (4,1,0) model.

b) Bottom-up approach

The bottom-up approach uses forecasts of output and the resultant labour elasticities to forecast labour demand. Three scenarios were presented for the bottom-up approach, namely the low, middle and high scenarios. Also, because both short-and long-run elasticities were calculated, labour demand for both the short and long run were determined.

c) Top-down approach

For the top-down approach, international tourism arrivals were forecasted, as well as both domestic and international tourism spending. These forecasts were then simulated using the 2012 South African SAM.

As can be deduced from the section above, the results of the time series method, the bottom-up approach and the top-down approach, indicate that it is of vital importance to consider that the two scenarios of the top-down approach reveal much higher forecasts than the other two methods. This is due to the fact that the top-down approach takes into account that the money spent by international and domestic tourists in South Africa, has been circulating throughout the economy for a period of time, thus resulting in larger effects on the South African economy.

6.3 EDUCATIONAL AND EMPLOYMENT PROFILE IN THE ACCOMMODATION VERSUS CATERING INDUSTRIES

The results of labour demand above are all for the composite industry that consists of both catering and accommodation. To split the labour into the two sub-sectors, data was obtained from CATHSSETA for two consecutive years, i.e. 2015 and 2016. The sub-sectors belonging to this SETA are namely: arts, culture and heritage; conservation; gaming and lotteries; hospitality; sport, recreation and fitness; and tourism and travel services (CATHSSETA, 2013: 9). The data and the manner in which it was disseminated are discussed in the sections that follow.

6.3.1 Data

Chapter two described the accommodation industry in South Africa according to the Stats SA (2013c: 10) classification as income tax registered and value added tax registered private and public enterprises that are mainly involved in supplying accommodation. The Standard Industrial Classification of all Economic Activities (SIC), covers:

a) Hotels, motels and inns (SIC 64101).
b) Caravan parks and camping sites (SIC 64102).
c) Guest houses and guest farms (SIC 64103).
d) Other accommodation (SIC 64109).

For this part of the chapter, the Microsoft Excel data was obtained from CATHSSETA. Data represented the years 2015 and 2016. CATHSSETA is the SETA that oversees the South African tourism industry, and is the Culture, Arts, Tourism, Hospitality and Sport Sector Education and Training Authority (CATHSSETA) (refer to chapter two). The available CATHSSETA data is disaggregated not only for SIC 6410 (accommodation industry), but also for SIC 6420 (food and beverage industry), both representing part of the South African hospitality industry or the catering and accommodation section (SIC64). The data represents the entire South African hospitality industry, indicated by SIC codes in Table 6.13 below.

Table 6.13 Group SIC Code Standard Category

Hospitality (16 SIC Codes)
64101 Hotels, motels, boatels and inns registered with the SA Tourism Board
64102 Caravan Parks and Camping Sites
64103 Guest Houses and Guest Farms
64104 Hotels, motels, boatels and inns not registered with the SA Tourism Board
64105 Bed and Breakfast
64106 Management and operation of game lodges
64201 Restaurants or tearooms with liquor license
64202 Restaurants or tearooms without liquor license
64203 Take-Away Counters
64204 Caterers
64205 Take-Away Restaurants
64206 Fast Food Establishments
64207 Other Catering Services n.e.c. including Pubs, Taverns, Night Clubs
64209 Other Catering Services N.E.C
84111 Timesharing
88994 Bioscope Cafes

(Source: CATHSSETA)

For each year (2015 and 2016), CATHSSETA provided the organisation details, employment summary, educational profile and vacancies that are difficult to fill. In Table 6.14 below is a breakdown of the information included in each Microsoft Excel worksheet.

Table 6.14 Excel data available

Worksheet name	Details included
Organisation details	Entity number (no names were given) SIC code Number of employees SA and non-SA permanent employment, fixed employment, seasonal employment Municipality and province
Employment summary	SIC code Occupation and job title Geography and province BEE status Age (under 35, over 55) Total
Educational profile	SIC code Description (NQF level) Number of employees
Vacancies that are difficult to fill	SIC code Occupation and job title Number of current vacancies Degree of scarcity Vacancy period Vacancy reasons Qualifications required Skills required Work experience required Province Further comments regarding recruitment Vacancies per BEE group

(Source: CATHSSETA)

6.3.2 Forecast for the accommodation industry

Taking the Microsoft Excel data above into consideration, the methodology used to calculate the resultant labour ratios for the accommodation sub-sector from the catering and accommodation industry, as well as the qualification profile of each set of data, is discussed below.

6.3.2.1 Educational Profile

In chapter two, section 2.2.2, a discussion was presented regarding higher education institutions in South Africa, with emphasis on qualifications. Only once a qualification has been approved by SAQA, may it be registered on the NQF (see Table 6.14 for an overview of the NQF levels as well as the types of qualifications available in South Africa). As indicated above, these are used in the CATHSSETA data to classify employment education levels.

As discussed in chapter two, section 2.5.2.1, CATHSSETA provides the following skills levels for organisations to classify skills:

a) High level skills – NQF levels 7-10 (offered by public and private training institutions).
b) Middle level skills – NQF levels 3-6 (offered by public and private training providers).
c) Low level skills – NQF levels 1-2 (offered by public and private training providers).

According to Quantec, skills levels are defined as follows:

a) Highly skilled: professional, semi-professional and technical occupations; managerial, executive and administrative occupations.
b) Skilled/medium skilled: clerical occupations; sales occupations; transport, delivery and communications occupations; service occupations; farmer, farm manager; artisan, apprentice and related occupations; production foreman, and production supervisor.
c) Semi- and unskilled: all that are neither highly skilled nor (medium) skilled.

Skills levels according to Stats SA are defined as follows:

a) 'Skilled' includes Manager, professional and technician occupations;
b) 'Semi-skilled' includes Clerk, sales and services, skilled agriculture, craft and related trade, and plant and machine operator occupations;
c) 'Low-skilled' includes elementary and domestic worker occupations.

Therefore, Stats SA definitions relate to Quantec definitions are follows:

a) Highly skilled according to Quantec is classified as skilled by Stats SA,
b) Skilled or medium-skilled according to Quantec is classified as semi-skilled by Stats SA,
c) While semi-skilled and unskilled according to Quantec is classified as low skilled by Stats SA.

Table 6.15 National Qualifications Framework

	OLD NQF LEVEL	NEW NQF LEVEL	NQF BAND	Type of Qualification
HET	8	10 9	Higher Education and Training	Certificates, Diplomas, Degrees, Higher diplomas, Master Degrees, Doctorates, etc.
	7	8		
	6	7		
	5	6 5		
FET	4	4	Further Education and Training	Grade 10 – 12 Short Courses, Colleges and Workplace Certificates
	3	3		
	2	2		
GET	1	1	General Education and Training	Grade 0 – 9 Pre-school ABET 1-4

(Source: Umsobomvu, 2003: 20)

Table 6.16 presents a more detailed overview of the delivery sites of NQF levels discussed in chapter two. This is relevant for this chapter, since the skills levels, jobs and qualifications need to be linked in order to provide insight on qualification demand in the accommodation industry.

The below information was used to compile the table and figures below (Table 6.17 and Figures 6.1 to 6.6), which provide a detailed description of the employees in the CATHSSETA database.

Table 6.16 Qualification Types and Delivery Sites (CATHSSETA, 2013: 100)

			Qualification types		Delivery sites	
BAND	**OLD NQF LEVEL**	**NEW NQF LEVEL**	**GENERAL ACADEMIC**	**OCCUPATIONAL PROFESSIONAL**	**GENERAL ACADEMIC**	**OCCUPATIONAL PROFESSIONAL**
HIGHER	8	10	Doctorates e.g. PhD	Doctorates e.g. DTech	Universities	Institutes Academia, Private Universities, University of Technology
		9	Masters e.g. MA	Masters e.g. MTech		
	7	8	Honours	(4yrs) 480+ Cr Bachelors, BTech	Universities	PHEI's, Academies, Prof. Institutes & Schools
	6	7	Bachelors	Bachelors, Diplomas, Certificates	Universities	-
	5	6	Access Certificates, Bridging Certificates	Occupational Certificates, Diplomas	Schools, Secondary Technical Colleges, FE Colleges, (Private) Colleges	Technical Schools, Professional Institutions & schools, Technical schools/colleges
		5		Occupational Certificates, Diplomas		
FET	4	4	SC, NC VOC, NSC Adult	Occupational FETCs		Workplace Private College/schools, Technikons & Technical Schools/Colleges
	3	3	NCI VOC, L3	Occupational Certificate Sector Based GETC		
	2	2	GETC, ABET, GEC, ABET CREDITS			
GET	1	1			ABET Centres, Public and Private Schools	NGO's, Special needs Schools, providers

(Source: CATHSSETA, 2013: 100)

As can be seen from Table 6.17 below, in 2015, the majority of employees in SIC 6410 and 6420 had obtained NQF qualifications in levels 3,4, 5 and 6 (58.18% and 52.68% respectively). This corresponds with the Quantec data as skilled or medium skilled, as middle level skills according to CATHSSETA and semi-skilled according to Stats SA. Over 25% of employees in SIC 6410 had obtained NQF qualifications on levels 1 and 2, and over 34% in SIC 6420. This shows that the employee educational profiles for both SIC 6410 and SIC 6420 are very similar, and that both SICs have approximately the same educational profile of employees.

In 2016, the trend of the educational profiles remained more or less the same as in 2015, with the majority of employees in both SIC 6410 and SIC 6420 having obtained NQF levels 3,4,5 or 6 (58.18% for SIC 6410 and 52.68% for SIC 6420

respectively). This also corresponds with the Quantec data as skilled or medium skilled, as middle level skills according to CATHSSETA and as semi-skilled according to Stats SA. The next levels of employees were at NQF 1 and 2, similarly to 2015, followed by ABET/AET and then NQF levels 7, 8, 9 and 10. This indicates that most employees in the SIC 64 are qualified in mid-level skills, rather than in higher or lower level skills.

From Table 6.17 it can be seen that between 2015 and 2016, the total number of employees for SIC 6410 increased by 1 243 employees. Yet, the total number of employees having obtained ABET/AET qualifications decreased by 502. The total number of employees having NQF qualifications on levels 1 and 2 decreased by 3 425, while the total number of employees having NQF qualifications on levels 3, 4, 5 or 6 increased by 4 372 employees. This indicated a shift in the employment of employees with such skills, from NQF levels 1 and 2, to levels 3 to 6. In contrast, between 2015 and 2016, the number of employees with NQF levels 7, 8, 9 or 10 decreased by 206 employees.

Table 6.17 Current educational Profile of SIC Codes 6410 and 6420

Summary EDUCATIONAL PROFILE 2015					
	SIC 6410	**%**	**SIC 6420**	**%**	**TOTAL**
Total ABET/AET	3 746	8.98	8 481	8.91	12 227
Total NQF 1,2	10 831	25.98	33 081	34.76	43 912
Total NQF 3,4,5,6	24 258	58.18	50 135	52.68	74 393
Total NQF 7,8,9,10	2 858	6.85	3 473	3.65	6 331
Total Employees in each SIC	41 693	100	95 170	100	136 863
Summary EDUCATIONAL PROFILE 2016					
	SIC 6410	**%**	**SIC 6420**	**%**	**TOTAL**
Total ABET/AET	4 248	9.89	7 956	8.45	12 204
Total NQF 1,2	7 406	17.25	30 521	32.40	37 927
Total NQF 3,4,5,6	28 630	66.68	52 190	55.41	80 820
Total NQF 7,8,9,10	2 652	6.18	3 529	3.75	6181
Total Employees in each SIC	42 936	100	94 196	100	13 7132

(Source: Own calculations from CATHSSETA data)

Figure 6.2 below indicates the 2015 educational profiles of employees, as part of the total employees in SIC 6410, while Figure 6.2 below indicates the educational profile of employees as part of the total employees for SIC 6420.

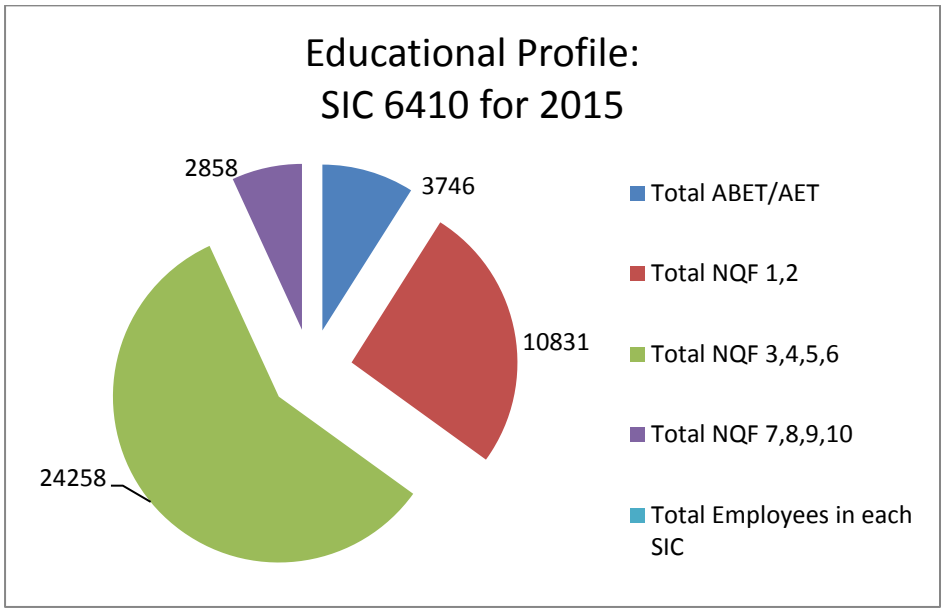


Figure 6.2 Educational Profile 2015 for SIC 6410

(Source: Own compilation from CATHSSETA data)

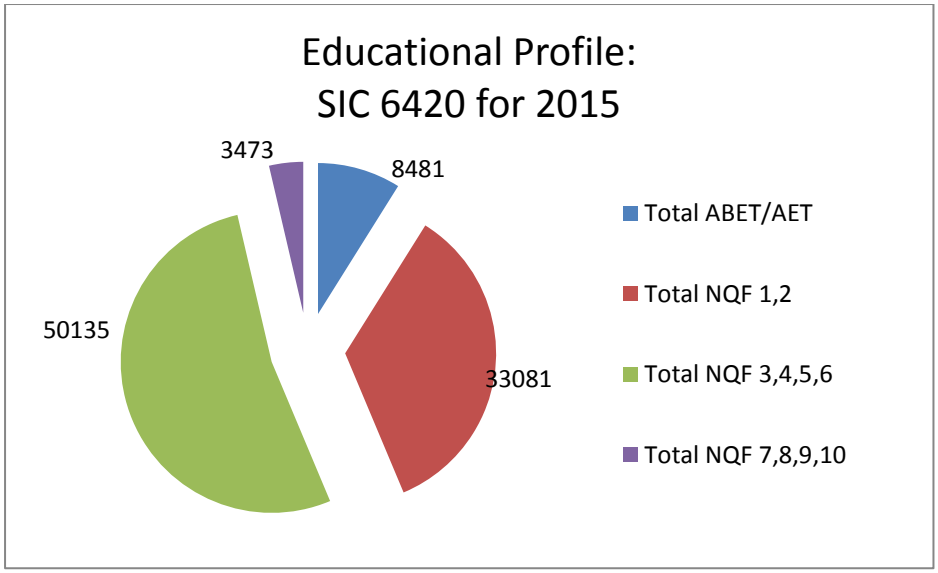


Figure 6.3 Educational Profile 2015 for SIC 6420

(Source: Own compilation from CATHSSETA data)

Figure 6.4 below indicates the 2016 (most recent) educational profiles of employees, as part of the total employees in for SIC 6410, while Figure 6.4 below indicates the educational profile of employees as part of the total employees in for SIC 6420.

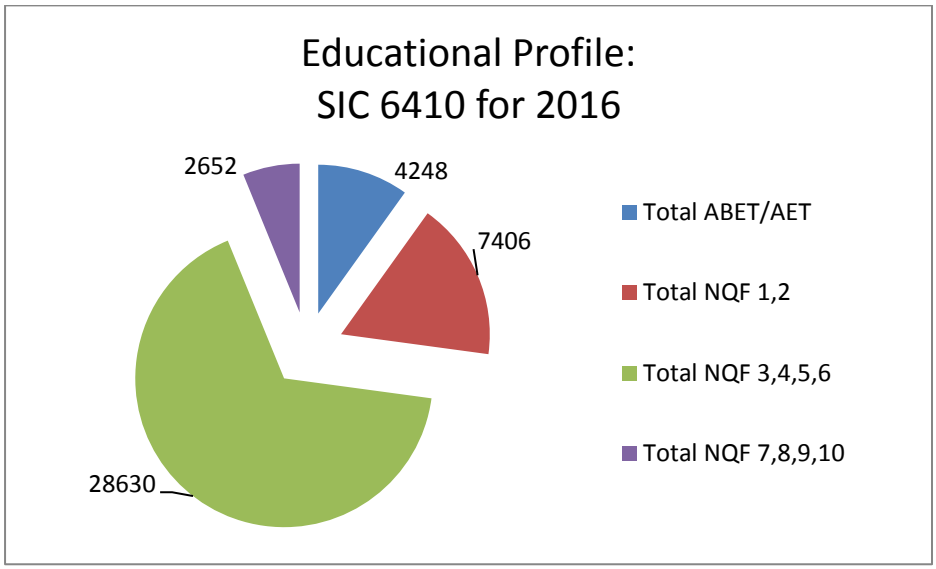


Figure 6.4 Educational Profile 2016 for SIC 6410

(Source: Own compilation from CATHSSETA data)

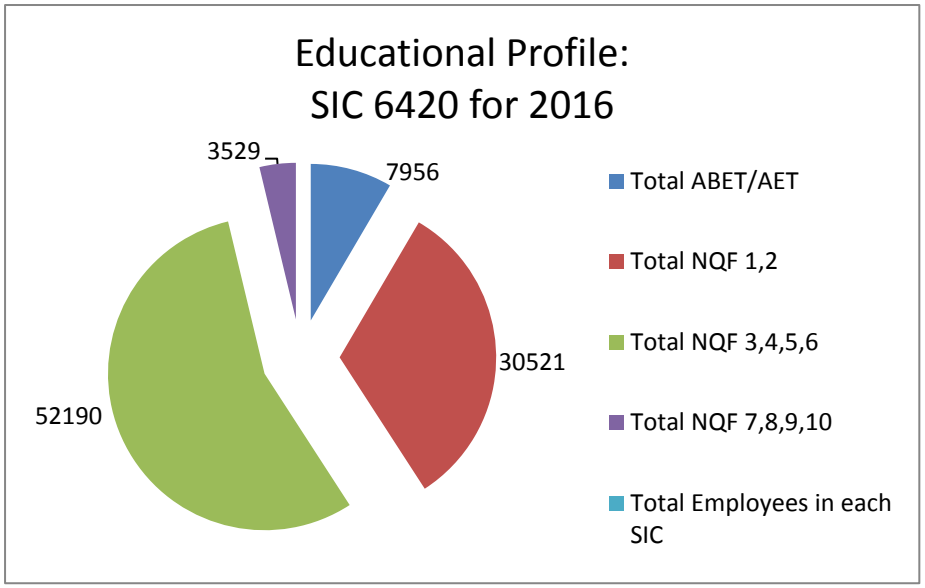


Figure 6.5 Educational Profile 2016 for SIC 6420

(Source: Own compilation from CATHSSETA data)

From the above, it is evident that the educational profiles of employees in both SIC 6410 and SIC 6420 are similar, with the majority of employees in both SICs, in 2015 and 2016, ranging in the mid-level skills category, having obtained qualifications on

NQF levels 3, 4, 5 and 6. This corresponds with the Quantec data as skilled or medium skilled, as middle level according to CATHSSETA and semi-skilled according to Stats SA.

6.3.2.2 Current employment profile

The next challenge is linking the educational profile with specific job descriptions. Again, the CATHSSETA data are used here. presented a detailed discussion of The three CATHSSETA skill levels (CATHSSETA, 2014b: 50) were presented in detail in chapter two, section 2.2.2 and summarised above to distinguish between high, middle and low level skills.

To provide guidelines for linking educational profiles and job descriptions, the Department of Higher Education & Training (2012) offers guidelines for the eight major OFO groups and their skill levels (CATHSSETA, 2014b: 47). The OFO groups use skills levels to classify South African occupations. From chapter two, section 2.5.2.1 the OFO groups are:

- Managers (skilled).
- Professionals (skilled).
- Technicians and associate professionals (skilled).
- Clerical support workers (semi-skilled).
- Service and sales workers (semi-skilled).
- Skilled agricultural, forestry, fishery, craft and related trades workers (semi-skilled).
- Plant and machine operators and assemblers (semi-skilled).
- Elementary occupations (low-skilled).

The various OFO groups are linked with the NQF levels and skills levels, in Table 6.18 below. These OFO groups were subsequently used as the basis for the results of SIC 6410 and SIC 6420 presented in Table 6.19 that follows.

Table 6.18 OFO Groups

<table>
<tr><th>NSDS</th><th>NQF Level</th><th>Skill Level</th><th colspan="4">OFO Major Groups</th></tr>
<tr><td rowspan="2">HIGH</td><td>10 - 7</td><td>4</td><td colspan="2">2 Professionals</td><td colspan="2" rowspan="2">1 Managers</td></tr>
<tr><td rowspan="3">6</td><td rowspan="3">3</td><td colspan="2" rowspan="3">3 Technicians and Associate Professionals</td></tr>
<tr><td rowspan="4">INTERMEDIATE</td></tr>
<tr><td>5</td><td rowspan="4">2</td><td rowspan="3">4 Clerical Support Workers</td><td rowspan="3">5 Service and Sales Workers</td><td rowspan="3">6 Skilled Agricultural, Forestry, Fishery, Craft & Related Trades Workers</td><td rowspan="3">7 Plant and Machine Operators and Assemblers</td></tr>
<tr><td>4</td></tr>
<tr><td rowspan="3">ENTRY</td><td>3</td></tr>
<tr><td>2</td><td rowspan="2">1</td><td colspan="4" rowspan="2">8 Elementary Occupations</td></tr>
<tr><td>1</td></tr>
</table>

(Source: OFO, 2012: 10)

In 2015 and 2016, as can be seen from Table 6.19, the majority of employees in SIC 6410 were employed as service or sales workers (see OFO group 5 in Table 6.18 above). This suggests that the majority of employees have a skill level of 2 (NQF 3-5), and are categorised as semi-skilled workers (although as skilled according to QUANTEC data), according to the OFO groups, as seen in Table 6.15. This is understandable, as the accommodation industry is known as a service industry, with the majority of employees falling under this OFO group.

For SIC 6420, in 2015, the majority of employees (32 787) were employed in elementary occupations, which is OFO group 8 in Table 6.18 above. These occupations are classified as occupations requiring low skills levels. This was followed closely by 32 750 service and sales workers. However, in 2016, the majority of employees, 42 243 to be specific, were employed in the service or sales workers category (OFO group 5 in Table 6.18 above), indicating that they are semi-skilled workers (or skilled according to the Quantec definition). This was followed by 31 470 employees in elementary occupations.

Table 6.19 summarises the employment statistics according to occupational level, for both SIC 6410 and SIC 6420, for the years 2015 and 2016.

Table 6.19 Employment profile according to Occupation

Employment summary according to occupation	2015			2016		
6410	Total Male	Total Female	**TOTAL**	Total Male	Total Female	**TOTAL**
CLERICAL SUPPORT WORKERS	1 545	3 222	**4 767**	1 844	3 730	**5 574**
ELEMENTARY OCCUPATIONS	5 279	5 277	**10 556**	5 424	5 239	**10 663**
MANAGERS	2 372	2 264	**4 636**	2 721	2 729	**5 450**
PLANT AND MACHINE OPERATORS AND ASSEMBLERS	416	97	**513**	383	42	**425**
PROFESSIONALS	388	389	**777**	499	514	**1 013**
SERVICE AND SALES WORKERS	5 611	7 873	**13 484**	5 932	8 380	**14 312**
SKILLED AGRICULTURAL, FORESTRY, FISHERY, CRAFT AND RELATED TRADES WORKERS	736	71	**807**	683	60	**743**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	2 375	2 319	**4 694**	2 502	2 631	**5 133**
TOTAL EMPLOYEES	**18 722**	**21 512**	**40 234**	**19 988**	**23 325**	**43 313**
6420	Total Male	Total Female	**TOTAL**	Total Male	Total Female	**TOTAL**
CLERICAL SUPPORT WORKERS	520	1 782	**2 302**	2 021	4 130	**6 151**
ELEMENTARY OCCUPATIONS	10 738	22 049	**32 787**	10 596	20 874	**31 470**
MANAGERS	3 557	4 650	**8 207**	4 273	5 546	**9 819**
PLANT AND MACHINE OPERATORS AND ASSEMBLERS	1 240	102	**1 342**	1 123	102	**1 225**
PROFESSIONALS	557	608	**1 165**	565	619	**1 184**
SERVICE AND SALES WORKERS	10 552	22 198	**32 750**	13 907	28 336	**42 243**
SKILLED AGRICULTURAL, FORESTRY, FISHERY, CRAFT AND RELATED TRADES WORKERS	277	254	**531**	151	49	**3 450**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	6 388	7 137	**13 525**	1 613	1 837	**3 450**
TOTAL EMPLOYEES	**33 829**	**58 780**	**92 609**	**34 249**	**61 493**	**95 742**

(Source: Own calculations from CATHSSETA data)

Figure 6.6 to Figure 6.9 below indicates the data from Table 6.19 in graph format, indicating employment for SIC 6410 and SIC 6420, for both 2015 and 2016.

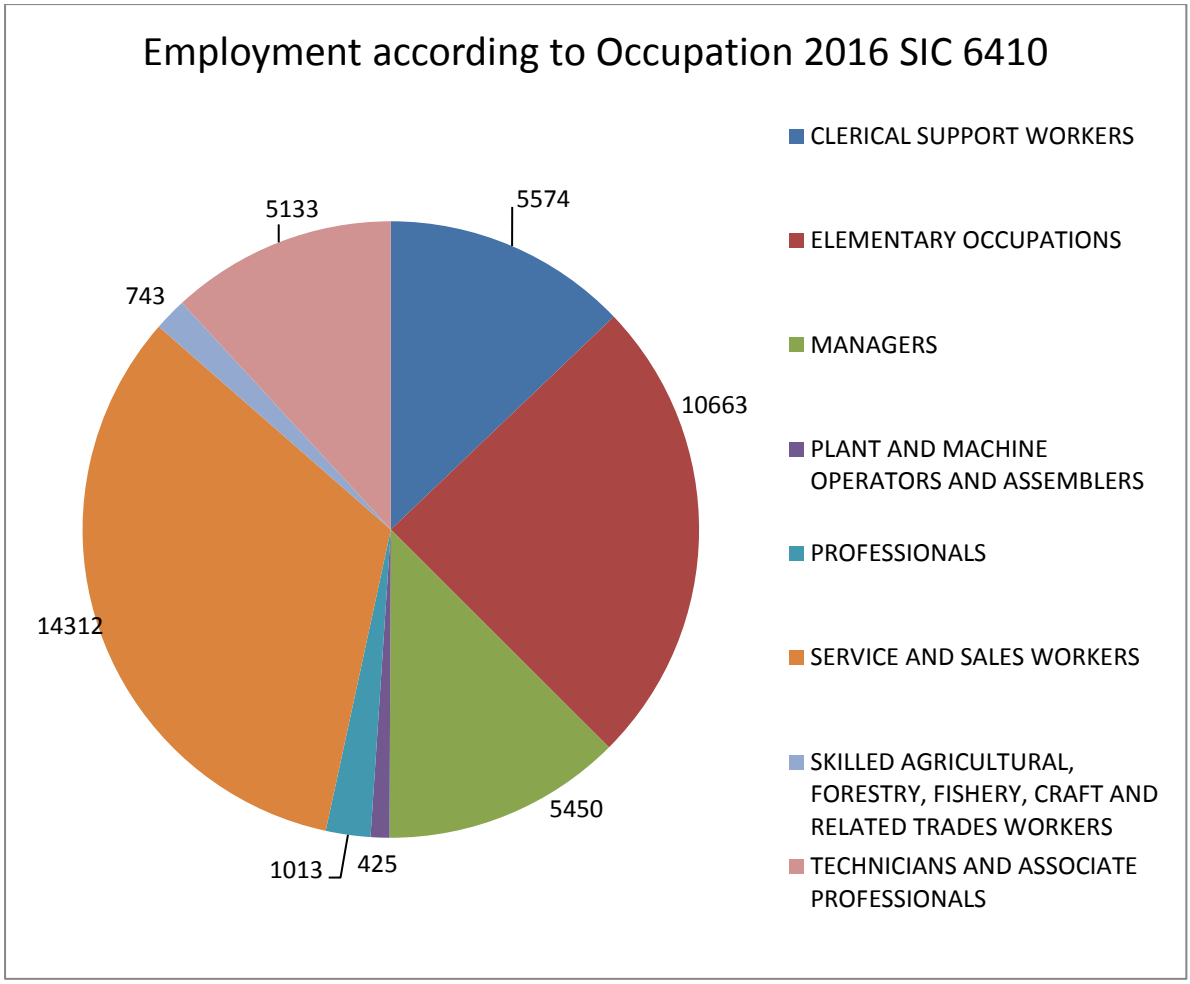


Figure 6.6 Employment according to occupation for SIC 6410, for 2016

(Source: Own compilation from CATHSSETA data)

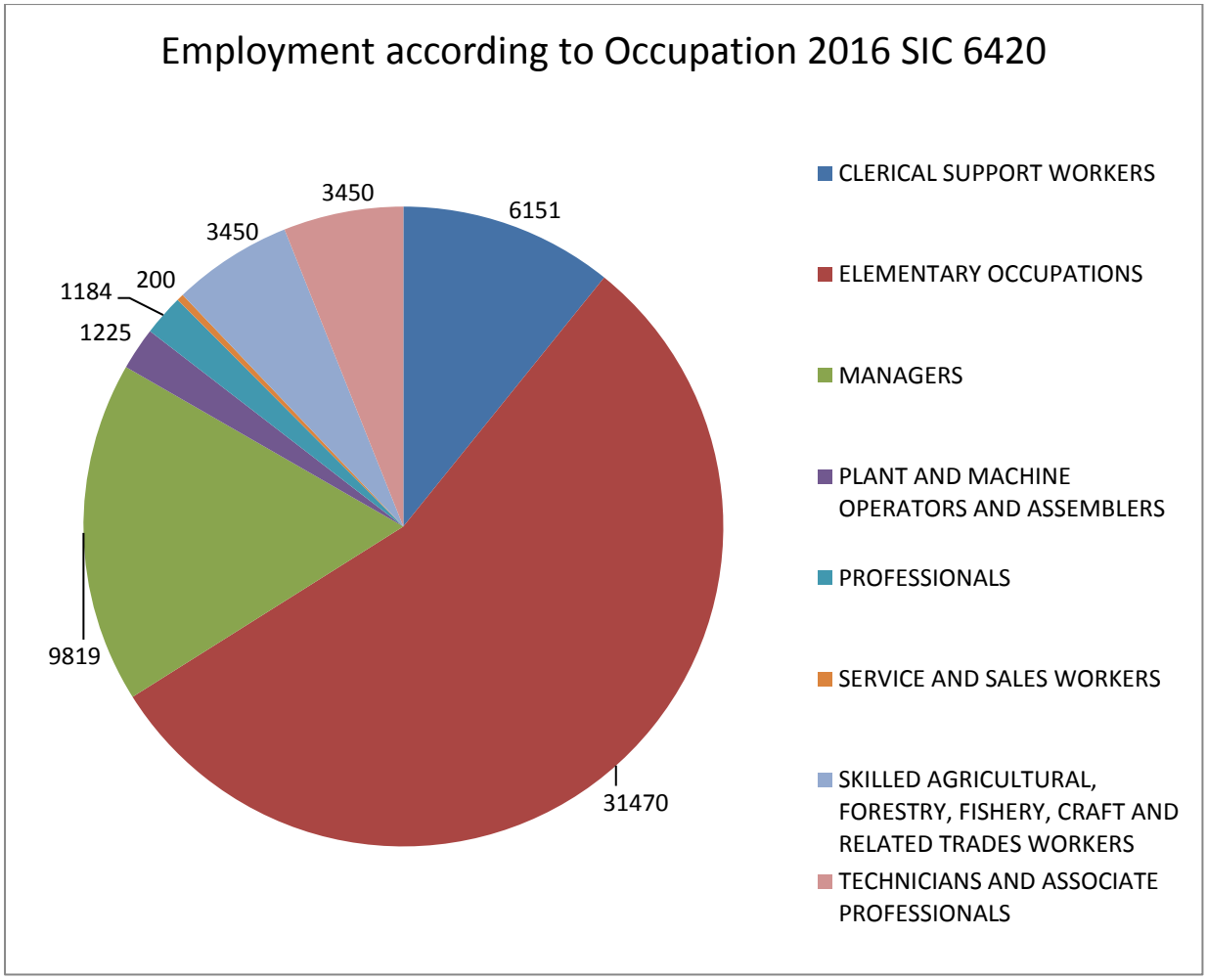


Figure 6.7 Employment according to occupation for SIC 6420, for 2016

(Source: Own compilation from CATHSSETA data)

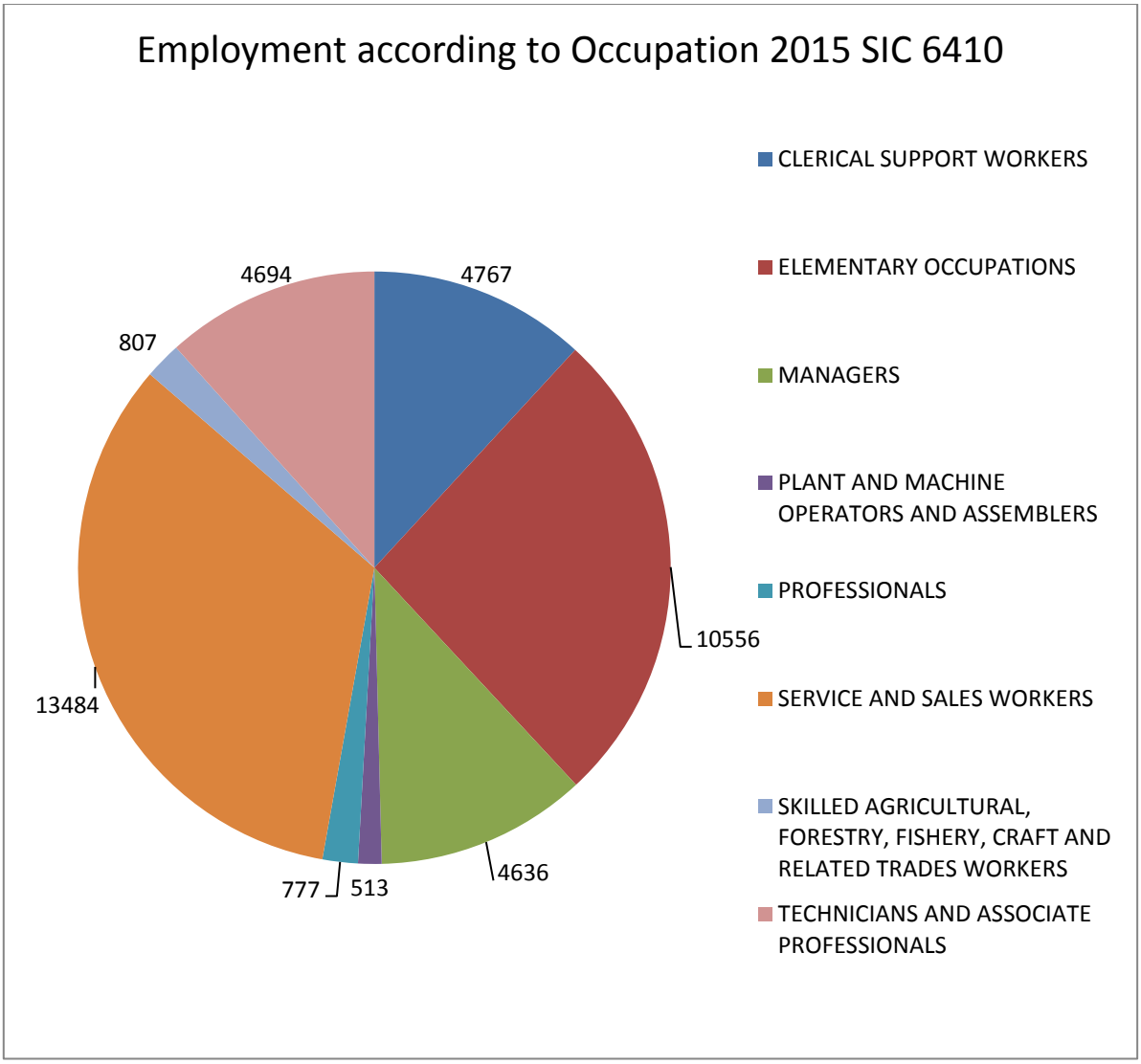


Figure 6.8 Employment according to occupation for SIC 6410, for 2015

(Source: Own compilation from CATHSSETA data)

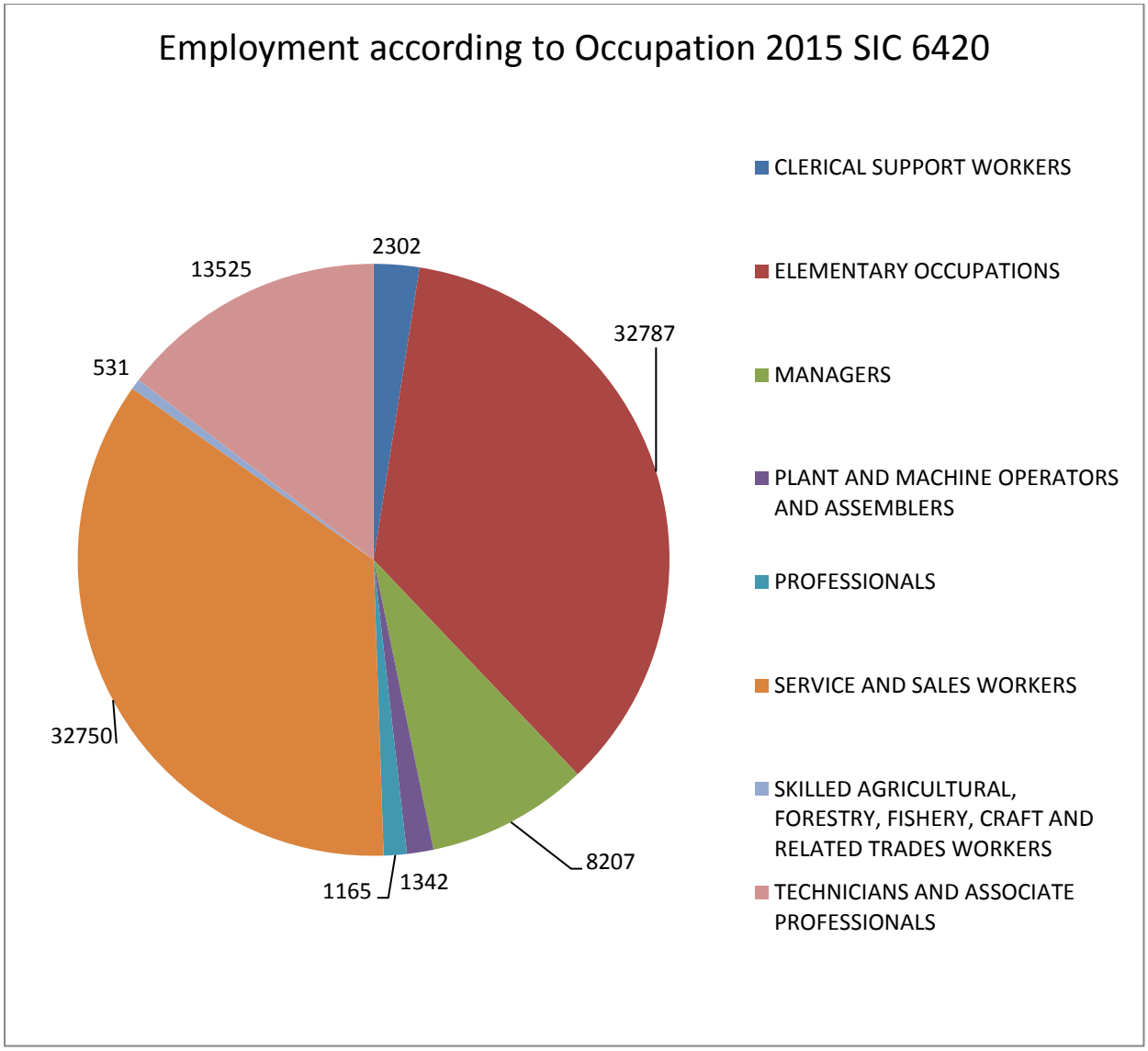


Figure 6.9 Employment according to occupation for SIC 6420, for 2015

(Source: Own compilation from CATHSSETA data)

In 2015 and 2016, SIC 6410 the majority of employees were employed as service or sales workers (semi-skilled workers). For SIC 6420, in 2015, the majority of employees were employed in elementary occupations. These occupations are classified as occupations requiring low skills levels. In 2016, however, the majority of employees were employed in the service or sales workers category (semi-skilled workers).

Appendix C contains Tables C1 and C2, which indicate the employment occupations alphabetically, according to job titles, including their OFO groups, skill level, NQF level and the total number of employees per job title for SIC 6410 in both 2015 and

2016. The top four OFO job titles for SIC 6410 for 2015 and 2016 are presented in Table 6.20 below. For both years the top four occupations and job titles with the most employees in SIC 6410 are the same. As can be seen from Table 6.20, waiters (NQF levels 3, 4 or 5), chefs (NQF level 6), commercial cleaners (NQF level 1 or 2) and hotel/motel receptionists (NQF levels 3, 4 or 5) employed the most employees in this SIC in the past two years.

Interestingly, the highest vacancies for SIC 6410 are for technicians and the associate professionals OFO group, both of which fall under skilled employees at NQF level 6 (Skill 3 and OFO group 3). This will be discussed further in section 6.3.2.3 below. The second highest numbers of vacancies for SIC 6410, in 2015, were for service and sales workers who are semi-skilled workers (Quantec data – skilled) (Skill 2, OFO group 5, with NQF levels 3, 4 or 5). In 2016, the second highest numbers of vacancies for SIC 6410 were for managers who are skilled workers (Skill 3-4, OFO group 1, with NQF levels 6 to 10).

Table 6.20 Employment for SIC 6410 according to job titles for 2016 and 2015

Employment occupation according to job titles (and OFO codes)	OFO GROUP	OFO NAME	SKILL LEVEL	NQF	TOTAL 2016 EMPLOYEES	TOTAL 2015 EMPLOYEES
Waiter - 513101	5	Service and Sales workers	2	3,4 or 5	5 351	5 182
Chef - 343401	3	Technicians and associate professionals	3	6	3 672	3 266
Commercial Cleaner - 811201	8	Elementary occupations	1	1 or 2	2 936	2 682
Hotel or Motel Receptionist - 422401	4	Clerical support workers	20	3,4 or 5	2 024	1 889

(Source: Own calculations from CATHSSETA data)

6.3.2.3 Vacancies

Besides the employment data, CATHSSETA also includes information about vacancies. In the forecasting of labour demand, only the increase in labour demand due to an increase in output, and not the vacancies, is considered. Therefore, the replacement demand has not been forecasted. To include the replacement demand, this study relies on the data obtained from CATHSSETA.

As can be seen from Table 6.21 below, for SIC 6410, in 2015 and 2016, the highest number of vacancies were for the technicians and associate professionals OFO group, which is skilled employees at NQF level 6 (Skill 3 and OFO group 3). SIC 6410 showed a decline in vacancies from a total of 482 in 2015 to 292 in 2016.

Table 6.21 Vacancies according to occupation (SIC 6410 for 2015 and 2016)

Vacancies according to occupation	2015		2016	
	Number of Vacancies	%	Number of Vacancies	%
CLERICAL SUPPORT WORKERS	63	13.07	40	13.70
ELEMENTARY OCCUPATIONS	18	3.73	1	0.34
MANAGERS	87	18.05	69	23.63
PLANT AND MACHINE OPERATORS AND ASSEMBLERS	4	0.83	0	0.00
PROFESSIONALS	21	4.36	19	6.51
SERVICE AND SALES WORKERS	105	21.78	55	18.84
SKILLED AGRICULTURAL, FORESTRY, FISHERY, CRAFT AND RELATED TRADES WORKERS	18	3.73	8	2.74
TECHNICIANS AND ASSOCIATE PROFESSIONALS	166	34.44	100	34.25
TOTAL VACANCIES	**482**		**292**	

(Source: Own calculations from CATHSSETA data)

Figure 6.10 indicates the above information in Table 6.21 for SIC 6410 in graph format.

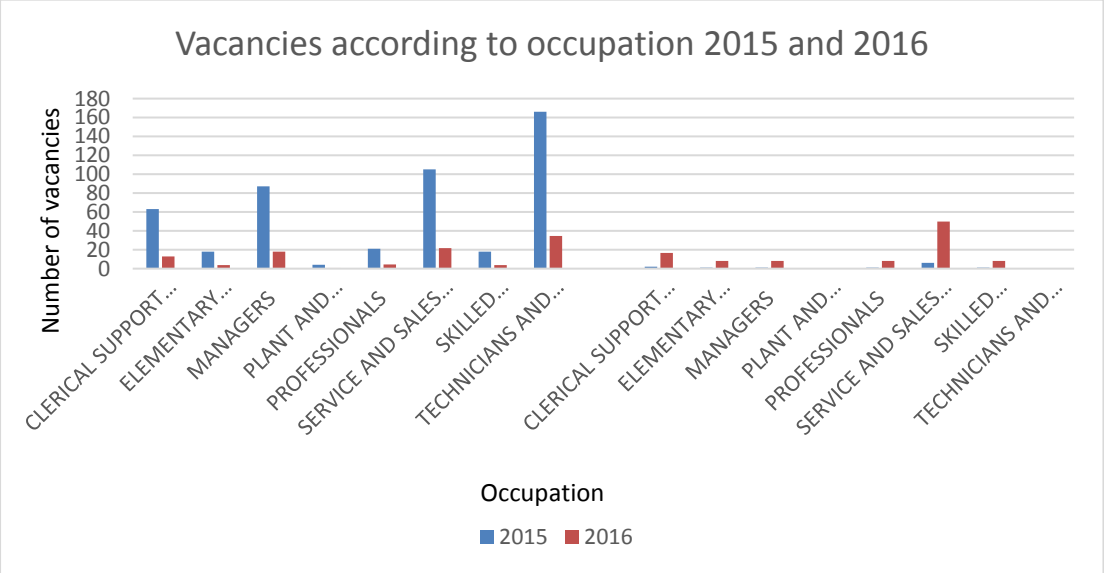


Figure 6.10 Vacancies according to occupation group for SIC 6410, for 2016

(Source: Own calculations from CATHSSETA data)

Figure 6.10 illustrates that for both 2015 and 2016, for SIC 6410, the majority of job vacancies were for the technicians and associate professionals group with 158 vacancies in 2015 and 88 vacancies in 2016. These are skilled employees with at least NQF level 6 qualifications. Table 6.22 below, indicates the positions (job titles) for which vacancies existed in SIC 6410 in 2015 and 2016.

Table 6.22 Vacancies according to Job Title (OFO) for SIC 6410

Vacancies according to Job Title (OFO) Code for SIC 6410, 2015 and 2016			
Occupational Category	**Job Title (with OFO code)**	**2015 No of vacancies**	**2016 No of vacancies**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	Chef - 343401	**158**	**88**
SERVICE AND SALES WORKERS	Call Centre Salesperson - 2015-524401	**0**	**5**
CLERICAL SUPPORT WORKERS	Hotel or Motel Receptionist – 422401	**42**	**28**
CLERICAL SUPPORT WORKERS	Accounts Clerk - 431101	**13**	**1**
CLERICAL SUPPORT WORKERS	Receptionist (General) - 422601	**6**	**7**
CLERICAL SUPPORT WORKERS	Call or Contact Centre Agent – 422206	**4**	**0**
CLERICAL SUPPORT WORKERS	Inbound Contact Centre Consultant - 422201	**2**	**0**
CLERICAL SUPPORT WORKERS	Travel Consultant - 422102	**2**	**3**
CLERICAL SUPPORT WORKERS	Account Clerk (Public Relations / Communication) - 441905	**1**	**0**
CLERICAL SUPPORT WORKERS	Contact Centre Resource Planner - 422204	**1**	**0**
CLERICAL SUPPORT WORKERS	Enquiry Clerk - 422501	**1**	**1**
CLERICAL SUPPORT WORKERS	General Clerk - 411101	**1**	**0**
CLERICAL SUPPORT WORKERS	Human Resources Clerk – 441601	**1**	**0**
CLERICAL SUPPORT WORKERS	Payroll Clerk - 431301	**1**	**0**
CLERICAL SUPPORT WORKERS	Back Office Process Consultant – 411102	**0**	**0**
ELEMENTARY OCCUPATIONS	Commercial Cleaner - 811201	**10**	**0**
ELEMENTARY OCCUPATIONS	Handyperson - 862202	**7**	**1**
ELEMENTARY OCCUPATIONS	Luggage Porter - 862102	**3**	**0**
ELEMENTARY OCCUPATIONS	Event Assistant - 862913	**2**	**0**
ELEMENTARY OCCUPATIONS	Scout - 821103	**2**	**0**
ELEMENTARY OCCUPATIONS	Mechanic's Assistant - 862919	**1**	**0**
ELEMENTARY OCCUPATIONS	Domestic Cleaner - 811101	**0**	**0**
MANAGERS	Café (Licensed) or Restaurant Manager - 141201	**29**	**32**
MANAGERS	Hotel or Motel Manager – 141101	**22**	**10**
MANAGERS	Facilities Manager - 143901	**12**	**2**
MANAGERS	Reservations Manager - 141204	**6**	**3**
MANAGERS	Finance Manager - 121101	**4**	**2**
MANAGERS	Reception Manager - 141103	**3**	**1**
MANAGERS	Customer Service Manager –	**2**	**0**

	122105		
MANAGERS	Guest House Manager - 141102	**2**	**1**
MANAGERS	Retail Manager (General) – 142103	**2**	**0**
MANAGERS	Office Manager - 134904	**1**	**1**
MANAGERS	Sales and Marketing Manager – 122101	**1**	**6**
MANAGERS	Sales Manager - 122102	**1**	**0**
MANAGERS	Catering Production Manager – 141203	**0**	**0**
MANAGERS	Corporate General Manager – 121901	**0**	**0**
MANAGERS	Engineering Manager - 132104	**0**	**0**
MANAGERS	Customer Service Manager - 2015-1221050	**0**	**2**
MANAGERS	Guest House Manager - 2015-141102	**0**	**2**
MANAGERS	Cleaning Services Manager - 2015-143902	**0**	**1**
MANAGERS	Community Development Manager - 2015-134402	**0**	**1**
MANAGERS	Quality Manager - 2015-132107	**0**	**1**
MANAGERS	Director of Marketing - 2015-122103	**0**	**0**
PLANT AND MACHINE OPERATORS AND ASSEMBLERS	Chauffeur - 732201	**2**	**0**
PLANT AND MACHINE OPERATORS AND ASSEMBLERS	Engineering Production Systems Worker - 718905	**2**	**0**
PROFESSIONALS	Accountant (General) - 241101	**8**	**4**
PROFESSIONALS	Park Ranger - 213307	**8**	**9**
PROFESSIONALS	Food and Beverage Scientist – 213205	**3**	**0**
PROFESSIONALS	Training and Development Professional - 242401	**2**	**0**
PROFESSIONALS	Assessment Practitioner – 242403	**1**	**0**
PROFESSIONALS	Internal Auditor - 242211	**1**	**0**
PROFESSIONALS	Actuary - 212101	**0**	**0**
PROFESSIONALS	Marketing Practitioner - 243103	**0**	**0**
PROFESSIONALS	Accounting Officer - 2015-242209	**0**	**1**
PROFESSIONALS	Biokineticist - 2015-226905	**0**	**1**
PROFESSIONALS	Marketing / Communication Strategist - 2015-243202	**0**	**1**
PROFESSIONALS	Printing and Publishing Equipment Sales Representative - 2015-243304	**0**	**1**
PROFESSIONALS	Skills Development Facilitator / Practitioner - 2015-242302	**0**	**1**
PROFESSIONALS	Student Support Service Officer - 2015-242404	**0**	**1**
SERVICE AND SALES WORKERS	Waiter - 513101	**25**	**22**
SERVICE AND SALES WORKERS	Hotel Service Manager - 515101	**23**	**13**
SERVICE AND SALES WORKERS	Cook - 512101	**20**	**5**
SERVICE AND SALES WORKERS	Body Therapist - 514202	**8**	**0**
SERVICE AND SALES WORKERS	Housekeeping Service Manager	**6**	**1**

	– 515102		
SERVICE AND SALES WORKERS	Butler - 515202	**4**	**2**
SERVICE AND SALES WORKERS	Commercial Housekeeper – 515103	**4**	**0**
SERVICE AND SALES WORKERS	Bar Attendant - 513201	**3**	**1**
SERVICE AND SALES WORKERS	Sales Assistant (General) – 522301	**2**	**0**
SERVICE AND SALES WORKERS	Tour Guide - 511302	**2**	**0**
SERVICE AND SALES WORKERS	Child Care Worker - 531101	**1**	**0**
SERVICE AND SALES WORKERS	Security Officer - 541401	**1**	**2**
SERVICE AND SALES WORKERS	Skin Care Therapist - 514201	**1**	**2**
SERVICE AND SALES WORKERS	Event Stylist - 02015-524102	**0**	**2**
SKILLED AGRICULTURAL, FORESTRY, FISHERY, CRAFT AND RELATED TRADES WORKERS	Wine Taster / Grader - 681504	**5**	**2**
SKILLED AGRICULTURAL, FORESTRY, FISHERY, CRAFT AND RELATED TRADES WORKERS	Green Keeper - 611303	**3**	**0**
SKILLED AGRICULTURAL, FORESTRY, FISHERY, CRAFT AND RELATED TRADES WORKERS	Mechanical Equipment Repairer – 653302	**3**	**0**
SKILLED AGRICULTURAL, FORESTRY, FISHERY, CRAFT AND RELATED TRADES WORKERS	Hunter - 622401	**2**	**0**
SKILLED AGRICULTURAL, FORESTRY, FISHERY, CRAFT AND RELATED TRADES WORKERS	Painter - 643101	**1**	**0**
SKILLED AGRICULTURAL, FORESTRY, FISHERY, CRAFT AND RELATED TRADES WORKERS	Confectionary Baker - 2015-681201	**0**	**3**
SKILLED AGRICULTURAL, FORESTRY, FISHERY, CRAFT AND RELATED TRADES WORKERS	Air-conditioning and Refrigeration Mechanic - 2015-642701	**0**	**2**
SKILLED AGRICULTURAL, FORESTRY, FISHERY, CRAFT AND RELATED TRADES WORKERS	Electrician - 2015-671101	**0**	**1**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	Bookkeeper - 331301	**3**	**0**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	Golfer - 342102	**2**	**0**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	Sales Representative (Business Services) - 333903	**2**	**0**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	Accounting Technician - 331302	**1**	**0**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	Events Manager - 333201	**1**	**0**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	Massage Therapist - 325501	**1**	**2**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	Food and Beverage Technician – 311903	**0**	**0**

TECHNICIANS AND ASSOCIATE PROFESSIONALS	Engineering Supervisor - 2015-312103	**0**	**3**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	Fitness Instructor - 2015-342301	**0**	**2**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	Marketing Coordinator - 2015-333908	**0**	**2**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	Web Technician - 2015-351401	**0**	**2**
TECHNICIANS AND ASSOCIATE PROFESSIONALS	Associate Legal Professional - 2015-341110	**0**	**1**

(Source: Own calculations from CATHSSETA data)

6.3.2.4 Retirement

Given that the replacement demand is not considered, the second aspect to consider is the replacement of current workers due to retirement. Retirement and replacing workers over the age of 55 in the hospitality industry, was discussed in detail in chapter two, section 2.5.2.1. Again, the data obtained from CATHSSETA serves as the basis for determining the demand arising from retirements.

From Table 6.23, the majority of employees over the age of 55 in SIC 6410 in 2016, were employed in elementary occupations, which is NQF level 1 or 2, and are known as low-skilled occupations. This is followed by service and sales workers, classified in NQF levels 3, 4 or 5, and known as semi-skilled occupations. The majority of employees above the age of 55 in SIC 6410 in 2015, were employed in elementary occupations, which are NQF level 1 or 2, and are known as low-skilled occupations. This is followed by service and sales workers, classified in NQF levels 3, 4 or 5, and known as semi-skilled occupations

Table 6.23 2016 - Employees aged over 55, according to occupational groups

Occupational Category	Number of Employees (2016)	Number of Employees (2015)
CLERICAL SUPPORT WORKERS	208	177
ELEMENTARY OCCUPATIONS	625	748
MANAGERS	396	334
PLANT AND MACHINE OPERATORS AND ASSEMBLERS	49	65
PROFESSIONALS	50	46
SERVICE AND SALES WORKERS	448	461
SKILLED AGRICULTURAL, FORESTRY, FISHERY, CRAFT AND RELATED TRADES WORKERS	66	74
TECHNICIANS AND ASSOCIATE PROFESSIONALS	183	176
TOTAL EMPLOYEES AGED OVER 55	**2 025**	**2 081**

(Source: Own calculations from CATHSSETA data)

From Table 6.24 below, it is evident that although the majority of the workforce in SIC 64, in both 2015 and 2016, were aged under 35 years of age, there is still a growing concern over the 3 929 employees for SIC 64 in 2016 that are above 55 years. This will lead to an increase in the demand for labour over the next five years due to replacement of employees needed for these 3 929 occupations when these employees reach retirement age.

Table 6.24 Age Profile of SIC 64 in 2015 and 2016

Age Profile of SIC 64 in 2015					
	SIC 6410	%	SIC 6420	%	TOTAL
Age under 35	22 544	53.19	62 592	66.23	85 136
Age 35 to 55	17 760	41.90	29 883	31.62	47 643
Age over 55	2 081	4.91	2 030	2.15	4 111
TOTAL	42 385	100	94 505	100	13 6890
Age Profile of SIC 64 in 2016					
	SIC 6410	%	SIC 6420	%	TOTAL
Age under 35	23 321	53.84	64 052	67.94	87 373
Age 35 to 55	17 967	41.48	28 321	30.04	46 288
Age over 55	2 025	4.68	1 904	2.02	3 929
TOTAL	43 313	100	94 277	100	13 7590

(Source: Own calculations from CATHSSETA data)

6.4 FORECASTS OF LABOUR DEMAND FOR THE ACCOMMODATION INDUSTRY

Forecasts for the catering and accommodation industry were completed according to the three methods namely; time series, bottom-up approach and top-down approach, as already discussed at the beginning of this chapter in section 6.2. However, these forecasts represent both catering and accommodation (SIC 6410 and SIC 6420). The purpose of this section is to isolate the accommodation industry forecasts by removing the catering data from the SIC forecasts that were already completed, thus leaving only the SIC 6410 (accommodation) data; resulting in the achievement of the following objective of this study:

Objective six: To use the identified optimal forecasting methods to generate quantitative forecasts of labour demand in the accommodation industry in South Africa and link these with job levels as well as qualification requirements.

Due to the fact that there were 43 313 total employees employed in the SIC 6410 (accommodation) CATHSSETA data during 2016, and a total of 95 742 employed in the SIC 6420 (catering) CATHSSETA data during 2016, this resulted in 31.1% being employed in SIC 6410 (accommodation) and 68.9% being employed in SIC 6420 (catering). For 2015, the division is almost similar, with 30.3% of employees belonging to SIC 6410 and 69.7% to SIC 6420.

These percentages were utilised to remove the information on SIC 6420 (catering) from the original forecasts. The results of this process are presented in the remainder of this section. However, the results are limited to the forecasts of the accommodation industry according to skills levels. This must then be linked with occupations and qualifications to achieve the aim of this study.

The following table is constructed from the information in the previous section, to indicate how the division of employment in the accommodation industry relates to the skills levels according to various sources. This is also the classification that will be used subsequently in section 6.5.

Table 6.25 Employment description and skill level categorisation in the accommodation industry

	Highly skilled labour	**Skilled labour**	**Semi-skilled labour**	**Informal labour**
According to CATHSSETA	High level skills	Middle level skills	Low level skills	
According to Quantec	Highly skilled: Professional, semi-professional and technical occupations; Managerial, executive and administrative occupations;	Skilled/medium skilled: Clerical occupations; Sales occupations; Service occupations; Artisan, apprentice and related occupations; Production foreman, production supervisor	Semi- and unskilled: All that are neither highly skilled nor (medium) skilled	Defined as workers who are employed on a part-time/casual and contract work basis.
According to Stats SA	Skilled: Manager, Professional and Technician occupations.	Semi-skilled: Clerk, Sales and services, Skilled agriculture, Craft and related trade and Plant and machine operator occupations.	Low-skilled: Elementary and Domestic worker occupations.	

OFO Levels	Managers (skilled) Professionals (skilled) Technicians and associate professionals (skilled)	Clerical support workers (semi-skilled) Service and sales workers (semi-skilled) Skilled agricultural, forestry, fishery, craft and related trades workers (semi-skilled) Plant and machine operators and assemblers (semi-skilled)	Elementary occupations (low-skilled)	
Accommodation related job title examples	For example: Guest House Manager (Manager) Accountant (Professional) Events Manager (Technician and associate professional)	For example: General Receptionist (Clerical support workers) Security Officer (Service and sales workers) Electrician (Skilled agricultural, forestry, fishery, craft and related trades workers) Chauffeur (Plant and machine operators and assemblers)	For example: Domestic cleaner (Elementary occupations)	
NQF levels	NQF level 7-10	NQF level 3-6	NQF level 1-2	
Qualifications required	Honours, Masters and Doctorates	Certificates, short courses and Bachelors	General education and training (e.g. ABET)	

(Source : Compiled by author)

From the information above, the forecasts generated for the different skill levels will be split into the OFO groups and NQF qualification levels, according to the information provided by CATHSSETA. Table 6.26 below is based on the data displayed in Table 6.19 and shows the division of the different OFO levels in each of the skills categories described above for the accommodation industry. It is clear that managers and technicians are the main categories of highly-skilled occupations in the accommodation industry, while the skilled occupations are dominated by service and sales workers, followed by clerical support. All informal and unskilled (or semi-skilled labour according to some definitions) labour, such as cleaners, are elementary positions.

Table 6.26 Division of skill levels according to OFO levels in the accommodation industry

Highly skilled occupations	**2015**	**2016**	**Average**
Managers	45.9%	47.0%	46.4%
Professionals	7.7%	8.7%	8.2%
Technicians and associate professionals	46.4%	44.3%	45.4%
Total	**100%**	**100%**	**100%**
Skilled occupations	**2015**	**2016**	**Average**
Clerical support workers	24.4%	26.5%	25.4%
Plant and machine operators and assemblers	2.6%	2.0%	2.3%
Service and sales workers	68.9%	68.0%	68.4%
Skilled agricultural, forestry, fishery, craft and related trades workers	4.1%	3.5%	3.8%
Total	**100%**	**100%**	**100%**
Semi-skilled and informal occupations	**2015**	**2016**	**Average**
Elementary occupations	100%	100%	100%

(Source: Compiled by author from CATHSSETA data)

It is evident from Table 6.26 above that, between 2015 and 2016 there was an increase in qualifications from the NQF level 3 – 5 categories, with increases in skilled occupations especially by clerical support workers. For highly skilled occupations there was also an increase of managers and professionals.

The ratios presented in table 6.26 above and the 31:69-ratio split between accommodation and catering, will be subsequently applied to the forecasts done in section 6.2. The goal is to derive the forecasts of the types of occupations and qualifications that the accommodation industry will demand over the next 5 years. Firstly, the forecasts are split into the accommodation subsector and the catering subsector for each of the three forecasting methods (the time series, bottom-up and top-down approaches to be discussed in section 6.4.1 to 6.4.3 below) before the forecasts are linked to the types of occupations and qualifications (based on the information in Tables 6.25 and 6.26) in section 6.5.

6.4.1 Forecasts according to the time-series forecasting method

As indicated in section 6.2.1, the Quantec data for total labour for the catering and accommodation industry was utilised in generating the forecasts for labour demand over a 5-year period. The ARIMA (4,1,0) model was used to generate the forecasts

of the future labour demand. Moreover, the forecasts of the different skills levels were derived from the total forecast based on the Quantec data composition.

The cumulative change for SIC 64 was 4 577 in 2015, increasing to 8 472 in 2016, 14 884 in 2017, 15 370 in 2018 and resulting in a forecasting cumulative change of 16 690 by 2019. For SIC 6410, calculated at 31% of the total Quantec labour forecasts for the catering and accommodation industry, the forecasting results are indicated in Table 6.27. Table 6.28 below only indicates the forecasted labour demand of the accommodation industry according to the time-series method. The cumulative changes in the formal labour demand for SIC 6410 are the total of cumulative highly skilled, skilled, and semi-skilled labour. The figures were obtained from 2014 as the base year.

From the table, it can be seen that according to the time series method, the cumulative increase in labour demand for highly skilled labour, for 2016, was 171 labourers. It is predicted as 300 for 2017, 310 labourers (10 additional labourers) by 2018 and 336 more labourers for 2019 compared to 2014. In the skilled labour category, the cumulative increase for 2016, predicted 1200 labourers (552 labourers alone), 2109 labourers (909 labourers alone) for 2017, 2178 (69 labourers alone) for 2018 and 2 365 labourers (187 labourers alone) for 2019. For semi-skilled labour, the cumulative forecasts predicted, 410 labourers (189 labourers alone) for 2016 720 labourers (310 labourers alone) for 2017, 743 labourers (23 labourers alone) for 2018 and 807 labourers (64 labourers alone) for 2019.

For informal labour, the cumulative forecast gave, a total of 846 labourers (389 labourers alone) for 2016, 1 486 (640 labourers alone) for 2017, 1 534 (48 labourers alone) for 2018 and 1 666 labourers (132 labourers alone) for 2019.

It is clear from Table 6.27 that despite the increase in highly skilled labour, the increase is slow, with only 10 new highly skilled labourers to be demanded in 2018 and 26 in 2019. For skilled labourers, here will be a large increase in figures from 2016 to 2017 (from 552 additional skilled workers in 2016 to an additional 909 in 2017), before it starts tapering down in 2018. For semi-skilled labour, employment figures will increase very slowly in 2018 (with only 23 additional semi-skilled labourers). This trend is also visible for informal labour, where only 48 additional

informal labourers will be demanded in 2018 before it starts increasing again in 2019 to 132 labourers.

It can therefore be deduced that in 2018, the demand for labour will grow more slowly in all of the categories of formal labour (highly skilled, skilled and semi-skilled labour). The demand for skilled labour is the highest of all the skills levels. According to Quantec, skilled labour includes the following occupations: clerical occupations; sales occupations; transport, delivery and communications occupations; service occupations; farmer, farm manager; artisan, apprentice and related occupations; production foreman, production supervisor. It is important to remember that skilled or medium-skilled according to Quantec is seen as semi-skilled according to Stats SA. Moreover, the demand for formal labour is more than the demand for informal labour.

Table 6.27 Forecasted labour demand for the accommodation industry according: time-series method

Year	Cumulative change for SIC 64	Cumulative change for SIC 6410	Cumulative Percentage	Cumulative Highly skilled labour	Cumulative skilled labour	Cumulative semi-skilled labour	Cumulative informal labour
2015	4 577	1 419	1.4%	92	648	221	457
2016	8 472	2 626	2.6%	171	1 200	410	846
2017	14 884	4 614	4.6%	300	2 109	720	1 486
2018	15 370	4 765	4.8%	310	2 178	743	1 534
2019	16 690	5 174	5.2%	336	2 365	807	1 666

(Source : Authors own calculations from forecasts and CATHSSETA data)

6.4.2 Forecasts according to the bottom-up approach

As discussed in detail in section 6.2.2.2, the bottom-up approach was utilised to forecast labour demand. In this section, the catering figures are also removed from the accommodation and catering figures for SIC 64. Thus the forecasted figures that will be used in linking occupations and qualifications in section 6.5 are specifically for the accommodation sub-sector. The ratio of 31:69 was again used for SIC 6410 compared to SIC 6420. Tables 6.28 to 6.30 show the results of the three scenarios when the long run elasticities (see Table 5.10) are applied.

It must be noted that, here too, the formal labour supply forecasts are the sum of the highly skilled, skilled and semi-skilled labour forecasts to maintain consistency. The total forecasted labour demand is therefore the sum of the informal and formal labour

demand. Table 6.28 below, indicates the low scenario for the accommodation forecasts for SIC 6410. Based on the labour elasticities presented in Table 5.10 in chapter five, the change in labour demand due to a change in output, for the low scenario, is expected to be 352 additional labourers by 2016, 499 labourers by 2017, 818 labourers by 2018 and resulting in an increase of 1 251 by 2019.

The low scenario forecasted the change in output for formal labour (this includes the sum of the highly skilled, skilled and semi-skilled labour forecasts) and informal labour, as shown in Table 6.28 below. The change is forecasted as cumulative, starting with 2014 as the base year, and is therefore reflected as change compared to 2014.

The demand for formal labour increased as follows: 268 labourers from 2015 to 2016, 380 labourers in 2017, 623 labourers in 2018 and 953 labourers in 2019. The change in informal labour demand was 84 labourers from 2015 to 2016, with an increase to 119 labourers in 2017, 195 labourers in 2018 and 298 labourers in 2019. The change in highly skilled labour demand was 20 labourers from 2015 to 2016, with an increase of 28 labourers in 2017, 46 labourers in 2018 and 70 labourers in 2019. The change in skilled labour demand was 235 labourers from 2015 to 2016, with an increase to 334 labourers in 2017, 547 labourers in 2018 and 836 labourers in 2019. The change in semi-skilled labour demand was 13 labourers from 2015 to 2016, to 18 labourers in 2017, 30 labourers in 2018 and 46 labourers in 2019.

In total, the demand was for 427 labourers in 2015, 351 in 2016, 499 in 2017, 818 in 2018 and 1 251 labourers in 2019 for the accommodation SIC. This shows a trend upward, increasing cumulatively to 1.3% in 2019. It is expected that the largest demand will still be for the skilled labour category, followed by the highly skilled labour and then for the semi-skilled labour. The formal cumulative labour is still higher than the informal cumulative labour.

Table 6.28 Low Scenario: Bottom-up forecast according to skill levels

Year	Cumulative change in output SIC 6410 (Rmil)	Cumulative change for SIC 6410	Cumulative Percentage	Cumulative Highly skilled labour	Cumulative skilled labour	Cumulative semi-skilled labour	Cumulative informal labour
2015	1 333	427	0.4%	24	286	16	102
2016	1 120	351	0.4%	20	235	13	84
2017	1 591	499	0.5%	28	334	18	119
2018	2 606	818	0.8%	46	547	30	195
2019	3 987	1 251	1.3%	70	836	46	298

(Source: Calculated from Forecasts)

Table 6.29 below, indicates the middle scenario for the accommodation forecasts for SIC 6410. Based on the labour elasticities presented in Table 5.10 in chapter five, the change in labour demand for the long run for labour output, for the middle scenario, is expected to have an increase of, for formal labour, an increase of 364 in 2015, 674 in 2016, 1 034 in 2017, 1 412 in 2018 and 1 789 in 2019. The informal labour increased with 114 in 2015, 339 in 2016, 534 in 2017, 757 in 2018 and 959 in 2019. The 2 748 cumulative change for the SIC, as demanded for 2019, is broken down into 1 570 new opportunities for skilled labourers, 132 highly skilled labourers, 87 semi-skilled labourers and 959 for informal labour. There is an increase in all labour categories, albeit higher than that of the low scenario discussed previously. The figures for formal labour are higher than for informal labour, as seen in the low scenario. The increase for the skilled category, once again, showed the largest demand, followed by highly skilled labour and semi-skilled labour.

Table 6.29 Middle Scenario: Bottom-up forecast according to skill levels

Year	Cumulative change in output SIC 6410 (Rmil)	Cumulative change for SIC 6410	Cumulative Percentage	Cumulative Highly skilled labour	Cumulative skilled labour	Cumulative semi-skilled labour	Cumulative informal labour
2015	1 491	478	0.5%	27	319	18	114
2016	2 827	1 012	1.0%	50	591	33	339
2017	3 493	1 569	1.6%	76	908	50	534
2018	5 211	2 170	2.2%	104	1 239	69	757
2019	6 527	2 748	2.8%	132	1 570	87	959

(Source: Calculated from forecasts)

Table 6.30 below, indicates the high scenario for the accommodation forecasts for SIC 6410. Based on the labour elasticities presented in Table 5.10 in chapter five, the change in labour demand due to a change in output, for the high scenario, is shown. The last column of the table shows that for in this scenario 1 420 additional

labourers will be demanded in 2016 – with most of the opportunities in formal employment and for skilled labourers. By 2017, 2 238 additional labourers is demanded and by 2018 3 176 labourers in the accommodation industry alone. It is evident that by 2019 more than 3 000 formal employment opportunities will have to be filled and almost 1 000 informal opportunities in the high scenario using employment elasticities. A large increase in labour demand for this high scenario is evident when the 2019 demand for labour is forecasted as 4 019 additional labourers are compared with the 2 748 of the middle scenario, and 1 251 of the low scenario.

Table 6.30 High Scenario: Bottom-up forecast according to skill levels

Year	Cumulative change in output SIC 6410 (Rmil)	Cumulative change for SIC 6410	Cumulative Percentage	Cumulative Highly skilled labour	Cumulative skilled labour	Cumulative semi-skilled labour	Cumulative informal labour
2015	2 876	556	0.56%	31	371	21	133
2016	4 556	1 420	1.43%	80	949	53	339
2017	7 181	2 239	2.25%	126	1 496	83	534
2018	10 187	3 176	3.20%	178	2 123	117	757
2019	12892	4 019	4.05%	226	2 686	149	959

(Source: Calculated from forecasts)

Again, the skilled labour showed the highest elasticity, with the semi-skilled labour showing the lowest elasticity.

In conclusion, for all three scenarios, the low, middle as well as high scenario, as discussed in this section, the majority of the labour demand is for the skilled labour category, followed by highly skilled and then lastly for the semi-skilled category of labour. In all three scenarios, the formal labour category sees the majority of increase in labour demand, when compared to the informal labour category.

6.4.3 Forecasts according to the top-down approach

The labour demand was calculated according to the top-down approach and two scenarios were created (see section 6.2.3). The cumulative change in labour demand for the accommodation and catering was estimated and shown in Table 6.12 above (see section 6.2.3), and using the CATHSSETA breakdown, 31% of the sector which belongs to the accommodation sector (SIC 6410), the subsequent results for the accommodation subsector only are shown in Table 6.31.

This table illustrates the cumulative changes of the entire SIC 64, which includes accommodation and catering, which is then split into SIC 6410 (accommodation industry only). The cumulative change is calculated from 2014 as the base year.

The figures in Scenario 1 are higher than those of scenario 2. In scenario 1, the cumulative change for the entire SIC 64 (accommodation and catering) was 67 009 for 2015, 144 184 in 2016, 233 088 in 2017, 335 526 in 2018 and 453 584 in 2019. The cumulative total increase for SIC 6410, was 23 924 from 2015 to 2016, 27 560 for 2017, 31 756 for 2018 and 36 598 for 2019.

For scenario 2, the cumulative change for the entire SIC 64 (accommodation and catering) was 43 353 for 2015, 117 493 in 2016, 203 003 in 2017, 301 650 in 2018 and 415 485 in 2019. For scenario 2, cumulatively for SIC 6410, from 2015 to 2016, the increase was forecasted as 22 984, for 2017 it was 26 508, for 2018 it was 30 581 and 35 288 in 2019.

Table 6.31 Labour forecasts for the accommodation industry only based on the top-down approach

Year	Scenario 1		Scenario 2	
	Cumulative change SIC64	Cumulative change SIC6410	Cumulative change SIC64	Cumulative change SIC6410
2015	67 009	20 773	43 353	13 439
2016	144 184	44 697	117 493	36 423
2017	233 088	72 257	203 003	62 931
2018	335 526	104 013	301 650	93 512
2019	453 584	140 611	415 485	128 800

(Source: Own calculations from forecasts)

The two scenarios above on the figures of cumulative change for SIC 6410, were further split into formal labour and informal labour. The formal labour category was further split into highly skilled, skilled, and semi-skilled labour.

To achieve this, the ten year average, from 2004 until 2014, was obtained for each of the above skills categories. The average total labour for the past ten years was calculated. The formal and informal labour was then calculated relative to the total labour. Each of the skills levels was further calculated by calculating them as a ratio of formal labour. To that effect, the average formal labour constituted 72% of the average total labour; while the informal labour constituted 28% of the average total labour. In addition, 9% of the average formal labour was highly skilled labour, 67%

skilled labour and 24% semi-skilled labour. These ratios were used in the calculation of the below table.

To that effect, reference is made to Table 6.32 below, which illustrates the ratio of total labour for SIC 6410, split into formal and informal labour, as well as the ratio of formal labour split into highly skilled labour, skilled labour and semi-skilled labour.

Table 6.32 Cumulative Labour demand forecasts according to skills levels using top-down approach

Scenario 1						
	Total Labour	Formal Labour	Highly Skilled	Skilled	Semi-skilled	Informal
2015	20 773	14 957	1 346	10 021	3 590	5 816
2016	44 697	32 182	28 96	21 562	7 724	12 515
2017	72 257	52 025	4 682	34 857	12 486	20 232
2018	104 013	74 889	6 740	50 176	17 973	29 124
2019	140 611	101 240	9 112	67 831	24 298	39 371
Scenario 2						
	Total Labour	Formal Labour	Highly Skilled	Skilled	Semi-skilled	Informal
2015	13 439	9 676	871	6 483	2 322	3 763
2016	36 423	26 225	2 360	17 570	6 294	10 198
2017	62 931	45 310	4 078	30 358	10 874	17 621
2018	93 512	67 329	6 060	45 110	16 159	26 183
2019	128 800	92 736	8 346	62 133	22 257	36 064

(Source: Own calculations from forecasts)

The top-down approach, as can be seen from Table 6.31 and Table 6.32 above, is higher than any of the other bottom-up or time-series forecast results presented. Therefore no further calculations of top-down scenario 1 or scenario 2 will be further presented, since these seem to be misleading compared to the other forecasting methods. For the following section, only the time series and bottom-up approach will be used to forecast occupation and the subsequent qualification demand in the accommodation industry. The bottom-up approach will include the three scenarios, namely the low scenario, middle scenario as well as the high scenario.

6.5 The demand according to qualifications and occupation levels in the accommodation industry

The above forecasts generated show vastly different demands for labour in the accommodation industry and it is clear that the top-down approach tend to generate inflated results, while the low scenario of the bottom-up approach shows almost no growth. Therefore the lowest scenario is disregarded together with the top-down approach, rendering three scenarios for labour, occupation and qualification forecasts in the accommodation industry.

For this final analysis, the time-series forecast serve as the high forecast, while the bottom-up “high scenario” is the middle forecast and the bottom-up “middle scenario” gives the low forecast. The information in section 6.4 are therefore used together with the ratios calculated from the CATHSSETA data in Table 6.26 above, to present three forecasting scenarios for occupation and qualification demand in the accommodation industry. Furthermore, given that the focus of this dissertation is on qualified labour, only highly-skilled and skilled labour demand are further broken down into qualification and occupation levels. To this end, the subsequent sections discuss and show the results of the highly skilled and skilled labour forecasts. This will be followed by a summary Table in section 6.5.3 that combines the forecasts with replacement demand due to retirement and vacancies.

6.5.1 Demand for highly skilled labour

Table 6.33 below indicates three forecasts for highly skilled labour in the accommodation industry. Highly skilled labour, according to the definitions provided in Table 6.25 above, are labourers that hold a post-graduate qualification, i.e. an honours, Masters or Doctorate degree. Typical occupations in the accommodation industry that require these qualifications are managers, professionals and technicians and associate professionals. The forecasted demand for these occupations from 2015 to 2019 is indicated in the Table. Notice that the numbers are again cumulative, using 2014 as the base year.

Table 6.33 Forecasted demand according to OFO and qualification level – highly skilled labour

OFO level	Qualification	High forecast				
		2015	**2016**	**2017**	**2018**	**2019**
Managers	Honours, Masters and Doctorate degrees	42 (0.66%)	80 (1.24%)	139 (2.15%)	144 (2.23%)	156 (2.42%)
Professionals		7 (0.11%)	15 (0.23%)	25 (0.38%)	25 (0.39%)	28 (0.43%)
Technicians and associate professionals		43 (0.66%)	76 (1.17%)	136 (2.11%)	140 (2.18%)	153 (2.36%)
		Middle forecast				
		2015	**2016**	**2017**	**2018**	**2019**
Managers	Honours, Masters and Doctorate degrees	14 (0.26%)	37 (0.67%)	58 (1.05%)	83 (1.48%)	105 (1.88%)
Professionals		2 (0.04%)	7 (0.12%)	10 (0.19%)	15 (0.26%)	19 (0.33%)
Technicians and associate professionals		14 (0.26%)	35 (0.63%)	57 (1.02%)	81 (1.45%)	102 (1.84%)
		Low forecast				
		2015	**2016**	**2017**	**2018**	**2019**
Managers	Honours, Masters and Doctorate degrees	12 (0.22%)	23 (0.48%)	35 (0.73%)	48 (1.01%)	61 (1.28%)
Professionals		2 (0.04%)	4 (0.09%)	6 (0.13%)	9 (0.18%)	11 (0.23%)
Technicians and associate professionals		12 (0.22%)	22 (0.45%)	35 (0.72%)	47 (0.99%)	60 (1.25%)

(Source: Calculated from forecasts and CATHSSETA data)

It is evident that the demand is the greatest for managers over the forecasting horizon, ranging from a 1.28% increase in demand for managers to a 2.42% increase in demand. The lowest demand is for professionals with only an additional 11 – 28 professional persons demanded from 2015 until 2019. It should be remembered that these forecasts exclude replacement demand due to retirement and normal job rotation, as well as current vacancies.

A closer inspection of the data (see Table 6.22) reveals that the following managerial positions are typical in the accommodation industry: café (licenced) or restaurant manager, hotel/motel manager and facilities managers. These managers typically require the following types of qualification: honours degrees or B Tech degrees or higher.

The typical professional persons working in the accommodation industry are accountants, marketing strategists and cooks. Their qualifications range from an

honours degree to a PhD-degree. Technicians and associate professionals employed in the accommodation industry include chefs, call centre sales persons and hotel or motel receptionists. To succeed in these occupations, the following qualifications are required: honours degrees or B Tech degrees or higher qualifications.

6.5.2 Demand for skilled labour

Table 6.34 below indicates the three forecasts for labour demand for skilled labour.

Table 6.34 Forecasted demand according to OFO and qualification level – skilled labour

OFO level	Qualification	High forecast				
		2015	**2016**	**2017**	**2018**	**2019**
Clerical support workers	Certificates, short courses and Bachelors degrees	158 (0.35%)	318 (0.70%)	536 (1.18%)	553 (1.22%)	601 (1.32%)
Plant and machine operators and assemblers		17 (0.04%)	24 (0.05%)	49 (0.11%)	51 (0.11%)	55 (0.12%)
Service and sales workers		447 (0.98%)	816 (1.80%)	1 443 (3.18%)	1 490 (3.28%)	1 618 (3.57%)
Skilled agricultural, forestry, fishery, craft and related trades workers		27 (0.06%)	42 (0.09%)	81 (0.18%)	83 (0.18%)	90 (0.20%)
		Middle forecast				
		2015	**2016**	**2017**	**2018**	**2019**
Clerical support workers	Certificates, short courses and Bachelors degrees	90 (0.14%)	251 (0.38%)	380 (0.57%)	539 (0.81%)	683 (1.03%)
Plant and machine operators and assemblers		10 (0.01%)	19 (0.03%)	35 (0.05%)	49 (0.07%)	62 (0.09%)
Service and sales workers		256 (0.39%)	645 (0.97%)	1 024 (1.54%)	1 453 (2.19%)	1 838 (2.77%)
Skilled agricultural, forestry, fishery, craft and related trades workers		15 (0.02%)	34 (0.05%)	57 (0.09%_	81 (0.12%)	103 (0.15%)
		Low forecast				
		2015	**2016**	**2017**	**2018**	**2019**
Clerical support workers	Certificates, short courses and Bachelors degrees	78 (0.12%)	157 (0.27%)	231 (0.40%)	315 (0.56%)	399 (0.70%)
Plant and machine operators and assemblers		8 (0.01%)	12 (0.02%)	21 (0.04%)	29 (0.05%)	36 (0.06%)
Service and sales workers		220 (0.33%)	402 (0.69%)	622 (1.08%)	848 (1.50%)	1 075 (1.89%)
Skilled agricultural, forestry, fishery, craft and related trades workers		13 (0.02%)	21 (0.04%)	35 (0.06%)	47 (0.08%)	60 (0.11%)

(Source: Calculated from forecasts and CATHSSETA data)

As per table 6.25 above, skilled labour refers to an employee with middle level skills, who holds a NQF level 3-6, which includes certificates, short courses and bachelors'

degrees. Occupations that require skilled labour include clerical support workers, service and sales workers, skilled agriculture workers, craft and related trades employees and plant and machine operators. Table 6.34 indicates the forecasted demand for occupations from 2015 until 2019. 2014 was used as the base year, with the numbers that are cumulative.

6.5.3 Summary: Demand forecasts including replacement

The Tables above summarise the forecasted demand for highly skilled and skilled labour. The typical occupations and qualifications on demand were also highlighted in the discussion. These forecasts, however, exclude both replacement demand due to retirement and current vacancies. The Tables 6.35 and 6.36 below summarise the highly skilled and skilled labour demand over the years 2015-2019, by including the forecasts due to growth in the industry, retirement demand and vacancies. It does, however, not include normal job rotation.

The vacancies included in the forecasts are based on the 2015 and 2016 CATHSSETA data, with the 2015 and 2016 actual percentage vacancies included and for the remaining years (2017-2019), the average of the two years' vacancies.

The retirement is also based on the CATHSSETA data, where the average of the 2015 and 2016 data of persons over the age of 55 were taken. These averages were equally distributed over the 5 years (i.e. it was divided by 5). The final demand is furthermore shown for all three forecasting scenarios (high, medium and low) as a percentage increase in the number of people.

Table 6.35 above shows that the accommodation industry will require between 4.73% and 5.84% more technicians and associate professionals by 2019, compared to 2014. This translates into between 305 and 377 additional workers. As indicated earlier, the typical occupations that will be required are chefs, events managers, and food and beverage technicians. The requisite qualifications for these persons should be at NQF level 6, which are occupational certificates and diplomas.

Table 6.35 Summary of highly skilled demand forecasts, including retirement and vacancies

		High				
Forecasts		***2015***	***2016***	***2017***	***2018***	***2019***
	Managers	0.66%	1.24%	2.16%	2.23%	2.42%
	Professionals	0.11%	0.23%	0.38%	0.39%	0.43%
	Technicians and associate professionals	0.66%	1.17%	2.11%	2.18%	2.36%
		Middle				
		2015	***2016***	***2017***	***2018***	***2019***
	Managers	0.26%	0.67%	1.05%	1.48%	1.88%
	Professionals	0.04%	0.12%	0.19%	0.26%	0.33%
	Technicians and associate professionals	0.26%	0.63%	1.02%	1.45%	1.84%
		Low				
		2015	***2016***	***2017***	***2018***	***2019***
	Managers	0.22%	0.48%	0.73%	1.01%	1.28%
	Professionals	0.04%	0.09%	0.13%	0.18%	0.23%
	Technicians and associate professionals	0.22%	0.45%	0.72%	0.99%	1.25%
Vacancies		**Vacancies**				
		2015	***2016***	***2017***	***2018***	***2019***
	Managers	1.88%	1.27%	1.57%	1.57%	1.57%
	Professionals	2.70%	1.88%	2.29%	2.29%	2.29%
	Technicians and associate professionals	3.54%	1.95%	2.74%	2.74%	2.74%
Retirement		**Retirement**				
		2015	***2016***	***2017***	***2018***	***2019***
	Managers	1.45%	1.45%	1.45%	1.45%	1.45%
	Professionals	1.09%	1.09%	1.09%	1.09%	1.09%
	Technicians and associate professionals	0.73%	0.73%	0.73%	0.73%	0.73%
Total demand (percentage)		**Total demand (percentage)**				
		High				
		2015	***2016***	***2017***	***2018***	***2019***
	Managers	3.98%	3.96%	5.18%	5.25%	5.44%
	Professionals	3.90%	3.19%	3.76%	3.77%	3.80%
	Technicians and associate professionals	4.93%	3.85%	5.58%	5.65%	5.84%
		Middle				
		2015	***2016***	***2017***	***2018***	***2019***
	Managers	3.58%	3.39%	4.07%	4.50%	4.90%
	Professionals	3.83%	3.09%	3.56%	3.64%	3.71%
	Technicians and associate professionals	4.53%	3.31%	4.50%	4.92%	5.31%
		Low				
		2015	***2016***	***2017***	***2018***	***2019***
	Managers	3.54%	3.19%	3.75%	4.03%	4.30%
	Professionals	3.83%	3.05%	3.50%	3.55%	3.60%
	Technicians and associate professionals	4.49%	3.13%	4.19%	4.46%	4.73%
Total demand		**Total demand (persons)**				
		2015	***2016***	***2017***	***2018***	***2019***
	Managers	229 - 257	206 - 255	242 - 334	260 – 339	278 - 351
	Professionals	247 - 252	197 – 206	226 – 242	229 – 243	233 - 245
	Technicians and associate professionals	290 - 318	202 - 249	270 - 360	288 – 365	305 - 377

(Source: Calculated from forecasts and CATHSSETA data)

Table 6.35 also reveals that a large percentage of professional positions are vacant. This implies that, an additional 233 to 245 professionals will be required by 2019. This encompasses accountants, internal auditors, and marketing practitioners, with

qualifications of NQF levels 7-10, which includes honours, masters or doctorate degrees.

Similarly, the total demand for managers is between 278 and 351 more by 2019. This envisages management positions such as sales managers, hotel/motel managers and reservations managers. These positions require qualifications of NQF level 6 to 10, which range from occupational certificates and diplomas, to bachelors, honours, masters and doctorate degrees.

Table 6.36 below shows the results of the total demand forecasts for skilled workers according to the OFO levels. Again, this demand includes forecasted demand due to higher economic activity as well as replacement demand due to retirement and vacancies.

The table shows that the greatest demand is for sales and service workers. By 2019, between 3.13% and 4.8% more sales and service workers will be required. This translates into an additional 1 400 to 2 100 employees in occupations such as call centre salespersons, waiters, and cooks. The qualifications of these employees should be in NQF levels 3 to 5, from occupational certificates that are sector based, occupational FETC's, occupational certificates and diplomas.

Table 6.36 Summary of skilled demand forecasts, including retirement and vacancies

		High				
Forecasts		***2015***	***2016***	***2017***	***2018***	***2019***
	Clerical support workers	0.35%	0.70%	1.18%	1.22%	1.32%
	Plant and machine operators and assemblers	0.04%	0.05%	0.11%	0.11%	0.12%
	Service and sales workers	0.98%	1.80%	3.18%	3.28%	3.57%
	Skilled agricultural, forestry, fishery, craft and related trades	0.06%	0.09%	0.18%	0.18%	0.20%
		Middle				
		2015	***2016***	***2017***	***2018***	***2019***
	Clerical support workers	0.14%	0.38%	0.57%	0.81%	1.03%
	Plant and machine operators and assemblers	0.01%	0.03%	0.05%	0.07%	0.09%
	Service and sales workers	0.39%	0.97%	1.54%	2.19%	2.77%
	Skilled agricultural, forestry, fishery, craft and related trades	0.02%	0.05%	0.09%	0.12%	0.15%
		Low				
		2015	***2016***	***2017***	***2018***	***2019***
	Clerical support workers	0.12%	0.27%	0.40%	0.56%	0.70%
	Plant and machine operators and assemblers	0.01%	0.02%	0.04%	0.05%	0.06%
	Service and sales workers	0.33%	0.69%	1.08%	1.50%	1.89%

	Skilled agricultural, forestry, fishery, craft and related trades	0.02%	0.04%	0.06%	0.08%	0.11%
Vacancies		**Vacancies**				
		2015	***2016***	***2017***	***2018***	***2019***
	Clerical support workers	1.32%	0.72%	1.02%	1.02%	1.02%
	Plant and machine operators and assemblers	0.78%	0.00%	0.39%	0.39%	0.39%
	Service and sales workers	0.78%	0.38%	0.58%	0.58%	0.58%
	Skilled agricultural, forestry, fishery, craft and related trades	2.23%	1.08%	1.65%	1.65%	1.65%
Retirement		**Retirement**				
		2015	***2016***	***2017***	***2018***	***2019***
	Clerical support workers	0.74%	0.74%	0.74%	0.74%	0.74%
	Plant and machine operators and assemblers	2.42%	2.42%	2.42%	2.42%	2.42%
	Service and sales workers	0.65%	0.65%	0.65%	0.65%	0.65%
	Skilled agricultural, forestry, fishery, craft & related trades	1.81%	1.81%	1.81%	1.81%	1.81%
Total demand (percentage)		**Total demand (percentage)**				
		High				
		2015	***2016***	***2017***	***2018***	***2019***
	Clerical support workers	2.41%	2.16%	2.94%	2.98%	3.09%
	Plant and machine operators and assemblers	3.24%	2.47%	2.92%	2.92%	2.93%
	Service and sales workers	2.42%	2.84%	4.42%	4.52%	4.80%
	Skilled agricultural, forestry, fishery, craft and related trades	4.09%	2.98%	3.64%	3.64%	3.66%
		Middle				
		2015	***2016***	***2017***	***2018***	***2019***
	Clerical support workers	2.20%	1.84%	2.34%	2.58%	2.79%
	Plant and machine operators and assemblers	3.21%	2.45%	2.86%	2.88%	2.90%
	Service and sales workers	1.82%	2.01%	2.78%	3.43%	4.01%
	Skilled agricultural, forestry, fishery, craft and related trades	4.06%	2.93%	3.55%	3.58%	3.61%
		Low				
		2015	***2016***	***2017***	***2018***	***2019***
	Clerical support workers	2.18%	1.73%	2.17%	2.32%	2.47%
	Plant and machine operators and assemblers	3.21%	2.44%	2.85%	2.86%	2.87%
	Service and sales workers	1.77%	1.73%	2.32%	2.73%	3.13%
	Skilled agricultural, forestry, fishery, craft and related trades	4.06%	2.92%	3.52%	3.54%	3.56%
Total demand (persons)		**Total demand (persons)**				
		2015	***2016***	***2017***	***2018***	***2019***
	Clerical support workers	991 – 1 096	786 - 981	983 - 1 337	1 053 – 1 354	1 120 – 1 402
	Plant and machine operators and assemblers	1 458 - 1 469	1 108 – 1 122	1 292 – 1 324	1 298 - 1 326	1 304 - 1 330
	Service and sales workers	801 - 1 097	786 – 1 287	1 052 - 2 004	1 240 – 2 051	1 421 – 2 179
	Skilled agricultural, forestry, fishery, craft and related trades	1 841 – 1 858	1 324 - 1 350	1 597 – 1 650	1 608 – 1 653	1 618 - 1 660

(Source: Calculated from forecasts and CATHSSETA data)

Another interesting category to note is the skilled agricultural, forestry, fishery, craft and related trades category, which includes wine tasters/graders, green keepers and mechanical equipment repairers. For this category, NQF levels 3 to 5 are required, from occupational certificates that are sector based, occupational FETC's, occupational certificates and diplomas. The total demand for this category in 2015 amounted to between 1 841 and 1 858 persons, increasing to between 1 618 and 1 660 persons in 2019.

In addition, the category of plant and machine operators and assemblers includes jobs such as chauffeurs, and engineering production systems workers. For this category, NQF levels 3 to 5 are required, from occupational certificates that are sector based, occupational FETC's, occupational certificates and diplomas. The total demand for plant and machine operators and assemblers for 2015 was between 1 458 and 1 469 persons, which increases to between 1 304 and 1 330 persons in the year 2019.

6.6 SUMMARY

The aim of this research is to forecast the demand for highly skilled, skilled and semi-skilled labour for the accommodation industry, in the South African context. This aim has been met in order to guide learners, as well as to ensure that general, further and higher education institutions provide adequate training and the necessary skills to meet the demand of the accommodation industry. Ultimately it is intended that this will assist in addressing the high rates of unemployment in South Africa. This chapter focussed on objective six of this study - to use the identified optimal forecasting methods to generate quantitative forecasts of labour demand in the accommodation industry in South Africa, and link these with job levels and the qualification requirements.

To this end, chapter six presented an in-depth analysis of the results of the labour demand forecast in this study. This involved a detailed discussion of the three approaches employed, namely the time series method, the bottom-up approach and the top-down approach. Furthermore, the educational and employment profiles of the accommodation and catering industries were presented according to the data used, the educational profile, education summary, vacancies and retirement. From this, the study narrowed its focus to the forecasts for the accommodation industry. The

forecasts for the accommodation industry were also discussed according to the time series method, the bottom-up approach and the top-down approach. As a conclusion to the labour demand forecasts, the demand according to qualifications and specific job levels in the accommodation industry, were presented using the time series method and the bottom-up approach.

Overall, it may be concluded that the labour force in the accommodation industry is not adequately qualified, according to the NQF levels that are required for the vacancies (demand) in the accommodation industry. Moreover, in order to address the high unemployment rate in South Africa, learners need to adequately equip themselves with the qualifications and skills for which a great demand exists.

It is important to note that the educational profile provided by CATHSSETA's data, is not in line with the occupational profiles, and therefore there are employees employed in positions for which they do not possess the adequate skills required to fulfil the job.

Due to the fact that the data from this chapter was computer-generated, it is necessary to verify the accuracy of this data by means of a qualitative adjustment. This will be undertaken in chapter seven. This will provide more complementary information to add depth to the quantitative findings that have been presented in this chapter. Chapter seven therefore discusses the qualitative adjustment of the summary, as presented in this chapter. The aim of this adjustment is to enhance the accuracy of the forecasts that have been presented.

CHAPTER SEVEN

QUALITATIVE ADJUSTMENT OF QUANTITATIVE FORECASTS

7.1 INTRODUCTION

The main goal of this study is to forecast the demand for various job levels and their associated qualification requirements in the accommodation industry in South Africa by using a combination forecast method, where both quantitative and qualitative methods are used. The previous chapter focussed on the quantitative forecasts using the elasticity approach and time-series forecasts from which estimates of the future demand for various levels of qualified labour were given. The previous chapter concluded with three scenarios in terms of forecasts of qualified labour demand. Following from these forecasts, this chapter presents the forecast adjustment based on judgement forecasting by a panel of experts. The essence of this chapter is to address the sixth objective for this study to implement qualitative forecasting methods in order to adjust the quantitative forecasts and enhance the forecasting accuracy. The methodology of the quantitative forecasts was presented in chapter five, and will be further elaborated on in this chapter, as the qualitative adjustment which was conducted after the quantitative methodology was concluded.

The first part of the chapter describes qualitative adjustment and the process followed for qualitative adjustment procedure. The second part of the chapter presents results of the qualitative adjustment of the quantitative forecasts undertaken in this study.

7.2 QUALITATIVE ADJUSTMENT

According to Babbie and Mouton (2001: 270), qualitative research is used to describe and understand, instead of merely explaining, human behaviour. McMillan and Schumacher (2006: 26) agree, adding that the data from qualitative research is in the form of words rather than numbers. Qualitative research may also be termed as the study of social action, which incorporates qualitative methods to access participants and collect and analyse data (Babbie & Mouton, 2001: 270).

Qualitative research design may be categorised as interactive or non-interactive. Five main methods of interactive qualitative research design include experiments, surveys, ethnographic studies, case studies and life histories.

This study adopts the case study approach, which examines a case over a period of time and may cover several entities (McMillan & Schumacher, 2006: 26). Leedy and Ormrod (2014: 137) describe the case study approach as an in depth study of an event, program or individual for a certain period of time. This is a good approach to utilise when insufficient information is available regarding the sample. Extensive data must be obtained regarding the sample and this information should be recorded (Leedy & Ormrod, 2014: 137). Babbie and Mouton (2008: 281) describe this as the case study approach of organisations and institutions, used in management sciences where there is a focus on best practice, policies, practices, specific issues or culture.

Guest *et al.* (2013: 16) state that the mixed method research approach, in which both quantitative and qualitative research methods are utilised, provide a better understanding of a research problem than one approach could provide alone. Another advantage is that using qualitative research methods to complement and to complete quantitative research methods produces more detailed information and explanations than from quantitative research methods only (Guest *et al.,* 2013: 21; Leedy & Ormrod, 2014: 269). It can also assist with generating and testing hypothesis, triangulation and developing further research plans (Leedy & Ormrod, 2014: 269). It assists in providing a full narrative, which is richly embedded with the perceptions and experiences of interviewees that cannot be highlighted through the use of quantitative research. For instance, using open-ended questions in an interview also allows for information that otherwise would not have come to the fore using surveys or other similar methods. The largest advantage is that relationships, trends and patterns become evident through qualitative research methods (Guest *et al.,* 2013: 22).

7.3 PROCESS FOLLOWED FOR QUALITATIVE ADJUSTMENT

Guest *et al.* (2013: 33-35) state that there are several design steps and options to be included in qualitative research methods. These include: determining the purpose of the study, the audience, the population and location, the elements to include, the orientation and the approach to use, the attributes to be investigated, the data

collection methods, further procedures to be followed, sampling methods, recruitment, time and resource constraints; and reviewing the collected data.

Taking this into consideration, Figure 7.1 below illustrates the methodology that will be followed for qualitative adjustment for this study. From the forecasting of job levels and requirements already conducted in chapter six, the first step is to identify the goals of qualitative adjustment. The second step is to identify the role-players and their respective organisations. The third step is to discuss the pilot study. The final step is to carry out interviews to assess the forecasts in chapter six.

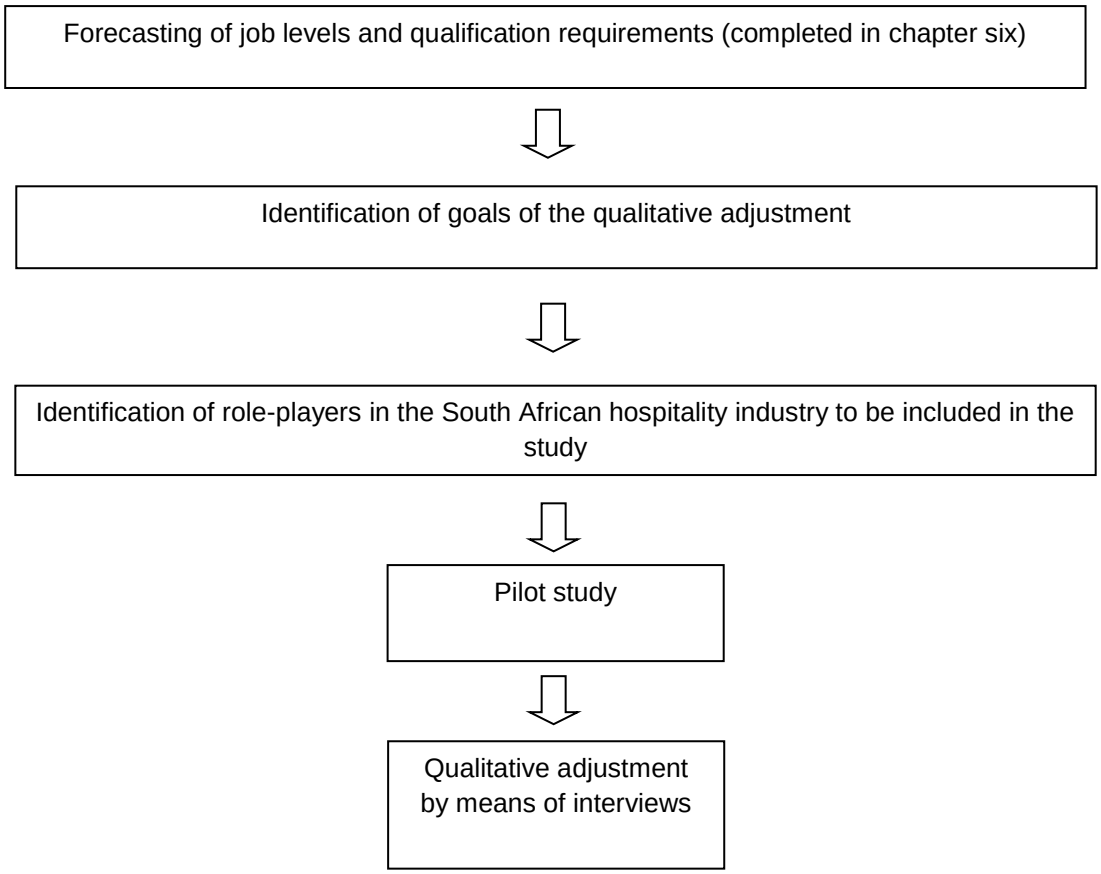


Figure 7.1 Methodology followed to complete qualitative adjustment of the quantitative forecasts

(Source: Compiled by author)

7.3.1 The goals of qualitative adjustment

According to the literature study conducted in chapter three, qualitative methods are used:

- To predict values of interest in the future.

- To better understand society.
- Especially when the environment changes very rapidly and major events are expected.
- When information may change over time.
- In combining quantitative and qualitative methods to be most effective.

The purpose of using qualitative adjustment in this study is to complement or add to the quantitative forecasting already completed in chapter six, by asking experts their perception of these findings. As discussed in chapter three, in section 3.5, it is important to not use only the statistical forecasting data as analysed in chapter six, but to also conduct a qualitative adjustment of this data. This is necessary due to the fact that the additional information obtained through means of qualitative data, cannot be clearly determined through forecasting data alone. This leads to the combination method, which will result in a well-rounded conclusion to this study. Thus, the subjective and expert responses of the experts from the interviews about the results of the forecasting undertaken in chapter six, may not only confirm but also add to the findings. For this reason, the three forecasting scenarios presented at the end of chapter six, the adjustments obtained from this chapter, the reasons for these adjustments and a combined forecast will be presented as the outcome of this study.

In-depth semi-structured interviews (described in section 3.5.5 of chapter three) will be used as the method of qualitative adjustment for this study. These interviews will be guided by the three scenarios developed in chapter six.

7.3.2 Identification of role-players in the South African accommodation industry to be included in the study

Part of the planning of conducting in-depth interviews, according to Boyce and Neale (2006: 4), is to identify stakeholders, and the type of information required from them. This is the process of obtaining a sample for the interviews. The role-players selected for this study, were based on the number of rooms/beds that they have available in the South African accommodation industry, as well as some being listed on the South African Johannesburg Stock Exchange (JSE). Six organisations were identified that comply with the criteria set out above and together they cover a broad range of accommodation types in South Africa, from 1 to 5 Star graded hotels, lodges, chalets and self-catering accommodation. The population for this study are

all hospitality accommodation specialists which is a common characteristic that they share. A representative from CATHSSETA was also interviewed. Their opinion of the accommodation industry forecasts is pertinent to this study as this organisation plays a large role in the South African accommodation industry as a whole and as a representative of the smaller role players.

Due to the nature of the line of questioning involved in the qualitative adjustments of the forecasts and to be representative of the industry, the interviewees were representatives from the human resources (HR) department of the identified organisations, representatives from the financial departments of six of the role-players in the South African accommodation industry and the representative from CATHSSETA. These representatives of the selected organisations and of CATHSSETA are seen as experts in their fields and leaders in the hospitality industry in South Africa.

These representatives were asked about their perceptions of the findings from the quantitative forecasts obtained. They were also expected to adjust the forecasts and provide reasons for their adjustments. Their feedback is documented and discussed in this chapter, together with a consensus forecast. This process aims to validate and enrich the findings of the study.

The organisations used in this study for their expertise in the accommodation industry are: Tsogo Sun Hotels, City Lodge Hotels, ATKV, Sun International, Forever Resorts and SanParks.

Table 7.1 below provides brief profiles of these organisations.

The sample for the interviews was a total of six organisations, with two representatives from each organisation (one from the HR department and the other from the financial department), totalling twelve interviewees. The target was the HR representatives and financial representatives at each organisation. The HR representative was deemed to be an expert in the human capital of the organisation, which would give an expert opinion on skill levels, and growth in jobs at the organisation. The financial representative had more access to financial information of the organisation, which would assist in the turnover questions about the organisation. However, at some of the organisations only one person committed to

the interview. The representative from CATHSSETA was interviewed but did not provide any adjustments to the forecasts. The role of CATHSSETA was to provide additional information from the industry for completeness.

Table 7.1 Profiles of organisations interviewed

Organisation	Number of rooms
Tsogo Sun	Tsogo Sun has more than 90 hotels, with more than 14 600 rooms in all sectors of the accommodation market, in South Africa and Africa, including the United Arab Emirates and the Seychelles (Tsogo Sun, 2016: Online).
City Lodge Hotels	The City Lodge Hotel Group has 7 064 rooms and suites and is listed as one of the 250 largest hotel chains in the world (City Lodge Hotel Group, 2016: Online).
ATKV	The ATKV resorts portfolio includes seven properties, specialising in self-catering accommodation (ATKV Resorts, 2014: Online).
Sun International	Sun International is known as “Africa's largest tourism, leisure and gaming group” and operates or has an interest in a total of 27 resorts, luxury hotels and casinos across ten countries. This includes 15 operations in South Africa, 2 in Zambia, 2 in Lesotho, 1 in Botswana, 1 in Nigeria, 1 in Swaziland and 1 in Namibia (Sun International, 2016: Online).
Forever Resorts	Forever Resorts Lodges Hotels and Retreats is known as a top tourism and hotel group in South Africa. Forever Resorts have 23 properties offering varying types of accommodation (Forever Resorts Lodges Hotels and Retreats, 2016: Online).
SanParks	SanParks have 22 properties nationwide, and their target is to sell 565 600 accommodation unit nights in the year 2016/2017 (Sanparks, 2016: Online).

(Source: Compiled by author)

According to Dworkin (2012: 1319), the sample size used in the interviews for qualitative research methods is smaller than that of quantitative methods, as the in-depth interviews focus on an understanding, a phenomenon or a meaning. This is because the focus is on the “how” or “why” of a topic. In-depth interview samples are therefore useful to analyse the relationship between different categories and to obtain the experience of the interviewees to complement the quantitative data obtained. The ideal sample size is obtained through saturation, which is the point at which no new or relevant data can be generated, also confirmed by Guest *et al.* (2013: 58-59). Dworkin (2012: 1319) mentions that anywhere from 5 to 50 participants are sufficient to be considered an adequate sample.

7.3.3 Pilot study

A pilot study using South African hotels has been conducted by a master's degree student at the North-West University, in her study *Analysing and forecasting qualified labour demand in the South African hotel accommodation sector* (Makumbirofa, 2015). She used a questionnaire as one of the research methods in her study, and the questionnaire used in this study is based on the questionnaire used in the pilot study.

7.3.4 Qualitative Adjustment by means of interviews

According to Boyce and Neale (2006: 3), in-depth interviews are conducted with interviewees to explore their perspectives on specific topics. These types of interviews are appropriate when more in-depth information is required regarding an interviewee's thoughts or behaviours, and aim to offer a complete picture of what happened in the collected data and relevant reasons for this.

Interviews are more beneficial than focus groups due to the fact that interviewees may not feel comfortable speaking in a focus group, or when individual information or opinions are required. The main benefit of using in-depth interviews is that they provide much more detailed information than any other qualitative research methods (Boyce & Neale, 2006: 3).

Gillman (2005: 3) explains that there are several ways of approaching research interviews, but due to the context of "real life" situations, and the various outcomes that the interviews may serve, it is important to select the correct type of interview for a research study. He describes interviews as having the following elements:

a) Questions asked are open ended, with interviewee's responding with their own answers.
b) The relationship between the interviewee and interviewer is responsive or interactive.
c) There is some structure or purpose from the interviewer.

As suggested by Boyce and Neale (2006: 4), for purposes of this study, an interview guide was developed to list questions or topics to be discussed during the interviews (see attached as Appendix D). The questions were mostly open-ended, although

they were directed at a specific topic. The interview guide starts with a cover letter, explaining the goal of the interview and the purpose of the study. This is followed by a letter of informed consent, which was completed and signed by each of the interviewees. The next section of the interview guide elicited responses from interviewees regarding their personal demographic information and that of their organisations. This data gave the researcher an idea of the background of the interviewee and the organisation.

This was followed by eight semi-structured interview questions, relating to the interviewees' perceptions of the quantitative forecasts obtained in chapter six of this study. These include questions regarding the interviewees opinions about the growth of the accommodation industry over the next five years; the growth in employees per skill level over the next five years; the kinds of jobs according to skill category that may increase over the next five years; and the staff turnover per year, according to retirement, migration and death. At the end of the interviews, interviewees were allowed to provide additional comments on issues they deemed pertinent to the study.

In August 2016, the HR and financial representative of each of these organisations were contacted via email and telephonically. The interview guide, and cover letter explaining the purpose of the study and interview, was emailed directly to the representatives at each organisation. The interview guide was sent to representatives prior to the interviews, in order for them to peruse the questions and provide them with time to obtain the necessary information that they might need to adjust the forecasts and provide reasons for the adjustments.

Ethical considerations were also made prior to the interviews. According to Guest *et al.* (2013: 317) ethical considerations for a qualitative research study include informed consent and confidentiality. Thus, representatives were asked for their permission to take part in the study. To adhere to confidentiality requirements, the participants' names and surnames will not be included in the study. The study only provides the name of the establishment and the title of the participant. Interviewees therefore remained anonymous, and only their job titles were used in the reporting of the results of these qualitative adjustments.

An informal discussion about the goal of the interview and the process to be followed during the interview was held at the start of each interview. The researcher prompted the questions as outlined in the interview guide to the interviewees, making notes and audio recordings of each discussion. Open ended questions were asked to obtain more clarity in some instances, regarding the interviewees' perceptions of the findings of chapter six's forecasts.

The interviews were recorded via audio tape recorder, while manual notes were taken during the interviews. For preciseness, the notes were completed by listening to the audio recordings after the interviews. The information from each interview was then summarised and compiled in the results section of this chapter. The data was reviewed and the patterns/trends amongst the responses of the interviewees were noted.

7.3.5 Reliability and validity

According to Gillman (2005: 6), reliability and validity originate from the positivist theory. Reliability is obtained from consistent results when the same test is provided to another person. It may also be obtained by measuring whether different parts of the test correspond in the metric sense. According to Guest *et al.* (2013: 22), reliability is increased when structured questions are used in an in-depth interview. Here, Interviewees and interviewers are said to be "constructing" themselves in what they say. Taking this into consideration, both parties should focus on objectivity during the interview (Gillman, 2005: 6). However since interviewees are asked to describe their opinions and feelings the results are more subjective than they are objective.

Guest *et al.* (2013: 22) confirm the importance of validity by stating that validity is improved by qualitative research methods such as in-depth interviews. This is because there is more flexibility in qualitative research methods, where the researcher is at liberty to rephrase certain questions, which cannot be done in quantitative research methods. Interviewees may also use their own ways of communication, which might include certain jargon or slang. However these need to be managed and used appropriately.

Using the process outlined above, the results of the interviews and qualitative adjustments to the quantitative forecasts are subsequently discussed.

7.4 RESULTS OF QUALITATIVE ADJUSTMENT

After completion of the interviews with respondents from the six organisations discussed above, the adjustment of the forecasts obtained after the completion of chapter six, were made where deemed necessary. Before these adjustments are shown, due consideration is given to the demographic characteristics of the respondents.

7.4.1 Informed consent

Eleven respondents from the six organisations gave their informed consent to be interviewed and recorded. The respondent from CATHSSETA was also interviewed for additional information.

7.4.2 Interviewee information

Seven out of the eleven respondents were male (64%); while four were female (36%). the majority of the respondents selected English as their main language (73%), two selected Afrikaans (18%) and one selected English and Afrikaans (9%). Seven respondents are White, three are African and one is of Indian decent. The average age of the respondents was 49 years. Moreover, all respondents resided in Gauteng.

Seven out of the eleven respondents were involved in the management of Human Resources/Human Capital Management or Training and Development (64%), three were involved in the management of Finances (27%) and one was a Managing Director (9%). The respondents all possessed higher education and training qualifications (100%). The total number of properties of the represented organisations ranged from 7 to 98, with between 9 and 90 years of existence.

These respondents were therefore deemed experts in the accommodation industry, with a wide range of properties in each organisation, ranging from one star to five star accommodation, and ranging from chalets to five star lodges and hotels. Their ages and qualifications assisted in deeming them knowledgeable experts in the

accommodation industry, making their inputs and insights into the industry invaluable.

Below are the summaries of the interviews held with the above-mentioned eleven respondents of the six organisations.

7.4.3 Accommodation industry forecasts for the next five years

The three scenarios for cumulative output growth in the accommodation industry were presented to interviewees and they were asked to circle what they deemed to be the most appropriate forecast and to adjust the forecasts accordingly. The low scenario represents the Quantec forecasts, while the middle and high scenarios are the VAR forecasts as presented in chapter six.

Table 7.2 Output forecasting scenarios presented to the respondents

Year	Low	Middle	High
2015	2.2%	2.4%	2.8%
2016	1.8%	4.5%	7.2%
2017	2.5%	6.9%	11.4%
2018	4.2%	9.4%	16.2%
2019	6.4%	12.0%	20.5%

(Source: Compiled by author)

One of the respondents selected the LOW forecast as the most accurate, while two of them adjusted the LOW forecast. Two respondents selected the LOW to MIDDLE forecast and one of the two adjusted this forecast. One respondent opted to adjust the LOW, MIDDLE and HIGH forecasts.

The respondent that selected the LOW forecast without adjustments provided the following reasons: The current crisis in higher education, the instability in the country due to the unstable economy, and a lower disposable income forcing people to travel for shorter periods and trying to save money on luxuries, such as holidays and accommodation. The respondent also stated that imminent elections in 2018/2019 will also impact negatively on the accommodation industry and affect revenues. In addition, the increase in competition in the accommodation industry will affect the accommodation revenues in the future. Therefore, building capacity is a positive sign towards growth in the accommodation industry.

The respondent that selected the LOW to MIDDLE forecast without adjustment, indicated that the forecast for domestic tourists would be LOW, while that of international tourists would be the MIDDLE forecast. This respondent reiterated that political unrest and instability in the economy were to be blamed for the low forecast. Due to this economic environment, less guests travel on leisure trips, few spend money and some stay on holiday for a shorter amount of time. Many guests were also inclined to travel during off-season times and not during Christmas or traditional holidays only, as was the case in the past. The increase in rates also added to the travel expenses. Conversely, when the economy is stronger, people have more money to travel and consequently, more, thereby impacting positively on the economy. The rapidly changing market (towards a more inclusive market such as the "black diamond" market), leads to new opportunities for self-catering and family accommodation in South Africa.

a) Low forecast adjustments scenario

Another two respondents opted to adjust the LOW forecasts for accommodation growth:

The one respondent stated that they would adjust the LOW forecast for accommodation growth to 2.8% in 2017, 4.8% in 2018 and to 8.5% in 2019 (see column 3, Table 7.3). According to this respondent, this adjustment was influenced by the GDP growth rate. Both respondents attributed the adjustment to the fact that their assumptions of the GDP, demand and supply, and inflation, which dictate the forecasts. However, the actual forecasts for the industry would be different the academic forecasts. They stated that South Africa requires a GDP growth of at least 3% or more. nevertheless, the downgrade on the economy in December 2016, combined with continued protests, resulted in a high low road full of uncertainty and instability, which influenced government to spending less. Another respondent also agreed that the economic instability in South Africa meant that the forecasts would remain low until 2019. The table below provides a representation of these figures.

Table 7.3 Adjusted Low forecast

Year	Low forecast	Respondent 1 forecast	Respondent 2 forecast
2015	2.2%	2.20%	2.00%
2016	1.8%	1.80%	2.08%
2017	2.5%	2.80%	3.08%
2018	4.2%	4.80%	5.08%
2019	6.4%	8.50%	8.08%

(Source: Compiled by author)

Other respondents opted to adjust the LOW forecast as follows: 2.0% in 2015, 2.08% in 2016, 3.08% in 2017, increasing to 5.08% in 2018 and 8.08% in 2019 (see column 4, Table 7.3). The respondents opined that the shrinking of the economy in 2016 means that it will take several years for the accommodation revenues to increase again.

Both of these respondents stated that government spending is a large component of business in the accommodation industry but is currently limiting its reservations in 4 and 5 star hotels. These respondents are of the opinion that the investment of more capital in businesses in the country will stimulate increased travel, which will also lead to increased spending in the accommodation industry. They also argue that the economy will thrive if excessive spending by government is curbed. One respondent mentioned that their organisation has experienced a 30% reduction in government reservations and spending.

b) Low to middle forecast adjustments scenario

One respondent selected the MIDDLE forecast but chose to adjust it to the LOW accommodation growth to 4% in 2018 and 6% in 2019. This adjustment was attributed to the current economic situation and the failure by government departments, such as the Department of Home Affairs, to assist in improving the economy. The respondents also mentioned that the grip of South African Airways (SAA) travel into and within South Africa, the increase in fuel price which leads to a hike in the price of airline tickets and in the exchange rates, negatively influence travel to South Africa. Table 7.4 below illustrates these figures.

Table 7.4 Adjusted low to middle forecast

Year	Low forecast	Middle forecast	**Respondent forecast**
2015	2.2%	2.4%	2.4%
2016	1.8%	4.5%	4.5%
2017	2.5%	6.9%	6.9%
2018	4.2%	9.4%	4.0%
2019	6.4%	12.0%	6.0%

(Source: Compiled by author)

See the table below for a representation of these figures.

c) Low, middle and high forecast adjustments scenario

One respondent agreed with the HIGH forecast for 2015, the MIDDLE forecast for 2016, and the LOW forecasts for 2017 – 2019 (5% at highest) (see Table 7.5 below). The reasons given for this include the following: the local economic situation; the biometric visas and other home affairs policies and regulations which came into effect since 2015; the less disposable income for people to spend on travel expenses; and the fact that it takes 18 to 24 months to recover from bad economic conditions. Therefore the new supply of labour to the industry will only assist to improve the economy by 2020. The respondent also stated that in 2015/2016 there was a very high increase in international tourists, especially after previous challenges with the Ebola crisis and the home affairs regulations of new biometric visas and unabridged birth certificates.

Table 7.5 Adjustment based on low, middle and high forecast

Year	**Low forecast**	**Middle forecast**	**High forecast**	**Respondent forecast**
2015	2.2%	2.4%	2.8%	2.8%
2016	1.8%	4.5%	7.2%	4.5%
2017	2.5%	6.9%	11.4%	2.5%
2018	4.2%	9.4%	16.2%	4.2%
2019	6.4%	12.0%	20.5%	5.0%

(Source: Compiled by author)

d) Additional considerations

Additional reasons were provided by the respondents for their selection of forecasts and the adjustments. These reasons and considerations that influence the future of the accommodation industry include the following:

Four of the six organisations' respondents were of the opinion that changes in the regulations on biometric visas will affect tourism and spending in South Africa. The long queues and complicated processes at immigration points, as well as uninformed tourists, were cited as challenges. They were of the opinion that the South African economy could grow within next six months without the implementation of the biometric visa regulations. One respondent stated that the changes in revenue in the accommodation industry could be felt through the implementation of new visa regulations. Respondents also pointed out that municipalities or councils should be actively involved in investing in tourism.

Another point that was made was that the international media houses often convey South Africa as a dangerous and risky place to visit, mainly due to the high unemployment and resulting crime, which deters international tourists from visiting South Africa. The increasing incidences of civil disobedience characterised by protests and violence is also portrayed on the international media front as a label that South Africa is a risky or dangerous tourism destination. This is confirmed by the high travel alerts that were recently made for South Africa, by the United Kingdom and the United States. On the contrary, when international tourists look past the crime and unemployment, they are able to have a very cost-effective holiday in South Africa, depending on the exchange rate of the country from which they are travelling. Overall, many tourists travel to South Africa due to the favourable exchange rate and the value for money.

Two of the six organisations' respondents indicated that there was an oversupply of accommodation in South Africa, due to an increase in the popularity of AirBnB and guesthouse businesses. This leads to too many rooms, as guests have many more options to choose from when selecting accommodation and have easy access to user-friendly booking methods. These do not create new jobs and influence hotels negatively as they are a cheaper alternatives and hotels are not able to compete with

budget options. Rate increases in hotels cannot be decreased, therefore occupancies must be increased to consistently obtain high revenues.

All six organisations' respondents agreed that the instability in the South African political climate, had an effect on the accommodation industry. They cited the Pravin Gordhan allegations, which had a positive impact on the accommodation industry in the short term. The upcoming national elections in 2019 may raise the confidence in the political landscape of the country. In one statement, a respondent stated that the political leadership will determine the growth of the economy and strength of South Africa as a global player. This may result in more investments in South Africa, which may ultimately lead to more new capacity being built in the accommodation industry and results in the creation of new jobs. Growth in the economy can only occur once the accommodation market has been saturated, and then the next step is to invest in Africa, before global market penetration is necessary. At this stage though, the view is that there is still scope and opportunity for expansion in the South African accommodation industry.

7.4.4 Labour growth over the next five years

In terms of total labour demand, the following scenarios were presented to the respondents and they were asked to choose the best scenarios and to create their own forecast. These scenarios correspond with the three scenarios presented at the end of chapter six:

Table 7.6 Total labour forecast scenarios

Year	Low Scenario	Middle Scenario	High Scenario
2015	0.5% (478)	0.6% (556)	1.4% (1 419)
2016	1.0% (1 012)	1.4% (1 420)	2.6% (2 626)
2017	1.6% (1 569)	2.3% (2 239)	4.6% (4 614)
2018	2.2% (2 170)	3.2% (3 176)	4.8% (4 765)
2019	2.8% (2 748)	4.0% (4 019)	5.2% (5 174)

(Source: Compiled by author)

Similarly, the formal labour scenarios according to skill-level were also presented together with the informal labour demand forecasts. These are summarised in Table 7.7 below.

Table 7.7 Formal and informal labour forecast scenarios

Highly-skilled Labour:			
Year	**Low Scenario**	**Middle Scenario**	**High Scenario**
2015	0.4% (27)	0.5% (31)	1.4% (92)
2016	0.8% (50)	1.2% (80)	2.6% (171)
2017	1.2% (76)	1.9% (126)	4.6% (300)
2018	1.6% (104)	2.8% (178)	4.8% (310)
2019	2.0% (132)	3.5% (226)	5.2% (336)
Skilled Labour:			
Year	**Low Scenario**	**Middle Scenario**	**High Scenario**
2015	0.7% (319)	0.8% (371)	1.4% (648)
2016	1.3% (591)	2.1% (949)	2.6% (1 200)
2016	2.0% (908)	3.3% (1 496)	4.6% (2 109)
2018	2.7% (1 239)	4.7% (2 123)	4.8% (2 178)
2019	3.5% (1 570)	5.9% (2 686)	5.2% (2 365)
Semi-and unskilled Labour:			
Year	**Low Scenario**	**Middle Scenario**	**High Scenario**
2015	0.1% (18)	0.1% (21)	1.4% (221)
2016	0.2% (33)	0.3% (53)	2.6% (410)
2017	0.3% (50)	0.5% (83)	4.6% (720)
2018	0.4% (69)	0.8% (117)	4.8% (743)
2019	0.6% (87)	1.0% (149)	5.2% (807)
Informal Labour:			
Year	**Low Scenario**	**Middle Scenario**	**High Scenario**
2015	0.4% (114)	0.4% (133)	1.4% (457)
2016	0.7% (211)	1.1% (339)	2.6% (846)
2017	1.0% (324)	1.7% (534)	4.6% (1 486)
2018	1.4% (442)	2.4% (757)	4.8% (1 534)
2019	1.8% (560)	3.0% (959)	5.2% (1 666)

(Source: Compiled by author)

One organisation's respondents selected the LOW scenario for the total labour, highly skilled, skilled, semi-skilled and informal labour forecasts. The reason for this is that revenue dictates the growth of other ancillaries and the number of new jobs in the accommodation industry. The other respondents felt that the adjusted growth

levels were correct and that the LOW scenario was the best, as it is relative to the anticipated growth in revenue. This is because an increase in revenue does not necessarily result in an increase in employees or headcount, due to factors such as inflation and a limited stock in the accommodation industry. According to these respondents, the key in the current human resources practices in the accommodation industry is to focus on unlocking efficiencies so that more productive and efficient work can be done by less or the existing number of employees, to avoid retrenchments. These respondents indicated that retrenchments were to be avoided at all costs because they often have negative effects such as instability in the workforce.

Another organisation opted to select the LOW total labour demand scenario but agreed to the LOW forecasts for highly skilled, skilled, semi-skilled and informal labour as follows: 0.5% for 2015, 0.8% for 2016, 1.2% for 2017, 2.0% for 2018 and 3.0% for 2019.

Respondents from another organisation selected the MIDDLE forecast for total labour, due to the fact that at least seven new hotels (in other, mostly, international hotel groups) are due to open in 2017 as a result of increased foreign investments in South Africa. These respondents chose the LOW forecast for highly skilled labour, indicating that certificates or diplomas are a requirement for many hospitality jobs. They selected the MIDDLE forecast for skilled jobs, as most of these jobs are outsourced. For unskilled labour, they selected the HIGH forecast, where the majority of labour in the accommodation industry comes from. This is also due to the fact that new jobs can only be created when new capacity is added, as agreed by three respondents. One organisation's respondent indicated that no new hotels were planned until 2019.

Respondents from another organisation differed from the above two organisations, in that they stated that they forecasted a MIDDLE forecast for the highly skilled labour; and skilled labour; while they forecasted LOW scenarios for semi-skilled and unskilled labour. For informal labour they forecasted the MIDDLE forecast to be most realistic.

Another respondent selected the MIDDLE scenario for 2015 for the forecast for total labour was to be the MIDDLE scenario for 2015, due to much in-sourcing in the

accommodation industry. The respondent also identified that for 2016 the forecast was LOW, with the MIDDLE scenario for both 2017 and 2018, resulting in a HIGH forecast for 2019. This respondent forecasts that after 2020, the labour forecasts would decrease again due to oversupply in the industry. The forecast for highly skilled and skilled labour was forecasted at HIGH for 2015 and 2016, and MIDDLE for 2017-2019. For semi-skilled and unskilled labour the forecast was MIDDLE for 2015-2016, with LOW forecasts for 2018 and 2019. The reasons provided for these forecasts were that technology, such as online check-ins, is replacing many manual jobs. The informal labour was forecasted at MIDDLE for 2015-2017, and HIGH for 2018-2019. This attributed to the employment of untrained, but more passionate, casual staff. Due to the fact that unskilled labour is often contracted out, the informal labour is also forecasted to be on the increase.

One respondent stated that a 1% increase in 2015 was reasonable, with a 2.0% increase in 2016, a 3.0% increase in 2017, a 2.7% increase in 2018 (due to the increase in new accommodation capacity in 2017, 2018 is forecasted to have a decrease in total labour employment), resulting in a 4.0% increase in 2019 due to the national elections. After the elections it is forecasted that, with the stability in the economic environment, many new jobs will be created and the industry will be developed further. The forecasted percentages are attributed to the high retirement that is forecasted for the industry and the recruitment of many post interns/learnership students into new positions in the industry.

For highly skilled employees, respondents forecasted the HIGH scenario, ascribed to an increase in qualified graduates that are vital to creating a professional hospitality industry. For skilled labour, the respondents forecasted the MIDDLE forecast from 2015-2019, except for 2017, when a LOW forecast was selected (2.7%) due to the anticipated uncertainty of the educational system in that year. For semi-skilled and unskilled labour, the HIGH scenario was selected for the entire period, except for 2017 with a MIDDLE forecast of 2.6% as a result of the probable retrenchments due to operational requirements. Informal labour given a MIDDLE forecast for all years, except for 2016 when a HIGH forecast was selected due to the taking over of labour brokerage contracts by full service companies and the subsequent increase in employment and managers that need to manage such companies.

a) Summary of labour demand forecast adjustments

Table 7.8 summarises the forecasts for total labour according to the respondents from the six organisations. It shows that two organisations chose the low scenario, one the middle scenario, one chose a combination of the three scenarios and two created their own scenarios.

Table 7.8 Respondents' adjustment of total labour demand forecasts

Year	Low Scenario	Low Scenario	Middle Scenario	Respondent adjusted scenario	Respondent own scenario	Respondent own scenario
2015	0.50%	0.50%	0.60%	0.60%	1.00%	0.50%
2016	1.00%	1.00%	1.40%	1.00%	2.00%	0.80%
2017	1.60%	1.60%	2.30%	2.30%	3.00%	1.20%
2018	2.20%	2.20%	3.20%	3.20%	2.70%	2.00%
2019	2.80%	2.80%	4.00%	5.20%	4.00%	3.00%

(Source: Compiled by author)

Similarly, Table 7.9 below summarises the forecasts that the respondents chose as the most probable for labour demand according to different skill levels, as well as their adjustments. Each column therefore represents the choice of the most likely forecast scenario by a respondent.

It is evident that most respondents agree with the low scenario for all skill levels, due to the reasons cited above.

Table 7.9 Respondents' adjustment of formal labour demand forecasts according to skill levels

Highly skilled labour forecasts						
Year	**Low Scenario**	**Low Scenario**	**Low Scenario**	**Middle Scenario**	**High Scenario**	**Respondent adjusted scenario**
2015	0.40%	0.40%	0.40%	0.50%	1.40%	1.40%
2016	0.80%	0.80%	0.80%	1.20%	2.60%	2.60%
2017	1.20%	1.20%	1.20%	1.90%	4.60%	1.90%
2018	1.60%	1.60%	1.60%	2.80%	4.80%	2.80%
2019	2.00%	2.00%	2.00%	3.50%	5.20%	3.50%
Skilled labour demand forecasts						
Year	**Low Scenario**	**Low Scenario**	**Middle Scenario**	**Middle Scenario**	**Respondent-adjusted middle scenario**	**Respondent combining middle and high**
2015	0.70%	0.70%	0.80%	0.80%	0.80%	1.40%
2016	1.30%	1.30%	2.10%	2.10%	2.10%	2.60%
2017	2.00%	2.00%	3.30%	3.30%	2.70%	3.30%
2018	2.70%	2.70%	4.70%	4.70%	4.70%	4.70%
2019	3.50%	3.50%	5.90%	5.90%	5.90%	5.90%
Semi- and unskilled labour demand forecasts						
	Low Scenario	**Low Scenario**	**Low Scenario**	**High Scenario**	**Respondent combining middle and low**	**Respondent-adjusted high**
	0.10%	0.10%	0.10%	1.40%	0.10%	1.40%
	0.20%	0.20%	0.20%	2.60%	0.30%	2.60%
	0.30%	0.30%	0.30%	4.60%	0.50%	2.60%
	0.40%	0.40%	0.40%	4.80%	0.40%	4.80%
	0.60%	0.60%	0.60%	5.20%	0.60%	5.20%

(Source: Compiled by author)

b) Observations regarding informal labour demand forecasts

Although they are not the main focus in this research, informal labour demand forecast adjustments are included for completeness. According to the respondents, the informal labour sector is defined as temporary jobs, for which no real vacancies exist. Therefore the employees in this sector are treated differently than permanent employees, as they do not have the same loyalty, neither do organisations have the same control over them.

Respondents from three organisations stated that they selected the LOW forecast for informal labour because of the introduction of new labour brokerage changes with the amendments to the labour law, which negatively affected the labour brokerage organisations and their role in the accommodation industry. Due to these legal amendments which force organisations to employ informal employees in a more formal manner to reduce their administrative burden, employees in the informal sector will transfer to the formal labour sector.

Thus, the conversion of informal employees to permanent employees will increase the permanent employees in the formal labour industry and reduce informal labour. They also mentioned that due to the seasonality of the accommodation industry, the informal labour figures were a challenge to forecast since informal labour is not as stable as formal labour. Due to the labour brokerage legal amendments, employees in the informal labour sector, will transfer to the formal labour sector, as these amendments force organisations to employ informal employees in a more formal manner, to reduce the administrative burden on organisations.

Although labour brokerage organisations supply the economy with employees, there are short to medium term consequences such as the wage distributions of employees, as well as a bigger pool of skills in the economy. Both organisations mentioned that outsourcing affords them the flexibility of employing workers (in terms of hours, days and shifts) that selecting permanent employees does not offer. The standards of these employees are much easier to maintain through outsourced companies, and these workers are only paid for work done.

7.4.5 Requirement and minimum qualifications for occupations in the highly skilled category

One of the main advantages of using an interview technique is that detail information can be obtained from respondents. This is especially relevant for this study where the typical qualifications demanded by the industry is under investigation. The respondents were prompted to reveal their views on the typical occupations that will be in demand as well as their corresponding qualification requirements.

Below is Table 7.10 on the summary of the occupations which were expected to be created in the higher skilled labour category by the respondents. If the occupation

was mentioned more than once, all minimum qualifications mentioned by respondents will also be listed alongside it. As can be seen from the table (Table 7.10) below, the majority of respondents agreed that general managers would be the most highly sought after highly qualified skill when it comes to the creation of new occupations.

Table 7.10 Highly skilled occupations and minimum qualifications

Types of occupation	Minimum Qualification	Minimum Qualification	Minimum Qualification	Minimum Qualification
General managers	Diploma and work experience	Advanced diploma or degree at NQF 7	Diploma or degree	Diploma
Assistant General Managers	Advanced diploma			
Managers/Head of Departments (for example Rooms Division)	Diploma	Advanced diplomas or degrees		
Front office managers	Diploma			
Reservations managers	Diploma			
Banqueting managers	B com degree			
Maintenance Manager	Qualified artisan			
F&B Manager	Diploma or Degree			
Finance Manager	Degree			
Payroll Administrator	Diploma or Degree			
Senior Administrator (accountant)	Degree			
Financial positions	B Com Degree			
Supply chain management	Diploma			
Executive Chef and Sous Chefs	Diploma	Diploma or Degree		
F&B chefs	Chef diploma and work experience			
Technological/IT jobs	Management diploma plus IT skills/Marketing	Diploma		
E-commerce Manager	Diploma or Degree			
Sales and Marketing managers	Advanced diploma or degree	Diploma	B com degree	
Skills Development Trainer	Diploma			

(Source: Compiled by author)

One organisation's respondent mentioned that new jobs in the highly skilled category would be available for general managers (with advanced diplomas or degrees at

NQF 7), assistant general managers (with advanced diplomas), IT staff (with diplomas), sales and marketing staff (with advanced diplomas or degrees), executive chefs (diplomas) and managers/head of departments, such as for rooms division (requiring advanced diplomas or degrees).

The reasons stated for this is that the respondent predicts that the need for technological skills combined with information technology skills, as well as marketing skills are on the rise. It was also stated that job-seekers as well as students, should focus on the global environment, and not only learn about South African tourism and hospitality. It was stated that head hunter human resource companies are often employed to find highly skilled employees, such as general managers, as these employees are very difficult to find. The supply chain management jobs refer to managing relationships between the accommodation provider, travel agent as well as other stakeholders in the industry, as well as management and knowledge of the various platforms of these stakeholders.

The reason for the growth in the highly skilled labour, according to the respondents from one organisation, is that the perceptions of the hospitality industry are changing, and people are starting to see the hospitality industry as a “real” career. Therefore the higher skilled that the employees are, the higher skilled the hospitality industry will become. The government is also promoting funding and the regulation of qualifications, ensuring that education is seen as a priority and educating employees as a matter of urgency. Also, several students who attend FET colleges are seen to have at least some work experience and exposure to the hospitality industry. Often, graduates’ perceptions of the industry do not match reality, and as competition in the accommodation industry becomes tougher, work experience and recruiting and employing the correct employees will become increasingly important.

One organisation responded that due to the fact that the organisation implements the “promoting from within” strategy, they forecast for the industry that new jobs will be created for financial positions (requiring BCom Degrees), general managers (requiring a diploma and work experience), and for chefs (requiring a chef diploma and work experience). In all cases work experience was essential. A comment was made that as an organisation you are not able to deny an applicant entry to a job if they were not able to have access to a formal qualification. Thus they give such

employees the opportunity to gain experience and be trained by the hotel. The respondent believed that a qualification is merely an indication of knowledge and life skills, but that experience is more important.

7.4.6 Requirement and minimum qualifications for occupations in the skilled category

Similar to highly skilled labour, respondents were asked to list the occupations and the minimum qualification requirements for the skilled labour category, where growth is expected. Below is a summary in Table 7.11 of the identified occupations that would be created in the skilled labour category. Again, the identified minimum qualifications are listed alongside the occupations. From Table 7.11 below, the majority of respondents agreed that front office staff would be the most highly sought after skilled job when it comes to the creation of new jobs.

Table 7.11 Skilled occupations and minimum qualifications

Types of occupations	Minimum Qualification	Minimum Qualification	Minimum Qualification	Minimum Qualification
Front office staff	Diploma and work experience	Certificate	Certificate	Certificate
IT/IT service desk	Certificate or Diploma	Certificate or Diploma	Management diploma plus IT skills/Marketing	
Supervisors (HK, FO, Maintenance etc)	Diploma	Diploma	Diploma	
PR	Certificate	Grade 12/FET/Workplace certificate		
Reservations	Diploma and work experience	Certificate		
Sales consultants	Grade 12 and experience	FET/Certificate		
Commis chef positions	Diploma and work experience			
Assistant managers	Diploma			
Supply chain management	Diploma			
Conference Coordinators	Certificate			
Housekeeping Supervisors	Certificate			
Administrators	Certificate			

(Source: Compiled by author)

One organisation agreed that the majority of occupations in the accommodation industry would be created in this skill category. One organisation indicated new jobs would be created for reservations and front desk positions, as well as for commis chef positions, which are also known as junior chef positions. For all these new vacancies, a diploma and work experience would be essential. Due to the fact that the organisation would not be building new hotels, new jobs would not be plentiful.

An observation was made that especially with skilled jobs, young female applicants are happy in these entry level jobs until they become married and have children, then they are unwilling to work shifts and struggle with the work/business balance. This is a worldwide challenge, which is in line with OECD (2014: 5) as discussed in chapter two of this study.

7.4.7 Requirements and minimum qualifications for occupations in the semi-skilled category

Table 7.12 below summarises the respondents' answers concerning the occupations that are to experience growth in the semi-skilled labour category. The list of the identified minimum qualifications is also provided alongside the occupations. As can be seen from Table 7.12, the majority of respondents agreed that waiters would be the most highly sought after semi-skilled jobs when it comes to the creation of new jobs.

Table 7.12 Semi-skilled occupations and minimum qualifications

Types of jobs	Minimum Qualification	Minimum Qualification	Minimum Qualification	Minimum Qualification
Waiters	Grade 10 to 12	Grade 10 to 12	Grade 10 to 12	
Housekeeping staff & room attendants	Grade 10 to 12	Grade 10-12 and ABET		
Landscaping	Grade 10 to 12			
Porters	Grade 10 to 12			
Stores person	Grade 10 to 12			
Drivers	Grade 10 to 12			
Handyman	Grade 10 to 12			
Supervisor	Grade 12			
General staff	Grade 10-12 and ABET			

(Source: Compiled by author)

One organisation's respondent mentioned that promoting entrepreneurship opportunities could also be seen as part of the semi-skilled labour job creation. An example was given of an opportunity which was granted to an employee to begin his

own sustainable waste management programme (with elementary education or ABET). It was stated that if employees in these skill levels have ABET qualifications, then it would assist them to move through the ranks and obtain better skills and employment opportunities.

One organisation indicated that no new jobs would be created in the semi-skilled category, due to these types of jobs being considered to be outsourced and not the core business of the organisation.

7.4.8 Requirement and minimum qualifications for unskilled occupations

Although this study focuses mainly on skilled labour, unskilled occupations are included to create a balanced picture of the total labour demand. Below is a summary in Table 7.13 of the identified occupations with their corresponding qualifications to be created in the unskilled labour category. Table 7.13 shows that the majority of respondents agreed that gardeners would be the most sought after due to industry growth.

Table 7.13 Unskilled occupations and minimum qualifications

Types of jobs	Minimum Qualification	Minimum Qualification	Minimum Qualification	Minimum Qualification
Gardener	Grade 12 and ABET	Grade 12 and ABET	Grade 12 and ABET	
Room attendants	Grade 10 and ABET	Grade 10 and ABET		
Waiters	Grade 10 and ABET	Grade 10 and ABET		
General staff	Grade 10 and ABET	Grade 12 and ABET		

(Source: Compiled by author)

One organisation indicated that no new jobs would be created in the unskilled category, due to these types of jobs being considered to be outsourced and not the core business of the organisation. The respondents mentioned that these jobs would be filled by more informal employees, resulting in no new jobs.

Another organisation mentioned that promoting entrepreneurship opportunities could also be seen as part of the unskilled labour job creation. An example that was given of an opportunity which was granted to an employee to begin his own sustainable waste management programme (with elementary education or ABET).

Assisting such employees to improve their ABET qualifications, would help them to be promoted through the ranks and obtain better skills and employment opportunities.

7.4.9 Requirement and minimum qualifications for informal occupations

All six organisations' respondents stated that no new jobs would be created in the informal category. They had two opinions as to reasons for this: according to respondents of four organisations of the six interviewed, employees from the informal labour sector are becoming absorbed by the semi-skilled category as permanent employees, and flexi and operational support staff (OSS) are used to fill the void of informal labour employees. One organisation stated that, specifically community projects, such as beadwork or needlework projects, also create much needed employment for the informal labour category. The remaining two organisations' respondents stated that informal labour would not create new jobs due to these jobs being replaced by the unskilled labour category.

7.4.10 Staff turnover per year according to retirement, resignation, migration and death

While the forecasts addressed the additional labour demand due to growth in the industry, it was also necessary to assess the replacement demand. The forecasted replacement demand in chapter 6 is based on CATHSSETA data and excludes aspects such as migration and resignation. Therefore the respondents were asked to give an approximate staff turnover per year (in number of persons and percentage of workers) according to retirement, resignation, migration and death in each of the skills categories.

The respondents from the six organisations gave varying responses about the staff turnover in the accommodation industry, as their own accommodation offerings differed largely from each other. Their responses also differed because of the several factors that generally influence staff turnover. Such factors include: the location of the accommodation type, whether it is in a rural or urban setting; how readily available (skilled) people are to recruit in the labour market and geographic area; and the ages and gender of the people available in the labour market and geographic area. Another factor is the employment wellness programmes offered to

employees (which assist in keeping them healthy and informed of illness and disease prevention).

Although the accommodation industry, as a part of the hospitality industry is well-known for its high staff turnover, it seems that the respondents deemed the staff turnover to be low in their own organisations. Their perceptions were that the staff turnover in the accommodation industry is not a significant challenge. This may also be due to the current economic and political climate in South Africa, where employees seem to hold on to their current jobs, regardless of their satisfaction or happiness with their jobs, due to the difficulty in finding a new job, and high unemployment rate in South Africa. Nevertheless, although they were reluctant to provide exact figures for their forecasts for staff turnover according to skill levels, the respondents did give their forecasts.

One organisation indicated that their staff turnover was between 5 and 6% in their organisation and that retirement affects their organisation due to the fact that many employees have been employed by the accommodation group since its inception. This also means losing employees that are very loyal. Therefore, with their retirement just a few vacancies open at the organisation. Migration was also not a big influence at this organisation. The respondents from this organisation explained that employees in the job market wanted to work for their organisation. Another reason mentioned why new jobs do not often open up in the highly skilled category, is that the employees at this level appear to be more loyal and do not often resign. Another respondent from another organisation mentioned that they have sufficient employee programmes to take care of their employees, and that very few deaths occur in the organisation.

Furthermore, the respondents from one organisation said that their perception is that accommodation establishments lose the majority of their employees to retirement and death. They also attribute this loss to the current economic conditions in the country. Therefore, most employees try to hold on to their jobs, as they realise that there is a small chance of finding other jobs or better opportunities. Another observation was that highly skilled employees find themselves “stuck” at the moment, due to very limited opportunities for highly skilled people in the accommodation industry.

From the interviews it was gathered that the location of an accommodation establishment appears to have a great influence on the staff turnover. Staff in especially rural areas, tend to work for many years at the same organisation, due to the lack of other opportunities and because they do not move or transfer to urban areas. These staff are also said to portray a high level of passion for the accommodation industry. These are the employees who would benefit greatly from skills development and promotion opportunities.

According to another organisation the industry staff turnover is at 8%, theirs is well below that figure, at 6%. They rank resignation and migration as the highest reason for employees leaving their organisation, with retirement and death last. The respondents mentioned that they welcome resignations, as unhappy and unmotivated employees have a negative effect on guests and other employees, in the service industry. Terminations contribute much to the reasons for employees leaving their organisation.

Another organisation stated that their staff turnover was 1% and that they did not lose many employees to the reasons mentioned above, but more to illness and HIV/Aids. This is because many of their properties are situated in rural areas where there is high prevalence of diseases. The respondents stated that due to the fact that most of their properties were in rural areas and they employed mainly local employees in these properties, most of their employees were aware that their employment opportunities were limited in these rural areas and therefore remained loyal to the organisation and did not migrate or resign easily.

One organisation observed that in the informal labour sector, jobs are lost due to retirement and death; in the unskilled sector jobs are lost due to retirement and resignation; and in the semi-skilled, skilled and highly skilled sector they are lost to migration and resignation. An increase in life expectancy also means that many people do not want to retire at the retirement age, as they may feel that they are still able to continue working.

Respondents from five organisations gave the 2016 staff turnover figures for their own organisations, while one organisation did not. As can be seen from Table 7.14 below, the percentages of staff turnover provided by the respondents differ greatly, depending on the factors stated above.

Table 7.14 Examples of organisations' staff turnover for 2016

	Organisation		Organisation		Organisation	Organisation	Organisation
	Number of employees	**%**	**Number of employees**	**%**	**%**	**%**	**%**
Highly skilled	13	1.08%	1	1.3%	**5-6%**	**6%**	**1%**
Skilled	12	1.00%	11	14.3%			
Semi-skilled	36	2.99%	53	15.4%			
Unskilled	17	1.41%	93	14.7%			
Informal	0	0	39	35.1%			

(Source: Compiled by author)

7.5 ADJUSTED RESULTS OF THE COMBINED FORECASTS

This section uses the information solicited from the interviews to combine the quantitative and qualitative forecasts. As indicated in chapter three, section 3.63, there are various methods that can be used to combine forecasts. One such a method is the simple average. Since the quantitative forecasts were presented to the interviewees and they could choose to either adjust these or to create their own, their forecasts are combined using the simple average approach to create the consensus forecast.

The section below presents the adjusted forecasts. This involved taking the forecasts from chapter six, and adjusting the forecasts according to the responses from the respondents.

7.5.1 Revenue growth forecasts

The qualitative adjustment of the revenue growth forecasts after the qualitative interviews is presented in Table 7.15. Table 7.15 below presents the results of the original quantitative forecasts as well as the combined consensus forecast of the experts, which are the average of the forecasts of the six organisations. The results show a unanimous forecast by accommodation industry experts that the accommodation industry will coincide with the low to middle forecasting scenarios for the years 2015 to 2019.

The results show that the consensus forecast predicts low growth in the industry – approximately 1% growth per year, although it is expected to pick up during 2018, with growth from 2017 to 2018 forecasted to be 1.24% and from 2017 to 2018, 2.26%. The reasons for the low growth are explained in section 7.4 above, but can

be summarised as (i) low economic growth, (ii) higher education crisis, (iii) unstable economic situation, (iv) low disposable income, (v) unstable political environment, (vi) increase in competition and oversupply of accommodation, (vii) changing target markets, (viii) SAA monopoly on the travel industry and its prices, (ix) fuel price increases, (x) fluctuating exchange rates, (xi) home affairs challenges in terms of policy implementation and biometric visas, and (xii) South Africa can improve its' image to tourists.

Table 7.15 Combined cumulative forecasts for revenue for the accommodation industry

Year	Low forecast	Middle forecast	High forecast	Consensus forecast
2015	2.20%	2.40%	2.80%	**2.31%**
2016	1.80%	4.50%	7.20%	**2.99%**
2017	2.50%	6.90%	11.40%	**3.88%**
2018	4.20%	9.40%	16.20%	**5.12%**
2019	6.40%	12.00%	20.50%	**7.48%**

(Source: Compiled by author)

7.5.2 Total labour demand forecasts

Table 7.16 below presents the results for the quantitative and combined total labour demand forecasts, based on the experts' adjustment of the quantitative forecasts. Again, the consensus forecast is the average of the forecasts by the different respondents. The table shows that the consensus forecast for total labour demand also lies between the MIDDLE and LOW quantitative forecasts.

Table 7.16 Combined cumulative forecasts for total labour demand

Year	Low Forecast	Middle Forecast	High Forecast	Consensus forecast
2015	0.5% (478)	0.6% (556)	1.4% (1 419)	0.62% (612)
2016	1.0% (1 012)	1.4% (1 420)	2.6% (2 626)	1.20% (1 192)
2017	1.6% (1 569)	2.3% (2 239)	4.6% (4 614)	2.00% (1 986)
2018	2.2% (2 170)	3.2% (3 176)	4.8% (4 765)	2.58% (2 565)
2019	2.8% (2 748)	4.0% (4 019)	5.2% (5 174)	3.63% (3 608)

(Source: Compiled by author)

Similar to the industry growth forecasts, the labour forecasts are quite low, with a forecast of less than 1% per annum growth. Also similar to the industry forecasts,

growth in labour demand is expected to rise by 2019, with more than 1% growth in labour demand forecasted between 2018 and 2019.

When total labour growth is compared to the above-mentioned revenue growth, the forecast, when adjusted, is at slightly above MIDDLE at 0.62% for 2015, LOW to MIDDLE for 2016 at 1.20%, stagnating at 2.00% for 2017 and between LOW and MIDDLE at 2.58% for 2018, and 3.63% which is also below MIDDLE forecasts, for 2019. Thus, the total labour growth corresponds with the revenue growth forecasted, except in 2015 where a small incremental difference was that the revenue was forecasted at MIDDLE with total labour forecasted at slightly above MIDDLE forecasts. For 2016 the revenue growth was between LOW and MIDDLE growth forecasts. For 2017 to 2019, the revenue growth is forecasted as LOW to MIDDLE. This may be due to the fact that although revenues in the accommodation industry are forecast to increase from 2016 through 2019, this may not result in a higher amount of total job creation, due to the fact that only a small number of new accommodation establishments will be built in the same time period, creating a very small number of new jobs. In fact, according to feedback from respondents, what may very well occur is that less jobs will be created but more efficiency and productivity will be required from current employees, to keep up with the amount of work.

7.5.3 Formal labour demand forecasts according to skill level

Table 7.17 indicates the different quantitative forecasts and the consensus forecast based on the adjusted forecasts by the experts for formal labour demand with various levels of skills. Here too, the consensus forecast is the average of the adjusted forecasts by the industry experts.

For the highly skilled labour category, the consensus forecast lies between the quantitative MIDDLE and HIGH forecasts for the years 2015 to 2017, but is more similar to the MIDDLE forecasts for the years 2018 and 2019. The forecast remains around 0.75% increase per annum, except for the years 2017 and 2018 when the increase per annum is around 0.5%, before it rises to above 1% for 2019.

Table 7.17 Combined cumulative forecasts for highly skilled labour demand

Highly-skilled Labour:				
Year	**Low Forecast**	**Middle Forecast**	**High Forecast**	**Consensus forecast**
2015	0.4% (27)	0.5% (31)	1.4% (92)	0.75% (48)
2016	0.8% (50)	1.2% (80)	2.6% (171)	1.47% (95)
2017	1.2% (76)	1.9% (126)	4.6% (300)	2.00% (129)
2018	1.6% (104)	2.8% (178)	4.8% (310)	2.53% (164)
2019	2.0% (132)	3.5% (226)	5.2% (336)	3.03% (196)
Skilled Labour:				
Year	**Low Forecast**	**Middle Forecast**	**High Forecast**	**Consensus forecast**
2015	0.7% (319)	0.8% (371)	1.4% (648)	0.87% (393)
2016	1.3% (591)	2.1% (949)	2.6% (1 200)	1.92% (870)
2016	2.0% (908)	3.3% (1 496)	4.6% (2 109)	2.77% (1 256)
2018	2.7% (1 239)	4.7% (2 123)	4.8% (2 178)	4.03% (1 830)
2019	3.5% (1 570)	5.9% (2 686)	5.2% (2 365)	5.10% (2 315)
Semi-and unskilled Labour:				
Year	**Low Forecast**	**Middle Forecast**	**High Forecast**	**Consensus forecast**
2015	0.1% (18)	0.1% (21)	1.4% (221)	0.53% (83)
2016	0.2% (33)	0.3% (53)	2.6% (410)	1.02% (158)
2017	0.3% (50)	0.5% (83)	4.6% (720)	1.43% (222)
2018	0.4% (69)	0.8% (117)	4.8% (743)	1.87% (289)
2019	0.6% (87)	1.0% (149)	5.2% (807)	2.13% (330)

(Source: Compiled by author)

For the skilled labour category the table shows that the growth will be highest according to the experts' consensus view. In fact, the growth in skilled labour demand seem to be very similar to the MIDDLE forecasts created by the quantitative methods for the years 2015 to 2017, but the consensus view is that this will increase from 2018 onwards to rather reflect the HIGH forecasting scenario. Between 2014 and 2019 more than 2 300 skilled workers will be demanded in the accommodation industry due to industry growth.

The forecasts for the semi-skilled and unskilled labour categories shown in Table 7.17, show that the consensus forecast lies between the MIDDLE and HIGH scenario from 2015 through to 2019. It is however closer to the MIDDLE scenario of the quantitative forecasts. Therefore, approximately 330 additional low skilled workers will be demanded by the industry over the 5-year period (2014-2019). This means that the industry is still an option for workers in these categories to make a living. Four aspects were identified by respondents as the reasons for growth in formal labour: These are (i) low expected revenue growth; (ii) limited stock in hospitality industry: (iii) few new hotels and low investments: and (iv) too much in-sourcing currently in the hospitality industry.

7.5.4 Informal Labour

Although not the main focus of this study, the consensus forecast of demand for informal labour is also shown in order to portray a clear picture of labour demand in the accommodation industry. Table 7.18 below indicates that the adjusted forecasts for the informal labour category are similar to the middle forecast created using the quantitative approach, although some of the forecasts are slightly lower than the middle forecast.

Table 7.18 Combined cumulative forecasts for informal labour demand

Year	Low Scenario	Middle Scenario	High Scenario	Consensus forecast
2015	0.4% (114)	0.4% (133)	1.4% (457)	0.40% (128)
2016	0.7% (211)	1.1% (339)	2.6% (846)	1.15% (368)
2017	1.0% (324)	1.7% (534)	4.6% (1 486)	1.35% (432)
2018	1.4% (442)	2.4% (757)	4.8% (1 534)	2.30% (735)
2019	1.8% (560)	3.0% (959)	5.2% (1 666)	2.77% (885)

(Source: Compiled by author)

The results also show that informal labour demand is expected to grow slowly from 0.4% in 2015, to 1.15% between 2015 and 2016, and to 1.35% between 2016 and 2017, before it rises to almost 1.05% growth between 2017 and 2018. The reasons for the slow growth in informal labour demand were identified by the experts and include the following: (i) new labour brokerage laws, (ii) seasonality of the hospitality industry and (iii) the nature of informal employees and contracts.

Comparing the total labour growth to the informal labour growth, informal labour growth was forecasted at MIDDLE to HIGH for 2015. For 2016, there is a difference, where informal labour was forecast at MIDDLE to HIGH, while total labour growth was forecast at LOW to MIDDLE for 2016. Informal labour growth was forecasted lower (at LOW to MIDDLE forecasts) than the forecasted revenue growth for 2017 to 2019, which was at between LOW and MIDDLE forecasts for the same period. Reasons for this may be that although the total labour and informal labour growth differ, with informal labour growth being more optimistic for the period 2017 to 2019, this may be due to the changes in legislation for labour brokerage, and accommodation establishments employing more contract companies to take over the labour from the labour brokerage firms.

7.5.5 Staff turnover

As indicated above, only two organisations provided a detailed estimate of their personnel turnover due to aspects such as retirement, migration and death. Two other organisations estimated the total personnel turnover for the industry at approximately 6%, while one respondent estimated it at 1% in total. Table 7.19 below summarises the respondent results together with the CATHSSETA turnover due to vacancies and retirement used in chapter six's forecasts. It is evident that the turnover seems to be very company specific and therefore there is a lot of variation in the turnover numbers.

Table 7.19 Annual turnover numbers

	Respondent	Respondent	CATHSSETA
Highly skilled	1.08%	1.3%	3.26%
Skilled	1.00%	14.3%	1.49%
Semi-skilled	2.99%	15.4%	1.50%

(Source: Compiled by author)

Since the responses vary considerably between the respondents, the CATHSSETA replacement numbers are used as a much larger response base. It might still be an underestimation, since vacancies and retirement, are the only considerations in the dataset. Therefore, the CATHSSETA turnovers are used in the final estimates of the qualified labour demand in the next section.

7.5.6 Summary of the consensus qualified labour demand

The following table summarises the highly-skilled and skilled labour demand for the accommodation industry based on the consensus forecasts described above and the CATHSSETA replacement data.

Table 7.20 Highly skilled

	Consensus forecast				
	2015	***2016***	***2017***	***2018***	***2019***
Managers	0.34%	0.69%	0.93%	1.17%	1.41%
Professionals	0.06%	0.13%	0.16%	0.21%	0.25%
Technicians and associate professionals	0.35%	0.65%	0.91%	1.15%	1.37%
	Replacement demand				
	2015	***2016***	***2017***	***2018***	***2019***
Managers	3.32%	2.71%	3.02%	3.02%	3.02%
Professionals	3.79%	2.96%	3.37%	3.37%	3.37%
Technicians and associate professionals	4.27%	2.68%	3.47%	3.47%	3.47%
	Total labour demand				
	2015	***2016***	***2017***	***2018***	***2019***
Managers	3.67%	3.40%	3.95%	4.19%	4.43%
Professionals	3.85%	3.09%	3.54%	3.58%	3.62%
Technicians and associate professionals	4.62%	3.33%	4.38%	4.62%	4.85%
	Total demand (persons)				
	2015	***2016***	***2017***	***2018***	***2019***
Managers	237	220	255	271	286
Professionals	248	199	228	231	234
Technicians and associate professionals	298	215	283	298	313

(Source: Compiled by author)

From Table 7.20 above, the final forecasts of this study for highly skilled labour, indicate that the demand is forecasted to increase from 3.67% in 2015, to 4.43% in 2019 for managers. This results in an increase from 237 persons in 2015, to 286 persons in 2019, which is a 29 person increase over five years.

For the professional category, demand is expected to a decrease from 3.85% in 2015, to 3.62% in 2019. This results in a decrease from 248 persons in 2015 to 234 persons in 2019, which is a 14 person decrease in five years.

For the technicians and associate professionals category, labour demand is expected to increase from 4.62% in 2015 to 4.85% in 2019. This is an increase from

298 persons in 2015 to 313 persons in 2019, which is a 15 person increase in five years.

Therefore, the highest forecasted increase in highly skilled jobs is seen in the manager category (237 persons), followed by technicians and associate professionals (15 persons), and allowing for a decrease in professionals (14 persons).

For the highly skilled labour category, the occupations forecasted by the respondents to be vital in job creation in this category include: general managers, assistant general managers, heads of department, front office managers, reservations managers, banqueting managers, maintenance managers, food and beverage managers, finance managers, payroll administrators, senior accounting administrators, financial positions, supply chain management, executive chefs and sous chefs, IT positions, e-commerce managers, sales and marketing managers and skills development trainers. According to the respondents, the minimum qualifications for these highly skilled labour categories, depending on the position, ranged from a diploma to a degree, and also included suggestions of a diploma with additional work experience.

The replacement demand for highly skilled labour is predicted to show a growth of approximately 3.02% for managers, 3.37% for professionals, and 3.47% for technicians and associate professionals by the year 2019.

From Table 7.21 below, it is clear that for the final forecasts of this study, for highly skilled labour, the total labour demand for skilled labour for clerical support workers, increased from 2.28% in 2015 to 3.06% in 2019, which was an increase of 356 people over five years.

For plant and machine operators and assemblers, the figure is forecasted to increase from 3.22% in 2015 to 2.93% in 2019, which is a decrease of 133 people over the five year period.

For service and sales workers, the total labour demand forecasts increased from 2.03% in 2015 to 4.73% in 2019, resulting in new jobs for 1 223 people.

For skilled agricultural, forestry, fishery, craft and related trades, total labour demand decreased from 4.07% in 2015 to 3.65% in 2019, which is a decline of 190 jobs during the five year period.

Table 7.21 Skilled

	Consensus forecast				
	2015	***2016***	***2017***	***2018***	***2019***
Clerical support workers	0.21%	0.51%	0.70%	1.03%	1.30%
Plant and machine operators and assemblers	0.02%	0.04%	0.06%	0.09%	0.12%
Service and sales workers	0.60%	1.30%	1.89%	2.76%	3.49%
Skilled agricultural, forestry, fishery, craft and related trades	0.04%	0.07%	0.11%	0.15%	0.20%
	Replacement demand				
	2015	***2016***	***2017***	***2018***	***2019***
Clerical support workers	2.07%	1.46%	1.76%	1.76%	1.76%
Plant and machine operators and assemblers	3.20%	2.42%	2.81%	2.81%	2.81%
Service and sales workers	1.43%	1.04%	1.24%	1.24%	1.24%
Skilled agricultural, forestry, fishery, craft and related trades	4.04%	2.88%	3.46%	3.46%	3.46%
	Total labour demand				
	2015	***2016***	***2017***	***2018***	***2019***
Clerical support workers	2.28%	1.97%	2.47%	2.79%	3.06%
Plant and machine operators and assemblers	3.22%	2.46%	2.87%	2.90%	2.93%
Service and sales workers	2.03%	2.34%	3.13%	4.00%	4.73%
Skilled agricultural, forestry, fishery, craft and related trades	4.07%	2.95%	3.56%	3.61%	3.65%
	Total demand (persons)				
	2015	***2016***	***2017***	***2018***	***2019***
Clerical support workers	1 033	894	1 120	1 266	1 389
Plant and machine operators and assemblers	1 462	1 116	1 304	1 318	1 329
Service and sales workers	922	1 063	1 420	1 814	2 145
Skilled agricultural, forestry, fishery, craft and related trades	1 848	1 339	1 618	1 640	1 658

(Source: Compiled by author)

From this table, it can be concluded that the largest increase in labour demand for skilled labour, will come from the service and sales workers (1 223 new people), followed by the clerical support workers (356 persons). A decrease is seen in plant and machine operators and assemblers as well as in skilled agricultural, forestry, fishery, craft and related trades.

For the skilled labour category, respondents identified the following occupations as forecasted to be vital in job creation in this category: front office staff, IT service desk staff, supervisors in various departments (such as housekeeping, front office, maintenance), public relations, reservations, sales consultants, junior chef positions, assistant managers, supply chain management staff, conference coordinators,

housekeeping supervisors and administrators. Qualification requirements for such occupations range from certificates (including FET), to diplomas and experience, or more specialised diplomas such as in the case of IT occupations or marketing qualifications.

The replacement demand for skilled labour, forecasts growth of approximately 1.76% for clerical and support workers, 2.81% for plant and machine operators and assemblers, 1.24% for service and sales workers, and 3.46% for skilled agricultural, forestry, fishery, craft and related trades by the year 2019.

7.6 Additional comments about the South African accommodation industry

This section presents additional information about the South African accommodation industry supplied by the respondents of the six organisations, as well as by CATHSSETA in an interview with the CATHSSETA respondent. As mentioned earlier (see section 7.3.2), a separate interview was conducted with a representative from CATHSSETA, which supplied the detail accommodation industry data. CATHSSETA provides advice mainly regarding strategic and skills development, that will benefit the 16 SIC codes that it governs (CATHSSETA, 2014c: Online). CATHSSETA governs hotels, motels, guest houses, bed and breakfasts, restaurants including fast food establishments as well as caterers, night clubs, pubs and time share facilities (CATHSSETA, 2014c: Online). This interview was deemed to be useful, as the representative was deemed to be an expert in the data obtained, and the respondents' opinions were seen as expert and thus valuable for this study.

Overall, all the respondents from all six organisations were very positive about the South African accommodation industry, despite the many challenges it is facing and will face in the future. The respondents provided their final insights into the accommodation industry, which they deemed useful for this study. These insights are considered below.

a) Benchmark standards across the accommodation industry

Respondents from two organisations were of the opinion that the industry could assist to raise skill levels. This may require the implementation of standards over the broad industry to uplift skills and employment opportunities. Respondents proposed that the industry needs better benchmark standards.

It was also stated that the standards at the moment in South Africa are very high when it comes to accommodation establishments, especially when compared to other countries. These high standards are ascribed to the standards offered and monitored by the South African Tourism Grading Council, so that even three star graded properties in South Africa are already at a notably high standard of service and product offerings.

b) Recruitment re-imagining

Another comment made by the respondents of two organisations was that the accommodation industry is moving towards a focus on productivity and efficiency. For this reason, they find it difficult to find good young professionals to recruit especially for their establishments that are located in rural areas.

Respondents from one organisation stated that perhaps job descriptions limit employees in their accountability and responsibilities, and that more fluid job tasks should be implemented. The example given was that employees these days are required to do more than just stated on their job description, and that in future, more will be expected from employees, as less employees might be employed so the current employees will need to be cross-trained and more flexible in their tasks.

Another point that was made by the respondents from one organisation, is that the newer generations are more focussed on the total cash benefit of a job, than on the benefits such as housing allowance, pension or medical benefits offered by employers. Therefore, the recruitment and financial packages need to be revised in the recruitment process. It was also mentioned that prospective employees should have more work experience, especially hospitality experience.

The changes in generations also mean that the current entry level employees are not keen to work shifts. The respondents from another organisation stated that the environment in the hospitality industry changes too quickly, which requires that job applicants need to have broader knowledge about management than was required in the past. Diverse skills such as aptitude, agility and flexibility to change are essential. The willingness to learn and learning on the job are also important skills. These respondents saw qualifications as merely useful for entry into the workforce.

c) Skills required from prospective candidates

Respondents from two organisations mentioned that it is important to know that skills can be taught but that attitude and aptitude are more important when employing an applicant. The focus should also be on emotional intelligence and soft skills of employees, as these interactions are essential in the accommodation industry.

Respondents from another two organisations said that online reservations and technological advances influence the industry. Consequently, prospective entrants into the industry should have sufficient knowledge to assist them in coping with these ever-changing trends.

d) The rise of AirBnB's

One organisation stated that the rise of AirBnB means that AirBnB's can get to know guests much faster than in hotels, by allowing guests to quickly and easily complete their own profiles and assist to fulfil their needs. This encourages AirBnB's to have the care and personal interaction that guests expect to have from hotels. AirBnB's have a good database of guest profiles which assists them to meet guests needs better.

e) Advantages for South Africa's accommodation industry

One organisation stated that investments in the rest of Africa are seen as less risky than investments in South Africa.

Respondents from another organisation disagreed by stating that South Africa is a country with many advantages and offerings to tourists, such as the good weather, high standards of service, courteous and well trained staff (under the circumstances), good infrastructure for travelling (for example good roads and ample flights), many cultural attractions and experiences (such as township tours) and beautiful landscapes to explore. In order to positively impact on the economy and for the tourism sector to reach its full potential, the South Africa accommodation industry needs to grow and build further capacity.

f) CATHSSETA considerations

The representative from CATHSSETA highlighted that due to the fact that their organisation captures data mainly from SMME's and smaller role-players in the accommodation industry, a number of the larger role-players do not provide their data to CATHSSETA. This may be due to such organisations not being adequately informed about the services that CATHSSETA provides, therefore not paying levies to CATHSSETA and ultimately not featuring on the database.

The largest challenge, according to the representative from CATHSSETA, was that SMME's exist, but they lack the adequate skills to make a success of their business. One reason may be that the person who owns the SMME business, often single-handedly manages the technology, management, operations, financial aspects etc. of the business, for which they do not possess adequate skills. To combat this, offices were opened in various metropolitan areas, so as to start to educate the public about CATHSSETA and its benefits. Sustainable training and skills development was seen as an important part of the CATHSSETA empowerment programme.

Assisting SMME's to be trained in especially technology skills, as well as assisting them to stay up to date on current trends, such as social media and marketing, was seen as a vital focus point for future training. As technological advances also begin to replace human interaction, such as the shift from telephone operators to online reservation systems or webpage information, people participating in the tourism industry in South Africa, need to be trained in order to empower them to still be able to be employed, even when such shifts occur. A shift in skills from low or semi-skilled labour, to skilled labour may even result from this shift.

Another challenge is that due to the current economic climate, less employees are required to do more work, and a wider range of work, as already stated by the respondents from the six organisations.

CATHSSETA already offers a wide range of skills development and training programmes, to assist with the skills shortage in the accommodation industry. The problem seems to be, according to the CATHSSETA representative, that although people are receiving training, the industry does not absorb these people into the

workforce, as they do not have sufficient work experience. This results in trained people then having to resort to finding a job in a different industry, for which they are perhaps not trained, merely due to the fact that that job market may be easier to enter than the tourism or hospitality industry, in which work experience is placed as a high priority.

Moreover, the qualifications of most people do not seem to meet the needs of the industry, nor do they meet the needs of the people receiving the training, who come from various backgrounds and educational levels. These are challenges which need to be addressed before CATHSSETA can be seen as successful in bridging the skills gaps in the South African accommodation industry. The proposal is that the training providers, people receiving the training, industry as well as educational specialists, need to be more involved in assisting CATHSSETA with these training programmes, in order to work together to build lasting solutions which also create and sustain jobs.

The representative was of the opinion that this research study could add value to the existing CATHSSETA data, and that the data could be offered and implemented in various areas and councils of the South African tourism sphere.

7.7 CONCLUSION

This chapter dealt with the seventh objective of this study to adjust the quantitative forecasts in order to enhance these forecasts for future labour and qualifications demand in the South African accommodation industry. This aimed to conclude the study, which was undertaken in order to forecast the demand for various job levels and their associated qualification requirements in the accommodation industry, which was achieved by means of various forecasting methods.

Chapter seven concluded the quantitative and qualitative research methodology followed in this study, by providing insights into the interviews held with six organisations, and a representative from CATHSSETA, all deemed to be accommodation industry leaders in South Africa. The results of the qualitative interviews were discussed and qualitative adjustments of the forecasts that were presented in chapter six were made. These are summarised below.

For the highly skilled labour demand, the highest number of new jobs are forecasted to be created in the manager category, for which diplomas or degrees are deemed to

be minimum requirements, and occupations may include general managers. For the skilled labour demand category, the highest occupation of new jobs are forecasted to be created for service and sales workers, which includes occupations such as supervisors, and for which certificates and, in some cases, diplomas are seen as minimum requirements.

Overall, the adjustments to the forecasts were much lower than expected, for the revenue and labour forecasts for the accommodation industry. Compared to the PwC Hospitality Outlook 2015-2019, the total room revenues were expected to increase by an overall 8.0% compound annual rate, with an overall 8.1% increase in hotel revenues. This is in stark contrast to the revenue growth forecasted by this study and qualitatively adjusted by accommodation industry experts. The PwC Hospitality bases these figures on a 3% growth for the South African economy.

Several reasons for the adjusted forecasts have been outlined in this chapter, and further conclusions to the study will be presented in the concluding chapter – chapter eight. Chapter eight will also highlight the contribution of the study and present recommendations for future research in this field.

CHAPTER EIGHT

CONCLUSION AND RECOMMENDATIONS

8.1 INTRODUCTION

The main goal of this final chapter is to draw a conclusion to this study based on the main objectives as set out in chapter one. This chapter therefore contains a synopsis of the main conclusions of the study and the recommendations based on the results of the research. Future research areas as well as the limitations of the study will be explored. The contribution of this study are also highlighted in this chapter.

It is widely acknowledged that the tourism industry contributes not only to the GDP of many countries (including South Africa), but also to the creation of jobs and to direct and indirect employment. The tourism industry is growing rapidly is projected, by the WTTC (2016), to continue growing at a rate of a 4% average annually, for the next ten years. The nature of the hospitality industry, as part of the tourism industry, is largely based upon the employment of quality labour and extensive service offerings. However, the industry is also known for employing unskilled or low skilled employees, often in an attempt by businesses to reduce their expenses. Addressing the qualifications and the skills levels needed for vacant occupations can thus add value to the success of the tourism industry as a whole.

It also is widely accepted that employees employed in the hospitality industry require a different skills set than is required in other industries. This is because employees must constantly produce service to guests, thus interacting with guests continuously. The accommodation industry, as a part of the hospitality and the larger tourism industry, is especially reliant on the use of labour in order to attract and retain guests, who are increasingly demanding higher service levels. This in turn assists in increasing the profits of accommodation establishments.

By researching the forecasts of the types of jobs that will be available in the accommodation industry until 2019 and the qualification requirements relevant to such jobs, this study will assist entrants to the job market to ensure that they are adequately qualified. It will also assist education institutions to focus on these specific qualifications and skills, to ensure the employability of their graduates. In doing so, the accommodation industry will then be able to readily employ graduates

in possession of the requisite qualifications and skills to fill the vacant occupations. Ultimately this will address the supply and demand factor of the labour market.

The high unemployment rate in South Africa, and the lack of skills in the accommodation industry as a whole, necessitates an investigation into this significant employer in the economy. Better knowledge of the demand for labour and of the specific skills required in the accommodation industry, would assist in the improved planning of training and learning opportunities for the South African workforce. By forecasting the demand for skilled labour, using both quantitative and qualitative research methods, an overall forecast of the accommodation industry may assist organisations and individuals to plan for the future. These forecasts may also be used to anticipate future trends and react to them in a flexible manner.

With this in mind, chapter one provided an introduction to the research problem and background to this study. The main goal of this research, as stated in chapter one, was to forecast the demand for various job levels and their associated qualification requirements in the accommodation industry in South Africa, by using a combination of forecasting methods. This goal addressed the main research question of this study namely: *"What is the demand for labour with different levels of education in the accommodation industry of South Africa over the next 5 years?"* The answer to this question involved the analysis and forecasting of qualified labour demand in the South African hospitality industry.

To meet the main goal of the study, specific objectives were formulated. These included the following: (i) to analyse the South African accommodation industry, with specific focus on the qualification levels and current qualifications of employees in this sector; (ii) to evaluate the quantitative forecasting methods, with a focus on time series forecasts that are used in the tourism demand forecasting literature; (iii) to evaluate the qualitative forecasting methods that have been applied in the tourism demand forecasting; (iv) to evaluate different methods used in manpower forecasting; (v) to use the South African hospitality and tourism data, together with quantitative manpower forecasting methods, to determine the accuracy of labour demand forecasts in the accommodation industry; (vi) to use the identified optimal forecasting methods to generate quantitative forecasts of labour demand in the accommodation industry in South Africa and link these with job levels as well as

qualification requirements; and (vii) to use qualitative forecasting methods in order to adjust the quantitative forecasts, with the aim of enhancing the forecasts for future labour and qualifications demand in the South African accommodation industry. These objectives were addressed in the various chapters of this study and the conclusions are highlighted below.

8.2 CONCLUSIONS

The conclusions of this study are discussed according to the objectives of the research.

8.2.1 Conclusions on the accommodation labour market

The first specific objective was to analyse the South African accommodation industry, by focussing on the qualification levels and current qualifications of employees in this sector. This was addressed in chapter two of this study.

Chapter two presented a theoretical literature discussion on tourism and employment in the South African context. The study established that for the tourism industry as significant contributor to the world economy as a whole and to the South African economy in particular, it is becoming increasingly important to recruit and retain suitably skilled and qualified employees to meet the increasing demand of the growing industry. This is because the tourism industry relies heavily on people interaction, and therefore employs workers on all skills levels. These skills levels are also largely determined by the function of the department in which they are employed and the nature of the tasks to be completed.

Chapter two also discussed the role of tourism in the South African policy and educational frameworks. The national policies and higher education institutions work closely together to determine the success of the qualifications offered and in meeting the demands of the industry.

The tourism industry also itself was analysed and a differentiation was made between its main components. It includes the tourism component (tourism industry) and the hospitality component (hospitality industry). The accommodation industry, as the focus of this study, falls under the hospitality industry. The accommodation industry contributes directly to the economy of South Africa, by offering

accommodation to local tourists and international travellers alike. Accommodation establishments may be graded according to the TGSCA, as discussed in chapter two. To conclude, accommodation grading as well as types of establishments, hotels, as well as the accommodation industry's contribution towards the economy were discussed. It was also important to understand the organisation of a typical accommodation establishment, to determine job levels and skills required for each job level.

The last section of chapter two focussed on tourism employment and the profile of the current hospitality workforce in South Africa. The chapter concluded that higher education should prepare graduates adequately to ensure that they are qualified to meet the demands of the hospitality industry. This will help address the high skills shortage and ultimately the e high and escalating unemployment rate in South Africa For this reason, there are policies and plans in place, such as the NDP, which aim to assist in meeting the demand of the South African economy, in providing adequately trained graduates who possess the skills necessary to compete in the workforce.

Based on the evidence presented in chapter two, it is concluded that the typical skills required by employees in the hospitality and accommodation industries are service skills. In other words, the industry requires skilled employees to deliver good quality services to guests, which is based on extensive guest interaction. The typical qualifications demanded by the accommodation industry are diplomas or other qualifications for mid-level and senior level management. For other occupations, work experience and a grade 12 certificate would suffice. The study revealed that in South Africa, the majority of the current employees in this industry possess skills in the levels of NQF 3-6. This is followed by employees with NQF levels 1-2, ABET and a few in NQF levels 7-10. Therefore the majority of employees have qualifications at lower skills levels, which makes it increasingly difficult for such employees to gain promotions or progress in their careers. These low levels of skilled labour in South Africa must be improved in order to increase employment in the accommodation industry.

The study further established that there is a shortage of qualified employees in the following occupations; hotel or motel managers, catering production managers, café (licenced) or restaurant managers, cooks and chefs. Thus, the vacancies that were

seen as extremely difficult to fill, were for management, waitrons, chefs, cooks, cashiers, grillers, accountants, sales staff and cleaners. This is because in most instances the prospective employees are not suitably qualified for the positions. Nonetheless, this is not unique to South Africa, since the demand for labour in the accommodation industry is fluctuating due to seasonal variations in the industry. Another factor influencing the demand for labour in South Africa, is the number of international tourists. The economy, as well as exchange rates, also influence the number of tourists travelling internationally to South Africa, which create variations in the demand for labour.

8.2.2 Conclusions on quantitative forecasting methods

The second specific objective was to evaluate the quantitative forecasting methods, with a focus on time series forecasts that are used in the tourism demand forecasting literature. This objective was addressed in chapter three of this study. Chapter three provided a detailed discussion of quantitative and qualitative forecasting methods, the combination and adjustment of forecasts and the metrics to evaluate forecasting accuracy. The study highlighted that tourism forecasting benefits the economic and political spheres of decision making as well as the decisions made in higher education to meet the needs of the labour market.

The study classified quantitative forecasting methods into time series (non-causal) or econometric (causal) methods. The advantages of the time series method are that these types of methods are known for their reliability, ease of use and cost-effectiveness. Personal bias is removed from the forecasting process, as the trend, cycle, seasonal elements or patterns are the main focus. Seasonal demands may be predicted, in order for supplies to be adjusted to seasonal variations, such as in the tourism and hospitality industries where such variations play a role. Time series methods are also used when there is insufficient knowledge about the process or when there is no explanatory variable data available. The disadvantages of time series methods are that they are not suited for short-term forecasting, as their structures are limited. They do not supply reasons for the changes in manpower, based on the assumptions that past events or patterns will be repeated in the future. Thus, time series methods should be supplemented with expert verifications to provide insight into such reasons. Moreover, if the tourism demand is influenced by

governmental factors or other external factors, time series methods are not able to assist. In addition, seasonal forecasts cannot be accurately predicted by using historical data. Thus, the study concluded that time series methods should always be used in collaboration with other predictions for accurate forecasting.

The advantages of econometric methods are that they make it possible to analyse the relationships between dependent variables and explanatory variables. Econometric models are simple to use and are therefore popularly used by academics. In addition, these models can be used in the interpretation of changes in tourism demand from an economic viewpoint.However a disadvantage of the econometric methods is that it requires detailed information regarding the variables, including data on the actual variable under study.

Linear models are most commonly used in tourism forecasting, although non-linear models are gaining popularity. Non-linear models refer to models which have a non-linear mean function, due to the fact that the derivative of the mean function depends on at least one other parameter. Causal linear models (single equation models) used in this study were ARIMA models, while causal non-linear models used were VAR. In non-causal methods, linear models were Naïve and non-linear were not included, but are BSM and STR models.

Time series forecasts were utilised in this study to analyse cycles as well as patterns of variables used. These are listed below.

a) The Naïve method was used in this study, as the simplest and most efficient method of forecasting, which is a good benchmark to use.

b) The Naïve 2 method was also utilised for its use of the constant growth rate to include trends that may be present.

c) The ARIMA method was used as data was equally spaced out and analysed in order to forecast stationary time series data.

d) The Holt-Winters approach was used to average out the irregular components of time series models.

e) The VAR model simulated cause and effect as a multiple equation regression model.

Naïve and Naïve 2 are always used as a benchmark. The ARIMA method is the most popular time series method used in tourism research, and has been proven as an accurate method in forecasting tourism demand. The Holt-Winters approach is more accurate when irregularities are present in the data, and is therefore popular in tourism studies, which often incorporate many irregularities. VAR is an econometric approach that can treat all variables as endogenous, where each is specified as a linear relationship of the other variables. It is often used in forecasting tourism demand, as this method can analyse the manner in which tourism demand responds to variations in economic variables in the VAR system.

8.2.3 Conclusions on qualitative forecasting methods

The third specific objective of this study was to evaluate the qualitative forecasting methods that have been applied in the tourism demand forecasting. This objective was also addressed in chapter three.

For qualitative research, several methods of obtaining qualitative data are available. Surveys are used in forecasting demand when time series data is scarce. Questions are asked to specific groups and their responses are analysed. Surveys may also be telephonic, face-to-face or use questionnaires. The advantages are that surveys can be used when the population is too large to observe personally. They are also used for testing ideas.

Focus group discussions follow interview techniques, and are held with several participants at the same time. This can be 10-12 people, and can last for two hours at most. The disadvantages of focus group discussions are that it may be difficult to gather all of the participants in one area. The moderator needs to be skilled in order to obtain findings from the participants. An inexperienced researcher may lose control over the discussion. The responses of participants may also be inhibited, due to the nature of the focus group discussions. Also, the findings may be difficult to analyse, as there are many responses to deal with.

The Delphi technique involves forecasting by obtaining expert opinions on a specific subject. The goal is to arrive at a correct estimate, which may take time as consensus must be reached amongst all participants.

Observations are flexible and can be unstructured, which is seen as advantageous. They also offer the opportunity to witness the world through the opinions of another person. Observations also show hidden activities. On the other hand, the researcher may not know what to look for in an observation environment, and fail to adapt, or may otherwise influence the observations by their mere presence. The record keeping aspect of observations may also lead to challenges when presenting findings.

Interviews are seen as a good method to collect data and are used frequently to gather data in qualitative studies. This is due to the fact that a checklist is used for the interview process. An advantage is also that the researcher can ask questions regarding things that cannot be observed. Besides, the interview can be flexible. A disadvantage is that interviews are reliant on the responses of the participants, which may complicate the comparison of answers. The memory of the participants may also be flawed, resulting in flawed responses.

Against his background of the pros and cons of the various types of qualitative research methods this study selected the interview method. This method was regarded as the most efficient manner of extracting information from experts in the field. This enabled flexibility in the process of acquiring the much needed expert information.

Literature has shown that interviews with experts are the best method to use where their expert opinions are needed to add valuable insights to quantitative data that is already available. In this study the interviews with experts were used to combine or adjust quantitative forecasts to improve the quality of the quantitative findings. The literature discussed in this regard shows that combining forecasting methods can add to better accuracy. Various quantitative methods can usually be combined for greater accuracy. This includes: combining time series forecasts with linear combinations; and mixing quantitative and qualitative methods to obtain a greater overview. This reduces forecasting errors, thus increasing the accuracy of the findings. It also adds to the reliability and validity of the research findings, as the qualitative findings complement the quantitative data. Combining quantitative as well as qualitative forecasting methods, was deemed to be a good way to ensure accuracy and benchmark quantitative findings, and was therefore used in this study.

The advantages of qualitative adjustment are that experts provide reasons for their adjustments, which increases forecasting accuracy. They are also able to adjust inaccurate or unrealistic statistical forecasts, also improving accuracy. Patterns are also identified by experts during the adjustment process, and are especially useful in times of uncertainty. Therefore, for this study, the interviews were used for qualitative adjustments.

8.2.4 Conclusions on labour demand forecasting methods

The fourth objective of this study, which was to evaluate different manpower forecasting methods, was addressed in chapter four. The literature review showed that there are four approaches to labour demand forecasting, namely: the time-series forecasts, market signalling, the top-down approach and the bottom-up approach.

Time series forecasts are used to examine the univariate relationships of the past, and extrapolate these relationships into the future. These methods are used to obtain more accurate forecasts, as they take into account the characteristics of manpower forecasting such as season, trend, cycle and other patterns. Time series forecasts use historical data of up to 20 years, producing short term results and an aggregated labour demand forecast. The qualitative adjustment of time series forecasts also increases the accuracy of these models, as used in this study.

The bottom-up coefficient approach produces short term forecasts using simple labour multiplier approaches. This approach is used when data is extensive and current, and is popular in project-based forecasts. However, one of the disadvantages is that the database of information must be up to date. Therefore, a time lag may lead to a constraint on the data, while updated coefficients are essential. This method relies on past data and the data's relationship between variables used and manpower, collecting past employment records requires labour and is time consuming.

The top-down forecasting model is seen as the dominant approach for deriving manpower forecasts as it assumes that manpower requirements, industry outputs and developments in the economy, are all related. An input-output model is used to determine labour forecasts. The assumption is that the industry's growth will lead to demands for each occupation within the same industry. It is used to calculate long

term forecasts for occupational and regional labour demand. The assumption is that the growth of the industry will lead to demands for each occupation within the same industry. A range of scenarios rather than a fixed forecast are used, in order to forecast labour demands, based on productivity, interest rates and overall outputs.

The market signal approaches are used when complex long-term forecasts are required. These approaches assess market signals, such as wages, education and training trends amongst others, to forecast labour demand in terms of signals and employers' views of future occupations. These approaches are often used when data is inadequate to complete time series and econometric studies. For this study, time-series forecasting as well as the top down and bottom-up approaches were utilised.

Chapter four elaborated on the labour market, demand for labour, labour forecasting methods and a literature study on international and local evidence on the demand for labour in the hospitality industry. The supply of labour in the South African context was also discussed in detail. Chapter four concluded that the demand for skills in the labour market in the South African accommodation market is vital for the success of the industry. The tourism and hospitality industry, as a skills intensive industry, has shown high growth over the years. As a result, it is vital for the tourism and hospitality workforce to be equipped adequately for the accommodation industry, and to possess the necessary skills and qualifications required by the industry.

The literature discussed in chapter four identified the factors that influence the supply of labour. These factors include, population size, labour force, hours worked, the impact of HIV and AIDS on the total labour supply, the immigration and emigration of skilled people, and individual decisions to work in the labour market.

The factors identified to influence the demand for labour, include;

- the rate and nature of economic growth which have not been high enough to combat the high unemployment rate.
- Overall job losses, which have been influenced primarily by the export of goods, focussing more on capital.
- Unskilled workers have been losing out to the demand for higher skilled jobs, which in part is due to trade liberations in South Africa.

- The demand for labour has been influenced by high wage increases, yet higher wage rates results in higher unemployment.
- The ineffectiveness of bargaining council systems utilised by the South African labour market.
- High incidents of strikes also have a negative impact, especially, on unskilled labour.
- Increases in labour costs can also be attributed to certain factors, such as new labour laws (Basic Conditions of Employment Act), which reduce the demand for labour, in terms of reducing labour flexibility and productivity.
- The Skills Development Act, which will take many years to have an impact on the upgrading of skills in the South African labour market.
- The Employment Equity Act, which has not had the desired effect on the effective utilisation of labour.

The factors that influence hospitality employment worldwide, include: skills demand, qualifications demand and the supply of labour in the international hospitality industry. In South Africa specifically, there are additional challenges. A major challenge is that the hospitality industry is well known for being characterised by a high demand for unskilled and low skilled workers who receive a lower wage, as the supply of these workers exceeds their demand. Thus, the skills and qualifications supplied by the South African labour market, do not always accurately meet the needs or demands of the accommodation industry. This results in a skills “gap”. As a result, the qualifications of the workforce in South Africa need to be upgraded to meet the needs of the labour market, thus ensuring that adequately skilled and qualified employees are available to meet the demands of the industry.

Due to the fact that the accommodation industry has various industry-specific characteristics, the time series method and top-down approach were selected to be for this study.

8.2.5 Conclusion on the accuracy of labour demand forecasts in the accommodation industry

The fifth specific objective of this study was to evaluate the accuracy of the quantitative forecasting methods. This was achieved in chapter five, which developed and compared the forecasting models for the accommodation industry. Chapter five presented a discussion of the three methods used to forecast labour, namely, the time-series, bottom-up and top-down approaches. These models were developed for the South African data. The limitations of the data were explained in this chapter. The main focus of the chapter was the development of these models, and the ex-post forecast accuracy of the time-series models.

To forecast international arrivals, the various time series models identified in chapter three (see objective two above) were developed and the ex post forecasting accuracy was compared. The most accurate forecasting methods were found to be the Naïve 2 method. These results feed into the top-down approach followed in this research.

ARIMA was the best time series method for this study, but the individual series (highly skilled, skilled, semi-skilled labour) did not contain the variation and information that the aggregate did. Therefore these series could not outperform the Naïve method, which is known as the benchmark. The superiority of the ARIMA as a time series method was confirmed not only in the tourism context, but also in the labour forecast context.

For the labour output forecasts, the VAR models fared better based on the theory stating the drivers of production and the VAR models takes this into account. The Naïve 2 was the most accurate for the first year, while the Holt-Winters multiplication method was the best method to use for the remaining years. The best forecasting methods are thus the multivariate and econometric approaches, which feed the bottom-up approach.

8.2.6 Conclusion on the quantitative forecasts of labour demand in the accommodation industry and the qualifications required

The sixth specific objective of this study was to use the optimal forecasting methods to generate the quantitative forecasts of labour demand in the accommodation

industry in South Africa and link these with job levels as well as qualification requirements. This objective was addressed in chapters five and six of this study.

The bottom-up and top-down approaches to labour demand forecasting were developed in chapter five. For the bottom-up approach, labour elasticities were determined using an autoregressive distributed lag specification of the labour demand function. The resulting demand elasticity represented the change in labour demand for a 1 percent change in output. Linking these elasticities to turnover forecasts provided an estimate of the future demand for various levels of qualified labour. This was achieved in chapter six, where forecasting results were presented.

The top down approach resulted in two scenarios. Scenario one involved the aggregate forecasting of real domestic and international tourism spending. Due to the fact that ten years of data was the only available data set to be used, and in order to accurately forecast tourism spending over several categories, the Naïve 2 model was implemented to calculate the average growth rate over this ten year period. Thus the growth forecasted was based on the sum of growth in both the domestic as well as international tourism spending.

Scenario two involved forecasting the international spending per person, still using the Naïve 2 model. As discussed in scenario one, the growth rate of a ten year period was used. The spending per person was multiplied by the forecasted number of international tourists. For domestic spending per person, this growth was modelled as explained in scenario one, due to the fact that insufficient data was available for domestic spending per person. The forecasted growth was again calculated as the sum of the international and domestic tourist spending growth.

Following from the above, chapter six, presented an in-depth analysis of the results of the quantitative labour demand forecast. The three approaches employed, were discussed in detail, as the time series method, the bottom-up approach and the top-down approach. The time series and three scenarios from the bottom-up approach resulted in comparable results. The top-down approach resulted in much higher results. The difference in the results was as a result of the use by SAM of labour ratios not labour elasticities. Thus the top-down approach over-estimates the forecasted labour demand.

Furthermore, the educational and employment profiles of the accommodation and catering industries were presented. According to the data used this included, the educational profile, education summary, vacancies and retirement in these industries.

CATHSSETA provides the following as skills levels according to which organisations classify skills:

d) High level skills – NQF levels 7-10 (offered by public and private training institutions).

e) Middle level skills – NQF levels 3-6 (offered by public and private training providers).

f) Low level skills – NQF levels 1-2 (offered by public and private training providers).

According to Quantec, the skills levels are defined as follows:

d) Highly skilled: professional, semi-professional and technical occupations; and managerial, executive and administrative occupations.

e) Skilled/medium skilled: clerical occupations; sales occupations; transport, delivery and communications occupations; service occupations; farmer, farm manager; artisan, apprentice and related occupations; production foreman; and production supervisor.

f) Semi- and unskilled: all that are neither highly skilled nor (medium) skilled.

The skills levels according to Stats SA are defined as follows:

d) 'Skilled' includes Manager, professional and technician occupations;

e) 'Semi-skilled' includes Clerk, sales and services, skilled agriculture, craft and related trade and plant and machine operator occupations;

f) 'Low-skilled' includes elementary and domestic worker occupations.

Therefore, the definitions of Stats SA that relate to the Quantec definitions are as follows:

d) Highly skilled according to Quantec is classified as skilled according to Stats SA,

e) Skilled or medium-skilled according to Quantec is considered as semi-skilled according to Stats SA,

f) While semi-skilled and unskilled according to Quantec is regarded as low skilled according to Stats SA.

The findings showed that there is an increase in labour demand for qualifications from the NQF level 3 – 5 categories, with increases in skilled occupations especially for clerical support workers, between 2015 and 2016. For highly skilled occupations there was an increase for managers and professionals between 2015 and 2016.

The replacement data was based on CATHSSETA's retirement figures, where the average of the 2015 and 2016 data of persons over the age of 55 were taken. These averages were equally distributed over the 5 years. For the total labour demand, the retirement data shows that from 2015 to 2019 retirement figures will be fixed with the highest number of retirees (1.45%) in the manager category for highly skilled labour, and in the plant and machine operators and assemblers (2.42%) category for skilled labour. This means that these proportions of labour will need to be replaced with equally skilled and qualified employees. It should be remembered that the forecasts excluded replacement demand due to retirement, normal job rotation and current vacancies.

This was further narrowed down to the accommodation industry, as the main focus of this study. For the accommodation industry, the forecasts were also discussed according to the time series method, the bottom-up approach and the top-down approach. Finally, the demand according to qualifications and specific job levels in the accommodation industry, were presented as a conclusion to the labour demand forecasts, utilising the time series method and the bottom-up approach. The generated forecasts showed vastly different demands for labour in the accommodation industry. The top-down approach generated inflated results, while the low scenario of the bottom-up approach showed almost no growth. Therefore the lowest scenario and the top-down approach were disregarded, rendering three scenarios for labour, occupation and qualification forecasts in the accommodation

industry. The time-series forecast served as the high forecast, the bottom-up “high scenario” was the middle forecast and the bottom-up “middle scenario” gave the low forecast.

For the qualitative adjustments in chapter seven, these three scenarios were presented in order to enhance the accuracy of the forecasts presented in chapter six.

8.2.7 Conclusion on qualitative adjustment of the quantitative forecasts

The final specific objective of this study was to implement qualitative forecasting methods in order to adjust the quantitative forecasts and enhance the forecasting accuracy. This was achieved in chapter seven. Chapter seven concluded this research by presenting the quantitative and qualitative research methodology. The results of the qualitative interviews held with representatives from the six largest stakeholders in the accommodation industry in South Africa, were presented. The results of a discussion held with a representative from CATHSSETA, which shed light on specific aspects of the industry, were also presented.

In addition to the synopsis of the results of the interviews, and the qualitative adjustments of the forecasts were provided. Overall, the adjustments placed the forecasts between the low and middle scenarios. Compared to the PwC Hospitality Outlook 2015-2019, the total room revenues were expected to increase by an overall 8.0% compound annual rate, with an overall 8.1% increase in hotel revenues. The PwC Hospitality based these figures on a 3% growth for the South African economy. However it is noted that consulting reports, such as the PwC reports, are evidently an over-estimation, and therefore PwC reports are always seen as over-estimated.

According to the interviewed experts, the low growth forecasts in the accommodation industry may be attributed to (i) low economic growth, (ii) higher education crisis, (iii) unstable economic situation, (iv) low disposable income, (v) unstable political environment, (vi) increase in competition and oversupply of accommodation, (vii) changing target markets, (viii) SAA monopoly on the travel industry and its prices, (ix) fuel price increases, (x) fluctuating exchange rates, (xi) home affairs challenges in terms of policy implementation and biometric visas and (xii) the need for South Africa to improve its’ image to tourists.

The reasons for the slow growth in the informal labour demand were identified in chapter seven, as: (i) new labour brokerage laws, (ii) seasonality of the hospitality industry and (iii) the nature of informal employees and contracts. The reasons provided by respondents for growth in formal labour include: (i) low expected revenue growth, (ii) limited stock in hospitality industry, (iii) few new hotels and low investments and (iv), the high rate of in-sourcing currently in the hospitality industry.

The results show that the consensus forecast predicts low growth in the industry – approximately 1% growth per year, although it is expected to pick up during 2018. The growth from 2017 to 2018 is forecasted to be 1.24% and 2.26% from 2017 to 2018.

The highest forecasted increase from 2015 to 2019 in highly skilled jobs is for the manager category (29 persons), followed by technicians and associate professionals (15 persons), and allowing for a decrease in professionals (14 persons). For the highly skilled labour category, the occupations forecasted by the respondents as vital in job creation are: general managers, assistant general managers, heads of department, front office managers, reservations managers, banqueting managers, maintenance managers, food and beverage managers, finance managers, payroll administrators, senior accounting administrators, financial positions, supply chain management, executive chefs and sous chefs, IT positions, e-commerce managers, sales and marketing managers, and skills development trainers. According to the respondents, the minimum qualifications for these highly skilled labour categories, depending on the position, ranged from diplomas to degrees. However they also suggested the inclusion of diplomas with additional work experience.

The replacement demand for highly skilled labour is predicted to show a growth of approximately 3.02% for managers, 3.37% for professionals, and 3.47% for technicians and associate professionals by the year 2019 (compared to the 2014 figures).

From this chapter, it can be concluded that from 2015 to 2019, the largest increase in labour demand for skilled labour, will come from the service and sales workers (1 223 new people), followed by the clerical support workers (356 persons). A decrease is seen in plant and machine operators and assemblers as well as in the skilled agricultural, forestry, fishery, craft and related trades. For the skilled labour

category, the respondents identified the following occupations as forecasted to be vital in job creation in this category: front office staff, IT service desk staff, supervisors in various departments (such as housekeeping, front office, maintenance), public relations, reservations, sales consultants, junior chef positions, assistant managers, supply chain management staff, conference coordinators, housekeeping supervisors and administrators. These occupations require qualifications that range from certificates (including FET), to diplomas with experience or more specialised diplomas such as for IT occupations or marketing qualifications.

The replacement demand for skilled labour forecasts growth of approximately 1.76% for clerical and support workers, 2.81% for plant and machine operators and assemblers, 1.24% for service and sales workers, and 3.46% for skilled agricultural, forestry, fishery, craft and related trades by the year 2019.

Therefore, many employees with the relevant qualifications will need to be trained, in order to replace the number of employees which will be lost in these skills categories over the next few years.

As mentioned in chapter two of this study, CATHSSETA has identified the following as scarce skills in the accommodation industry, namely; chefs, restaurant, operational, hotel and general managers. The results of the qualitative findings of this study are in line with the data presented by CATHSSETA, which indicates that management occupations in the hospitality industry require an NQF 6, with chefs requiring NQF 4 qualifications.

8.3 RECOMMENDATIONS

The conclusions above presented a summary of the results of this study and were based on the findings of this research. This section discusses recommendations which ensued from the results of this study. The recommendations are categorised as industry recommendations, policy recommendations and research recommendations.

8.3.1 Industry recommendations

The recommendations for the accommodation industry in South Africa include the following:

To continue employing adequately skilled and qualified employees, the industry needs to work more closely with higher education providers, as well as with organisations such as CATHSSETA. This will ensure that the qualifications of students provide them the adequate skills and qualifications demanded by the industry. The cooperation between the industry and these institutions could be in the form of panel discussions or bi-annual meetings in provinces, to ensure that the higher education providers keep abreast of trends and needs in the industry. In doing so, the industry will have adequately trained, skilled, and experienced prospective employees ready to be employed once they have graduated. If graduates know that there are jobs for them in the fields for which they have qualified, this may ultimately assist in bringing down the unemployment rate in South Africa.

Following from this, it may be necessary to introduce hospitality training programmes in high schools to introduce learners to the opportunities and job vacancies that exist in the accommodation industry. The revised hospitality training programmes may be used and incorporated into the existing tourism or hospitality subject material. This would create a pool of the correct target market, who are prepared for the industry and will know how to obtain the adequate qualifications and skills in order to meet the needs of the labour market, specifically in the accommodation industry.

Higher education institutions offering hospitality and accommodation management programmes, could tailor-make their subjects and learning materials to the occupations identified in the forecasts developed in this study. This may address the gaps between industry expectations and the labour market. In addition employees may be retained and promoted, as their skills levels improve. Also, the accommodation industry needs to be encouraged to offer training programmes to their employees, thus improving the qualifications of staff in the hospitality industry.

Furthermore, representatives of the tourism and hospitality sectors should have in-depth discussions with CATHSSETA, TSA, Stats SA, SARS, TGCSA and other stakeholders, to discuss the classification of accommodation establishments, other

classification systems of employees and their skills, which differ to varying degrees. For instance, the classification of OFO job levels and employees' jobs is easy and will ensure more accurate reporting about employees in the future, with more accurate data available, using the same classification systems. As mentioned in chapter seven, better benchmarking of standards across the accommodation industry would lead to better offerings to tourists.

The general public could be more informed of the unique attributes of the accommodation industry and the job opportunities that exist. This may improve South Africa's chances of keeping skilled individuals in the country. It will also enable the industry to employ less emigrants with lower skills. South African citizens may therefore be employed in such positions and be provided with the opportunities to improve their skills. In this way skills shortages, generically and also in the accommodation industry, may also be addressed.

Special attention should be given to recruitment strategies especially of prospective employees falling within Generation Y. This would lead to an improvement of standards and productivity in the accommodation industry.

As competition in the accommodation industry in South Africa becomes stronger, there is a greater need to improve guest relations and personalised and customised services across the board.

The accommodation industry is clearly starting to demand better qualified employees, which may be seen as a sign that service levels may start to increase. The challenge in the accommodation industry, with employing better qualified employees, is of course that such employees demand better salaries, which must be met by the industry.

The skills that are most scarce in the accommodation industry are; namely; chefs, restaurant, operational, hotel and general managers. The accommodation industry should focus more attention on the recruitment and also retention of employees who possess such scarce skills, in order to retain them at the organisation, as it is becoming increasingly difficult to find employees who possess such skills.

8.3.2 Policy recommendations

Due to the fact that tourism is seen as an industry which can create jobs and employment opportunities, ineffective policy decisions (such as new visa regulations and capturing of biometric data) can be detrimental to the tourism industry as a whole and ultimately hamper employment opportunities. Policies should therefore be thoroughly developed and researched as they have a direct and evident impact on the industry and employment.

The nature of the hospitality (particularly accommodation industry), with characteristics such as long working hours and low wages, give the industry a negative image, making it an unappealing option for employment. Further research and development of specific labour policies for this industry, may improve these working conditions and the negative image of the industry. Better wages, working conditions, incentives for further training and educational qualifications, and other benefits may be implemented in order to encourage employees to take up employment in this industry. Skills development, internship programmes and youth subsidies can be developed to further provide for employment. This could be especially useful in cases where people are trained in scarce skills areas, and to also encourage people to take up qualifications in such areas.

8.3.3 Research recommendations

For researchers aiming to recreate a similar study, it is important to note that the two methods, the bottom-up approach and time series methods, provide comparable results and that these two methods can similarly be used to study other industries. It is also essential to use a qualitative adjustment following such quantitative forecasts, in order to complement the quantitative statistics with expert opinions which add environmental knowledge to the forecasts. This provides a more accurate overview than may be provided by the use of quantitative data only.

8.4 CONTRIBUTION OF THIS RESEARCH

This study made a contribution to the literature, methodology and industry, which are outlined in this section.

8.4.1 Literature contribution

Currently, literature suggests that the research on job levels as well as qualifications in the accommodation industry leaves much to be desired. Taking this into consideration, the main goal and focus of this study was to forecast the demand for various job levels and their associated qualification requirements in the accommodation industry in South Africa. This study therefore contributed towards the creation of new knowledge in the area of forecasting accommodation qualifications and accommodation job levels.

As identified in this study, there is insufficient research available regarding labour and qualification forecasts in the tourism industry. This study presents a full overview of the current and future forecasts in labour demand in the accommodation industry (as part of the tourism industry), and identifies specific challenges and opportunities.

The literature study, discussed in chapter two, focused on the role of the accommodation industry in the tourism sector, the growth of the tourism industry in South Africa, employment in the tourism industry in South Africa, the job levels available in the accommodation industry in South Africa, as well as the South African qualifications available in order to address the demand for these current job levels. The literature study brings to light the importance of the accommodation industry in South Africa's tourism industry, as well as the importance of adequately qualified employees to meet the demand of the job levels that will become available in the next five years.

Past literature from developed and other developing countries will also be taken into consideration for the literature study. The literature examined for this study will provide the background and context for the methodology implemented in the study.

The use of quantitative time series forecasting (discussed in chapter three) has developed the literature on quantitative time series forecasting methods, specifically on Naïve forecasting, Autoregressive Integrated Moving Average (ARIMA) models, exponential smoothing and Vector Autoregressive (VAR) models. The literature review also dealt with qualitative forecasting methods, and specifically interviews with experts, since this method was followed in the last part of the study (chapter seven).

Another literature study was completed offering an overview of the labour market (discussed in chapter four). This also included aspect of the labour market in general, as well as labour demand practices, labour supply, and factors influencing the labour supply. Labour forecasting as a practice was then discussed according to the three main approaches which were employed in this study, namely the bottom-up coefficient approach, the top-down forecasting model and followed by several market signalling approaches. The literature review assisted in the development of the bottom-up and top-down approaches to labour forecasting, used in this study. To further illustrate labour demand and supply, international and local evidence was presented for demand for labour in the hospitality industry.

8.4.2 Methodological contribution

The main goal of this study was realised by using both quantitative and qualitative forecasting methods (discussed in chapters five and six). The quantitative forecasting method entailed univariate time series methods, most notably the Naïve, Naïve 2, ARIMA, Holt-Winters approach, VAR. Although these methods are regularly applied in tourism forecasting, they are not often applied in forecasting a certain sub-section of the tourism industry, such as the accommodation industry and also not in terms of labour forecasting in tourism and accommodation. ARIMA and VAR have been proven as accurate methods to be used in labour forecasts. The labour elasticities were determined according to the ARDL models, and were accurate. The majority of the scenarios were determined by the respondents as the most likely scenario, which means that the labour elasticities were accurate.

The literature of the labour forecasting methods assisted in the development of scenarios which were used to forecast labour demand for the accommodation industry. Three labour forecasting methods were used in this study, namely the time-series forecasts, the bottom-up coefficient approach, and the top down approach. The results of the study showed that the top-down approach provide inflated results, while the results of the bottom-up and time-series approaches provided comparable results. Three scenarios were also used in the bottom-up approach and these provided a spectrum of possible forecasts, which proved to be useful in the qualitative adjustments done in this research.

The qualitative forecasting method of interviews was followed to enhance the quantitative forecasts. Qualitative forecasts are neglected in tourism and hospitality literature. This study contributed towards applying qualitative forecasting in tourism. The results showed that qualitative forecasts provide additional information and given a spectrum of possible forecasts, industry experts can add significant value to identify and also substantiate the most probable forecasting scenario. It is vital that qualitative adjustments be used in such studies, as they add value to the study by incorporating expert opinions about the industry. This results in more accurate findings and therefore a more accurate overall view of the research findings.

8.4.3 Industry contribution

The findings of this study may be applied in the following areas:

This study assists the industry to understand various trends in employment in the accommodation industry. It assists to identify gaps in terms of labour demand and supply, in terms of qualifications and experience, as well as skills levels. This study also aims to provide educational advice to educational institutions, to better equip graduates with the necessary skills and qualifications demanded by the industry.

The challenge in the accommodation industry is related to the fact that low skills and qualifications are common. It is also related to the abnormal working conditions such as long working hours, which have a greater impact on the lower skilled jobs where job rotation is commonplace.

This study also contributes positively to the improvement of skills and to address the challenge of shortage of skills that is rife in the accommodation industry. This may ultimately contribute to the reduction of the high unemployment rate in South Africa.

This study can also contribute, to a great extent, to the overall performance of not only the accommodation industry, but also the tourism industry as a whole. This can be achieved through employing higher skilled and qualified employees, and thus increasing the service levels in the industry. This will in turn increase the satisfaction of guests, more return business, and thus an increase in income generated. This will also have a positive impact on the economy of South Africa, which may lead to increased job creation.

The study will enable higher education institutions to ascertain the type and level of hospitality qualifications that will be required by the accommodation industry in the future. This information can then be used to ensure that graduates have a higher chance of employment in the future.

Current employees in the accommodation industry may secure their jobs by ensuring that they have the qualifications required by the industry, as forecasted in this study. In addition, certain gaps may be identified based on this study, which may lead to the creation of new or improved accommodation industry qualifications.

According to the HSRC (2008: 2), the weakest part of the supply and demand analysis in human resource management relates to the comparison of the qualifications required and the job level vacancies. This study may therefore prove to address the labour demand created by the accommodation industry, and address the supply offered by the labour market.

8.5 LIMITATIONS

The greatest limitation of the study was that there was no readily available data exclusively for the accommodation industry. Therefore, for this study, the hospitality data which included the catering and accommodation data had to be utilised. This required a further breakdown to extract the accommodation data relevant for this study.

Another limitation was that the data had to be collected from various sources, namely from Quantec, Stats SA and CATHSSETA. Each source produced its own data, which was not readily comparable. There were large differences in the data obtained from these three sources, but due to the fact that this was the only data available, it needed to be used. Moreover, only CATHSSETA captured the data regarding education, training and qualifications. Even then the data was only for two years. This was a challenge as it is difficult to determine trends with such a limited amount of data.

The differences in the categories of skills (and definition of these skills levels) between CATHSSETA, Quantec, Stats SA and SARS, led to some confusion as to the skills categories used for this study (provided from information from CATHSSETA and Quantec).

The limitations of using in-depth interviews for the purpose of qualitative adjustment, is the susceptibility of the responses to bias and the inadvertent portrayal of the accommodation industry more favourable light than it is. In addition, interviewees may not have had sufficient time to provide their answers due to work-related commitments as the time allocated for interviewees to respond, and due to their job requirements, may have been too little.

Another limitation, as stated by one respondent, was that it was not valid to offer forecasts for 2015 based on 2014 that is related to the time lags for available data. The challenge is that the published data that was used resulted in a time lag. Another comment was that this study focussed on certain aspects of the accommodation industry, and not on all aspects, such as the number of bed growth in South Africa, which could have added value to this study.

A further limitation, which may also be seen as an opportunity was that the six interviewed organisations offer various types of accommodation such that their perceptions of the accommodation industry might have been tainted by their frame of reference. In other words, the different types of accommodation offered by the interviewed organisations have different service levels, such that their frame of reference regarding what they forecasted for the accommodation industry in terms of growth and job creation, including job levels, might have been slanted towards their varied expertise. However, interviewing several experts ensured that bias in this study was reduced.

It was deemed as a challenge for respondents to give an opinion regarding the staff turnover in the accommodation industry. They found it impossible to forecast the staff turnover according to skills levels, partly due to the fact that staff turnover is influenced by many external factors and that the industry consists of many types of accommodation. Employees in various types of accommodation organisations have varying reasons for levels of staff turnover, and could only give their opinions or insights based on their own experiences.

A further limitation is that due to time constraints, the accuracy of this study's ex ante forecasts could not be determined. This can be completed in a future study.

8.6 AREAS OF FUTURE RESEARCH

Using this study as background, future research should review the accuracy of the forecasts generated by this study for the years 2015-2019.

Another area to explore in future is the incorporation of the forecasts of SIC 6410 and SIC 6420 to obtain an overall view of the SIC 64 of the hospitality industry. There may be a difference in forecasts for the catering sector, which makes up 70% of SIC 64. Also the current and future skills levels of employees in the catering sector may lead to a different demand than forecasted in this study.

Another valid research point may be to investigate the staff turnover of the accommodation sector according to skill levels and the different accommodation types, as this was not a main objective of this study, but may be influenced by the results of this study. Finally, the understanding of the intricacies of the accommodation working environment would also be beneficial to future studies.

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APPENDICES

Appendix A

Table A1: Model diagnostics of all the time series models

VARIABLE	MODEL	R-squared	LM-Stat/ Q-stat for ARIMA	Jarque Bera
LNARR	ARIMA(0,1,1)	0.1648	0.013 (0.906)	9.6815*** (0.007)
LNLST	ARIMA(0,1,3)	0.5074	2.684 (0.101)	206.33*** (<0.001)
	ARIMA(4,1,0)	0.4117	4.674** (0.031)	98.32*** (<0.001)
	VAR1	0.4259	6.645 (0.653)	36.817*** (<0.001)
LNLSF	ARIMA(1,1,1)	0.5026	0.033 (0.855)	19.053*** (<0.001)
	VECM	0.7350	14.421 (0.567)	2.390 (0.302)
	VAR2	0.5806	17.11 (0.378)	4.868* (0.087)
LNLSHS	ARIMA(1,1,1)	0.5995	0.145 (0.703)	17.12*** (<0.001)
	VAR3	0.8652	29.766 (0.758)	0.873 (0.646)
LNLSS	ARIMA(1,1,1)	0.5167	0.009 (0.922)	16.766*** (<0.001)
	VAR3	0.8463	29.766 (0.758)	20.637*** (<0.001)
LNLSSEMI	ARIMA(1,1,1)	0.5155	0.072 (0.788)	23.72*** (<0.001)
	VAR3	0.8349	29.766 (0.758)	9.861*** (0.007)
LNLSI	ARIMA(0,1,1)	0.4812	0.278 (0.598)	595.2*** (<0.001)
	VAR2	0.5190	17.11 (0.378)	55.57*** (<0.001)
	VAR3	0.7981	29.766 (0.758)	22.884*** (<0.001)
LNOUTPUT	ARIMA(3,1,2)	0.4601	2.341 (0.126)	4.034 (0.133)
	VAR1	0.2289	17.11 (0.378)	2.051 (0.358)
	VAR3	0.5586	29.766 (0.758)	4.818* (0.089)

Table A2: Holt-Winter models output

			HW1	HW2	HW3
LNARR	Parameters:	Alpha	1.000	1.000	1.000
		Beta	0.390	0.310	0.330
		Gamma		0.000	0.000
	Sum of Squared Residuals		0.721	0.773	0.756
	Root Mean Squared Error		0.153	0.158	0.156
LNLSF	Parameters:	Alpha	1.000	1.000	1.000
		Beta	1.000	0.720	0.720
		Gamma		0.000	0.000
	Sum of Squared Residuals		0.0350	0.0495	0.0497
	Root Mean Squared Error		0.0296	0.0352	0.0352
LNLSHS	Parameters:	Alpha	1.000	1.000	1.000
		Beta	0.480	0.350	0.350
		Gamma		0.000	0.000
	Sum of Squared Residuals		0.7585	0.0705	0.0709
	Root Mean Squared Error		0.1377	0.0420	0.0421
LNLSI	Parameters:	Alpha	1.000	1.000	1.000
		Beta	1.000	0.390	0.360
		Gamma		0.000	0.000
	Sum of Squared Residuals		0.0347	0.7970	0.8188
	Root Mean Squared Error		0.0295	0.1412	0.1431
LNLSS	Parameters:	Alpha	1.000	1.000	1.000
		Beta	1.000	0.850	0.850
		Gamma		0.000	0.000
	Sum of Squared Residuals		0.036	0.044	0.044
	Root Mean Squared Error		0.030	0.033	0.033
LNLSSEMI	Parameters:	Alpha	1.000	1.000	1.000
		Beta	0.660	0.480	0.460
		Gamma		0.000	0.000
	Sum of Squared Residuals		0.082	0.061	0.061
	Root Mean Squared Error		0.045	0.039	0.039
LNLST	Parameters:	Alpha	1.000	1.000	1.000
		Beta	0.420	0.530	0.530
		Gamma		0.000	0.000
	Sum of Squared Residuals		0.127	0.090	0.091
	Root Mean Squared Error		0.056	0.048	0.048

LNOUTPUT	Parameters:	Alpha	1.000	1.000	1.000
		Beta	0.420	0.440	0.430
		Gamma		0.000	0.000
	Sum of Squared Residuals		0.127	0.123	0.124
	Root Mean Squared Error		0.056	0.056	0.056

Table A3: VAR1 model results

Vector Autoregression Estimates
Sample (adjusted): 1973 2009
Included observations: 37 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	DLNOUTPUT	DLNFCS	DLNLST
DLNOUTPUT(-1)	0.240044	0.108201	-0.204458
	(0.19634)	(0.03538)	(0.14999)
	[1.22262]	[3.05788]	[-1.36313]
DLNOUTPUT(-2)	0.017467	-0.082825	-0.329713
	(0.21462)	(0.03868)	(0.16396)
	[0.08139]	[-2.14133]	[-2.01094]
DLNFCS(-1)	0.457447	1.317004	1.235821
	(0.83053)	(0.14968)	(0.63449)
	[0.55079]	[8.79883]	[1.94775]
DLNFCS(-2)	-0.168102	-0.541526	-0.401578
	(0.75427)	(0.13594)	(0.57623)
	[-0.22287]	[-3.98370]	[-0.69691]
DLNLST(-1)	-0.447856	0.080876	0.390459
	(0.23398)	(0.04217)	(0.17875)
	[-1.91411]	[1.91796]	[2.18442]
DLNLST(-2)	0.313135	-0.039601	-0.255102
	(0.23909)	(0.04309)	(0.18265)
	[1.30971]	[-0.91906]	[-1.39666]
C	0.012328	0.004032	0.001100
	(0.01184)	(0.00213)	(0.00905)
	[1.04099]	[1.88936]	[0.12153]
R-squared	0.239152	0.885297	0.425954
Adj. R-squared	0.086983	0.862357	0.311145
Sum sq. resids	0.091823	0.002982	0.053591
S.E. equation	0.055324	0.009971	0.042265
F-statistic	1.571616	38.59101	3.710106
Log likelihood	58.47718	121.8791	68.43932
Akaike AIC	-2.782550	-6.209681	-3.321044
Schwarz SC	-2.477782	-5.904913	-3.016276
Mean dependent	0.023789	0.022142	0.007872
S.D. dependent	0.057900	0.026875	0.050924

Determinant resid covariance (dof adj.)	4.60E-10
Determinant resid covariance	2.45E-10
Log likelihood	251.8742
Akaike information criterion	-12.47969
Schwarz criterion	-11.56538

Table A4: VAR2 model results

Vector Autoregression Estimates
Sample (adjusted): 1973 2009
Included observations: 37 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	DLNOUTPUT	DLNFCS	DLNLSF	DLNLSI
DLNOUTPUT(-1)	0.211674	0.106285	0.010424	-0.513731
	(0.20452)	(0.03202)	(0.09829)	(0.42841)
	[1.03498]	[3.31909]	[0.10605]	[-1.19917]
DLNOUTPUT(-2)	0.021734	-0.100171	-0.076321	-0.886299
	(0.22253)	(0.03484)	(0.10694)	(0.46612)
	[0.09767]	[-2.87503]	[-0.71365]	[-1.90143]
DLNFCS(-1)	0.429783	1.275919	0.553349	1.392608
	(0.85512)	(0.13389)	(0.41096)	(1.79120)
	[0.50260]	[9.52970]	[1.34647]	[0.77747]
DLNFCS(-2)	-0.124060	-0.505753	-0.475571	0.613075
	(0.79488)	(0.12446)	(0.38201)	(1.66501)
	[-0.15607]	[-4.06371]	[-1.24491]	[0.36821]
DLNLSF(-1)	-0.182861	0.073368	0.928544	0.349305
	(0.36078)	(0.05649)	(0.17339)	(0.75571)
	[-0.50685]	[1.29883]	[5.35531]	[0.46222]
DLNLSF(-2)	0.227279	0.082964	-0.424710	1.366447
	(0.41579)	(0.06510)	(0.19983)	(0.87094)
	[0.54662]	[1.27438]	[-2.12540]	[1.56893]
DLNLSI(-1)	-0.134542	0.007817	-0.048149	0.260713
	(0.08552)	(0.01339)	(0.04110)	(0.17913)
	[-1.57331]	[0.58381]	[-1.17156]	[1.45547]
DLNLSI(-2)	0.067861	-0.034371	0.073392	-0.387389
	(0.08519)	(0.01334)	(0.04094)	(0.17845)
	[0.79656]	[-2.57673]	[1.79254]	[-2.17083]
C	0.016565	0.006804	-0.004138	0.077920
	(0.01488)	(0.00233)	(0.00715)	(0.03116)
	[1.11350]	[2.92094]	[-0.57875]	[2.50047]
R-squared	0.228964	0.912266	0.580610	0.519025
Adj. R-squared	0.008669	0.887199	0.460784	0.381604
Sum sq. resids	0.093053	0.002281	0.021492	0.408286
S.E. equation	0.057648	0.009026	0.027705	0.120754
F-statistic	1.039349	36.39331	4.845450	3.776889
Log likelihood	58.23111	126.8377	85.34229	30.87333
Akaike AIC	-2.661141	-6.369606	-4.126610	-1.182342
Schwarz SC	-2.269296	-5.977761	-3.734765	-0.790497
Mean dependent	0.023789	0.022142	-0.002089	0.081857
S.D. dependent	0.057900	0.026875	0.037730	0.153557

Determinant resid covariance (dof adj.)	1.54E-12
Determinant resid covariance	5.06E-13
Log likelihood	313.7672
Akaike information criterion	-15.01444
Schwarz criterion	-13.44707

Table A5: VAR3 model results

Vector Autoregression Estimates
Sample (adjusted): 1974 2009
Included observations: 36 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	DLNOUTPUT	DLNFCS	DLNLSHS	DLNSS	DLNLSSEMI	DLNLSI
DLNOUTPUT(-1)	-0.025005	0.111496	-0.029149	-0.029734	-0.025278	-0.771459
	(0.25574)	(0.04424)	(0.10092)	(0.10087)	(0.09889)	(0.45760)
	[-0.09778]	[2.52031]	[-0.28883]	[-0.29478]	[-0.25561]	[-1.68586]
DLNOUTPUT(-2)	0.040995	-0.067530	-0.243271	-0.242977	-0.246554	-1.649719
	(0.32110)	(0.05555)	(0.12671)	(0.12665)	(0.12417)	(0.57456)
	[0.12767]	[-1.21576]	[-1.91984]	[-1.91846]	[-1.98563]	[-2.87127]
DLNOUTPUT(-3)	-0.449601	-0.037316	0.185717	0.184621	0.182000	0.309975
	(0.39427)	(0.06820)	(0.15559)	(0.15551)	(0.15246)	(0.70549)
	[-1.14034]	[-0.54713]	[1.19365]	[1.18718]	[1.19373]	[0.43938]
DLNFCS(-1)	-1.657093	0.860960	1.270539	1.260281	1.291168	7.378246
	(1.47905)	(0.25585)	(0.58367)	(0.58338)	(0.57194)	(2.64652)
	[-1.12038]	[3.36507]	[2.17682]	[2.16031]	[2.25751]	[2.78790]
DLNFCS(-2)	3.149512	-0.108037	-0.815792	-0.803692	-0.893701	-3.662174
	(2.20319)	(0.38112)	(0.86943)	(0.86900)	(0.85196)	(3.94226)
	[1.42952]	[-0.28347]	[-0.93831]	[-0.92484]	[-1.04899]	[-0.92895]
DLNFCS(-3)	-1.778282	-0.196875	-0.443648	-0.449660	-0.402956	2.648233
	(1.31246)	(0.22703)	(0.51793)	(0.51767)	(0.50752)	(2.34844)
	[-1.35492]	[-0.86716]	[-0.85659]	[-0.86862]	[-0.79397]	[1.12766]
DLNLSHS(-1)	6.378272	0.185491	-0.243354	-2.298696	-2.362012	-40.82026
	(9.88738)	(1.71036)	(3.90178)	(3.89987)	(3.82341)	(17.6919)
	[0.64509]	[0.10845]	[-0.06237]	[-0.58943]	[-0.61778]	[-2.30729]
DLNLSHS(-2)	-8.688909	-0.302741	7.985129	9.571773	9.766371	64.36496
	(15.2565)	(2.63913)	(6.02055)	(6.01760)	(5.89962)	(27.2991)
	[-0.56952]	[-0.11471]	[1.32631]	[1.59063]	[1.65542]	[2.35777]
DLNLSHS(-3)	1.673794	-0.210439	-4.589320	-5.087760	-5.244443	-11.57480
	(8.73210)	(1.51052)	(3.44588)	(3.44420)	(3.37667)	(15.6247)
	[0.19168]	[-0.13932]	[-1.33183]	[-1.47720]	[-1.55314]	[-0.74080]
DLNSS(-1)	6.199603	0.852566	3.641945	6.172245	4.008296	36.03418
	(11.7417)	(2.03113)	(4.63355)	(4.63128)	(4.54048)	(21.0099)
	[0.52800]	[0.41975]	[0.78600]	[1.33273]	[0.88279]	[1.71510]
DLNSS(-2)	-4.374479	-1.003014	-7.945286	-10.29761	-8.703499	-65.57621
	(21.6805)	(3.75039)	(8.55561)	(8.55142)	(8.38376)	(38.7938)
	[-0.20177]	[-0.26744]	[-0.92866]	[-1.20420]	[-1.03814]	[-1.69038]
DLNSS(-3)	-0.047920	0.720522	3.826806	4.617483	4.263666	26.26852
	(11.6313)	(2.01204)	(4.58999)	(4.58774)	(4.49779)	(20.8124)
	[-0.00412]	[0.35811]	[0.83373]	[1.00648]	[0.94795]	[1.26216]
DLNLSSEMI(-1)	-12.62936	-0.869865	-2.624375	-3.099195	-0.873881	4.349660
	(8.17416)	(1.41400)	(3.22571)	(3.22413)	(3.16092)	(14.6264)
	[-1.54503]	[-0.61518]	[-0.81358]	[-0.96125]	[-0.27646]	[0.29738]

DLNLSSEMI(-2)	13.03615	1.337348	-0.626983	0.138967	-1.648721	1.678421
	(15.9417)	(2.75766)	(6.29095)	(6.28787)	(6.16459)	(28.5251)
	[0.81774]	[0.48496]	[-0.09966]	[0.02210]	[-0.26745]	[0.05884]
DLNLSSEMI(-3)	-1.009684	-0.358501	0.895076	0.599709	1.110529	-14.54776
	(10.0836)	(1.74430)	(3.97921)	(3.97726)	(3.89929)	(18.0430)
	[-0.10013]	[-0.20553]	[0.22494]	[0.15078]	[0.28480]	[-0.80628]
DLNLSI(-1)	-0.248697	-0.006729	-0.081033	-0.081562	-0.080945	-0.040782
	(0.14804)	(0.02561)	(0.05842)	(0.05839)	(0.05725)	(0.26489)
	[-1.67993]	[-0.26277]	[-1.38708]	[-1.39681]	[-1.41398]	[-0.15396]
DLNLSI(-2)	0.131873	-0.007093	0.053089	0.053456	0.052274	-0.807550
	(0.11420)	(0.01976)	(0.04507)	(0.04505)	(0.04416)	(0.20435)
	[1.15472]	[-0.35904]	[1.17800]	[1.18673]	[1.18370]	[-3.95183]
DLNLSI(-3)	-0.225614	-0.039899	-0.069649	-0.069639	-0.068986	-0.008590
	(0.17608)	(0.03046)	(0.06949)	(0.06945)	(0.06809)	(0.31507)
	[-1.28129]	[-1.30990]	[-1.00233]	[-1.00268]	[-1.01314]	[-0.02726]
C	0.061339	0.018478	-0.060195	-0.060169	-0.060456	-0.271284
	(0.06278)	(0.01086)	(0.02477)	(0.02476)	(0.02428)	(0.11233)
	[0.97709]	[1.70152]	[-2.42983]	[-2.42998]	[-2.49039]	[-2.41507]
R-squared	0.558355	0.936799	0.865246	0.846345	0.834995	0.798165
Adj. R-squared	0.090731	0.869881	0.722565	0.683652	0.660284	0.584457
Sum sq. resids	0.053296	0.001595	0.008300	0.008291	0.007970	0.170640
S.E. equation	0.055992	0.009686	0.022096	0.022085	0.021652	0.100188
F-statistic	1.194026	13.99911	6.064212	5.202089	4.779296	3.734842
Log likelihood	66.19564	129.3596	99.66938	99.68700	100.3998	45.24914
Akaike AIC	-2.621980	-6.131089	-4.481632	-4.482611	-4.522213	-1.458286
Schwarz SC	-1.786234	-5.295343	-3.645886	-3.646865	-3.686467	-0.622539
Mean dependent	0.023705	0.022901	0.013126	0.001601	-0.016504	0.080253
S.D. dependent	0.058719	0.026851	0.041949	0.039265	0.037148	0.155420

Determinant resid covariance (dof adj.)	4.17E-25
Determinant resid covariance	4.62E-27
Log likelihood	785.0116
Akaike information criterion	-37.27842
Schwarz criterion	-32.26395

Appendix B

Table B1 ARDL model for Formal Labour

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
DLNLSF(-1)	0.801063	0.160617	4.987407	0
DLNLSF(-2)	-0.38296	0.167306	-2.28898	0.0288
DLNOUTPUT	0.051065	0.103702	0.492424	0.6258
DLNOUTPUT(-1)	0.088144	0.087652	1.00562	0.3221
DLNOUTPUT(-2)	-0.16332	0.087843	-1.85925	0.0722
DLNOUTPUT(-3)	0.136868	0.08316	1.645829	0.1096
D(LNULC)	0.115071	0.074404	1.546577	0.1318
DUM2001	-0.00964	0.031163	-0.3094	0.759
C	-0.01447	0.010067	-1.43735	0.1603
R-squared	0.52626	Mean dependent var		-0.002
Adjusted R-squared	0.407824	S.D. dependent var		0.036236
S.E. of regression	0.027885	Akaike info criterion		-4.13027
Sum squared resid	0.024882	Schwarz criterion		-3.75412
Log likelihood	93.67058	Hannan-Quinn criter.		-3.9933
F-statistic	4.443441	Durbin-Watson stat		1.833609
Prob(F-statistic)	0.001069			

(Source: Estimated output)

Table B2: ARDL model for Highly Skilled Labour

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
DLNLSHS(-1)	0.840376	0.163916	5.126874	0
DLNLSHS(-2)	-0.31346	0.165859	-1.88989	0.0679
DLNOUTPUT	0.035087	0.106737	0.328723	0.7445
DLNOUTPUT(-1)	0.079948	0.090647	0.881969	0.3844
DLNOUTPUT(-2)	-0.16871	0.091246	-1.84901	0.0737
DLNOUTPUT(-3)	0.134531	0.086303	1.558829	0.1289
D(LNULC)	0.114855	0.077601	1.480068	0.1486
DUM2001	-0.00476	0.03214	-0.14807	0.8832
C	-0.00671	0.010013	-0.67007	0.5076
R-squared	0.583852	Mean dependent var		0.013207
Adjusted R-squared	0.479815	S.D. dependent var		0.03997
S.E. of regression	0.028828	Akaike info criterion		-4.06375
Sum squared resid	0.026594	Schwarz criterion		-3.6876
Log likelihood	92.30679	Hannan-Quinn criter.		-3.92677
F-statistic	5.61197	Durbin-Watson stat		1.803938
Prob(F-statistic)	0.000177			

(Source: Estimated output)

Table B3: ARDL model for Skilled Labour

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
DLNSS(-1)	0.828316	0.159353	5.197987	0
DLNSS(-2)	-0.39256	0.169613	-2.31446	0.0272
DLNOUTPUT	0.072837	0.105581	0.689865	0.4953
DLNOUTPUT(-1)	0.09828	0.088418	1.111537	0.2746
DLNOUTPUT(-2)	-0.1587	0.088425	-1.79472	0.0822
DLNOUTPUT(-3)	0.150778	0.08379	1.799481	0.0814
D(LNULC)	0.128621	0.077284	1.664262	0.1058
DUM2001	-0.00854	0.031298	-0.2729	0.7867
C	-0.01442	0.010218	-1.41135	0.1678
R-squared	0.551667	Mean dependent var		0.00243
Adjusted R-squared	0.439584	S.D. dependent var		0.03758
S.E. of regression	0.028133	Akaike info criterion		-4.11256
Sum squared resid	0.025327	Schwarz criterion		-3.73641
Log likelihood	93.30744	Hannan-Quinn criter.		-3.97559
F-statistic	4.921947	Durbin-Watson stat		1.840457
Prob(F-statistic)	0.000501			

(Source: Estimated output)

Table B4: ARDL model for Semi-skilled Labour

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
DLNLSSEMI(-1)	0.787193	0.164782	4.777191	0
DLNLSSEMI(-2)	-0.34453	0.16454	-2.09388	0.0443
DLNOUTPUT	0.010537	0.103773	0.101543	0.9198
DLNOUTPUT(-1)	0.072823	0.088716	0.820859	0.4178
DLNOUTPUT(-2)	-0.16912	0.088883	-1.90277	0.0661
DLNOUTPUT(-3)	0.111884	0.084691	1.321086	0.1958
D(LNULC)	0.0824	0.071723	1.148861	0.2591
DUM2001	-0.0088	0.031641	-0.27804	0.7828
C	-0.01661	0.010263	-1.6186	0.1153
R-squared	0.5054	Mean dependent var		-0.01496
Adjusted R-squared	0.381749	S.D. dependent var		0.035817
S.E. of regression	0.028163	Akaike info criterion		-4.11045
Sum squared resid	0.025381	Schwarz criterion		-3.7343
Log likelihood	93.26411	Hannan-Quinn criter.		-3.97347
F-statistic	4.09E+00	Durbin-Watson stat		1.817884
Prob(F-statistic)	0.001913			

(Source: Estimated output)

Table B5: ARDL model for Informal Labour

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
DLNLSI(-1)	0.608609	0.08048	7.562288	0
DLNLSI(-2)	0.144496	0.083967	1.720873	0.0949
DLNOUTPUT	-0.36831	0.199254	-1.84844	0.0738
DLNOUTPUT(-1)	0.404475	0.203342	1.989137	0.0553
D(LNULC)	-0.05375	0.154615	-0.34762	0.7304
D(LNULC(-1))	0.271589	0.162077	1.675675	0.1035
DUM2001	-0.52815	0.060503	-8.72922	0
DUM2003	0.501721	0.087054	5.763311	0
DUM2008	0.245216	0.057195	4.287366	0.0002
C	-0.01255	0.022536	-0.55691	0.5815
R-squared	0.887914	Mean dependent var		0.074343
Adjusted R-squared	0.85639	S.D. dependent var		0.146997
S.E. of regression	0.055706	Akaike info criterion		-2.73321
Sum squared resid	0.099301	Schwarz criterion		-2.31947
Log likelihood	67.39731	Hannan-Quinn criter.		-2.58156
F-statistic	28.16612	Durbin-Watson stat		1.85818
Prob(F-statistic)	0			

(Source: Estimated output)

Table B6: Diagnostic Test results for ARDL models

	Breusch-Godfrey Serial Correlation LM Test:		**Heteroskedasticity Test: Breusch-Pagan-Godfrey**	
	Obs*R-squared		Obs*R-squared	
Formal Labour	(1.037797)	0.5952	(9.318899)	0.3161
Highly Skilled Labour	(2.007555) Prob. Chi-Square(2)	0.3665	(9.674768) Prob. Chi-Square(8)	0.2886
Skilled Labour	(0.673919) Prob. Chi-Square(2)	0.7139	(8.54446) Prob. Chi-Square(8)	0.3822
Semi-Skilled Labour	(2.003192) Prob. Chi-Square(2)	0.3673	(10.2163) Prob. Chi-Square(8)	0.2502
Informal Labour	(0.70331) Prob. Chi-Square(2)	0.7035	(4.838874) Prob. Chi-Square(9)	0.8481

(Source: Own calculations from estimated output)

Appendix C

Table C1 Employment occupation according to Job Titles (SIC 6410 for 2015)

Employment occupation according to job titles (and OFO codes) 2015 - 6410	OFO	OFO NAME	SKILL LEVEL	NQF	TOTAL
Advertising and Public Relations Manager - 122201	1	Managers	3 or 4	6 to 10	16
Agricultural Farm Manager - 131101	1	Managers	3 or 4	6 to 10	8
Amusement Centre Manager - 143106	1	Managers	3 or 4	6 to 10	4
Application Development Manager - 133104	1	Managers	3 or 4	6 to 10	4
Arts / Culture Manager - 143104	1	Managers	3 or 4	6 to 10	1
Bank Manager - 134601	1	Managers	3 or 4	6 to 10	3
Business Training Manager - 121202	1	Managers	3 or 4	6 to 10	31
Café (Licensed) or Restaurant Manager - 141201	1	Managers	3 or 4	6 to 10	585
Call or Contact Centre Manager - 143905	1	Managers	3 or 4	6 to 10	1
Caravan Park and Camping Ground Manager - 143906	1	Managers	3 or 4	6 to 10	8
Catering Production Manager - 141203	1	Managers	3 or 4	6 to 10	45
Chief Information Officer - 133101	1	Managers	3 or 4	6 to 10	4
Child Care Centre Manager - 134101	1	Managers	3 or 4	6 to 10	2
Cleaning Services Manager - 143902	1	Managers	3 or 4	6 to 10	130
Community Development Manager - 134402	1	Managers	3 or 4	6 to 10	6
Compensation and Benefits Manager - 121203	1	Managers	3 or 4	6 to 10	1
Construction Project Manager - 132301	1	Managers	3 or 4	6 to 10	5
Corporate General Manager - 121901	1	Managers	3 or 4	6 to 10	188
Credit Manager - 121103	1	Managers	3 or 4	6 to 10	13
Customer Service Manager - 122105	1	Managers	3 or 4	6 to 10	49
Data Management Manager - 133103	1	Managers	3 or 4	6 to 10	1
Director (Enterprise / Organisation) - 112101	1	Managers	3 or 4	6 to 10	184
Director of Marketing - 122103	1	Managers	3 or 4	6 to 10	22
Employee Wellness Manager - 121205	1	Managers	3 or 4	6 to 10	2
Engineering Manager - 132104	1	Managers	3 or 4	6 to 10	21
Environmental Manager - 134901	1	Managers	3 or 4	6 to 10	10
Facilities Manager - 143901	1	Managers	3 or 4	6 to 10	222
Faculty Head - 134503	1	Managers	3 or 4	6 to 10	1
Finance Manager - 121101	1	Managers	3 or 4	6 to 10	306
Financial Markets Business Manager - 134603	1	Managers	3 or 4	6 to 10	3
Fitness Centre Manager - 143107	1	Managers	3 or 4	6 to 10	1
Gaming Manager - 143102	1	Managers	3 or 4	6 to 10	1
General Manager Public Service - 111202	1	Managers	3 or 4	6 to 10	28
Guest House Manager - 141102	1	Managers	3 or 4	6 to 10	115
Head of Department (Teacher) - 134507	1	Managers	3 or 4	6 to 10	1
Health and SaFETy Manager - 121206	1	Managers	3 or 4	6 to 10	9
Hotel or Motel Manager - 141101	1	Managers	3 or 4	6 to 10	1180
ICT Project Manager - 133102	1	Managers	3 or 4	6 to 10	5

Importer or Exporter - 142101	1	Managers	3 or 4	6 to 10	4
Information Technology Manager - 133105	1	Managers	3 or 4	6 to 10	41
Internal Audit Manager - 121104	1	Managers	3 or 4	6 to 10	3
Local Authority Manager - 111203	1	Managers	3 or 4	6 to 10	1
Logistics Manager - 132402	1	Managers	3 or 4	6 to 10	5
Office Manager - 134904	1	Managers	3 or 4	6 to 10	75
Operations Foreman (Non Manufacturing) - 134916	1	Managers	3 or 4	6 to 10	55
Payroll Manager - 121102	1	Managers	3 or 4	6 to 10	11
Personnel / Human Resource Manager - 121201	1	Managers	3 or 4	6 to 10	81
Production / Operations Manager (Manufacturing) - 132102	1	Managers	3 or 4	6 to 10	7
Production / Operations Manager (Mining) - 132201	1	Managers	3 or 4	6 to 10	11
Programme or Project Manager - 121905	1	Managers	3 or 4	6 to 10	42
Quality Systems Manager - 121908	1	Managers	3 or 4	6 to 10	11
Reception Manager - 141103	1	Managers	3 or 4	6 to 10	317
Recruitment Manager - 121204	1	Managers	3 or 4	6 to 10	1
Research and Development Manager - 122301	1	Managers	3 or 4	6 to 10	6
Reservations Manager - 141204	1	Managers	3 or 4	6 to 10	253
Retail Manager (General) - 142103	1	Managers	3 or 4	6 to 10	39
Sales and Marketing Manager - 122101	1	Managers	3 or 4	6 to 10	88
Sales Manager - 122102	1	Managers	3 or 4	6 to 10	175
School Principal - 134501	1	Managers	3 or 4	6 to 10	1
Security Services Manager - 143904	1	Managers	3 or 4	6 to 10	61
Senior Government Manager - 111207	1	Managers	3 or 4	6 to 10	5
Small Business Manager - 134903	1	Managers	3 or 4	6 to 10	5
Sports Administrator - 143105	1	Managers	3 or 4	6 to 10	2
Sports Centre / Facility Manager - 143108	1	Managers	3 or 4	6 to 10	8
Supply and Distribution Manager - 132401	1	Managers	3 or 4	6 to 10	21
Sustainability Manager - 121909	1	Managers	3 or 4	6 to 10	1
Warehouse Manager - 132404	1	Managers	3 or 4	6 to 10	3
Operations Manager (Non Manufacturing) - 134915	1	Managers	3	6 to 10	90
Accountant (General) - 241101	2	Professionals	4	7,8,9 or 10	126
Accountant in Practice - 241106	2	Professionals	4	7,8,9 or 10	4
Accounting Officer - 242209	2	Professionals	4	7,8,9 or 10	12
Advertising Specialist - 243101	2	Professionals	4	7,8,9 or 10	1
Assessment Practitioner - 242403	2	Professionals	4	7,8,9 or 10	1
Book or Script Editor - 264102	2	Professionals	4	7,8,9 or 10	7
Botanist - 213106	2	Professionals	4	7,8,9 or 10	3
Business Administrator - 242210	2	Professionals	4	7,8,9 or 10	3
Communication Coordinator - 243201	2	Professionals	4	7,8,9 or 10	12
Company Secretary - 242203	2	Professionals	4	7,8,9 or 10	9
Computer Network and Systems Engineer - 252301	2	Professionals	4	7,8,9 or 10	4
Conservator - 262103	2	Professionals	4	7,8,9 or 10	2
Copywriter - 264201	2	Professionals	4	7,8,9 or 10	2

Corporate Communication Manager - 243203	2	Professionals	4	7,8,9 or 10	3
Database Designer and Administrator - 252101	2	Professionals	4	7,8,9 or 10	5
Early Childhood Development Practitioner - 234201	2	Professionals	4	7,8,9 or 10	1
Education or Training Advisor - 235101	2	Professionals	4	7,8,9 or 10	2
Electrical Engineer - 215101	2	Professionals	4	7,8,9 or 10	6
Electrical Engineering Technologist - 215102	2	Professionals	4	7,8,9 or 10	1
Electronics Engineer - 215201	2	Professionals	4	7,8,9 or 10	1
Event Producer - 243204	2	Professionals	4	7,8,9 or 10	55
External Auditor - 241104	2	Professionals	4	7,8,9 or 10	1
Financial Accountant - 241107	2	Professionals	4	7,8,9 or 10	17
Financial Investment Advisor - 241301	2	Professionals	4	7,8,9 or 10	1
Food and Beverage Scientist - 213205	2	Professionals	4	7,8,9 or 10	7
Forensic Accountant - 241108	2	Professionals	4	7,8,9 or 10	1
Graphic Designer - 216601	2	Professionals	4	7,8,9 or 10	14
Human Resource Advisor - 242303	2	Professionals	4	7,8,9 or 10	46
ICT Account Manager - 243401	2	Professionals	4	7,8,9 or 10	1
ICT Business Development Manager - 243402	2	Professionals	4	7,8,9 or 10	1
ICT Security Specialist - 252901	2	Professionals	4	7,8,9 or 10	1
ICT Systems Analyst - 251101	2	Professionals	4	7,8,9 or 10	11
Information Services Manager - 262202	2	Professionals	4	7,8,9 or 10	3
Internal Auditor - 242211	2	Professionals	4	7,8,9 or 10	28
Interpreter - 264301	2	Professionals	4	7,8,9 or 10	1
Landscape Architect - 216201	2	Professionals	4	7,8,9 or 10	2
Management Accountant - 241102	2	Professionals	4	7,8,9 or 10	22
Management Consultant - 242101	2	Professionals	4	7,8,9 or 10	10
Market Campaign Analyst - 243104	2	Professionals	4	7,8,9 or 10	1
Marketing / Communication Strategist - 243202	2	Professionals	4	7,8,9 or 10	2
Marketing Practitioner - 243103	2	Professionals	4	7,8,9 or 10	51
Mathematician - 212102	2	Professionals	4	7,8,9 or 10	1
Media Monitor - 264207	2	Professionals	4	7,8,9 or 10	1
Media Producer - 265412	2	Professionals	4	7,8,9 or 10	1
Multimedia Designer - 216603	2	Professionals	4	7,8,9 or 10	1
Multimedia Specialist - 251301	2	Professionals	4	7,8,9 or 10	1
Occupational Instructor / Trainer - 242402	2	Professionals	4	7,8,9 or 10	7
Organisational Risk Manager - 242208	2	Professionals	4	7,8,9 or 10	8
Park Ranger - 213307	2	Professionals	4	7,8,9 or 10	191
Policy Analyst - 242202	2	Professionals	4	7,8,9 or 10	1
Printing and Publishing Equipment Sales Representative - 243304	2	Professionals	4	7,8,9 or 10	2
Professional Principal Executive Officer - 241205	2	Professionals	4	7,8,9 or 10	4
Quality Assurance Analyst (Computers) - 251901	2	Professionals	4	7,8,9 or 10	1
Recreation Officer - 242307	2	Professionals	4	7,8,9 or 10	4
Registered Nurse (Community Health) - 222104	2	Professionals	4	7,8,9 or 10	1

SaFETy, Health, Environment and Quality (SHE&Q) Practitioner - 226302	2	Professionals	4	7,8,9 or 10	1
Sales Representative (Educational Products and Services) - 243303	2	Professionals	4	7,8,9 or 10	1
Sales Representative / Salesman (Industrial Products) - 243301	2	Professionals	4	7,8,9 or 10	13
Skills Development Facilitator / Practitioner - 242302	2	Professionals	4	7,8,9 or 10	6
Software Developer - 251201	2	Professionals	4	7,8,9 or 10	1
Student Support Service Officer - 242404	2	Professionals	4	7,8,9 or 10	1
Systems Administrator - 252201	2	Professionals	4	7,8,9 or 10	15
Tax Professional - 241103	2	Professionals	4	7,8,9 or 10	4
Technical Director - 265405	2	Professionals	4	7,8,9 or 10	1
Training and Development Professional - 242401	2	Professionals	4	7,8,9 or 10	17
University Lecturer - 231101	2	Professionals	4	7,8,9 or 10	1
Web Designer - 216604	2	Professionals	4	7,8,9 or 10	1
Web Developer - 251302	2	Professionals	4	7,8,9 or 10	6
Workplace / Industrial Relations Advisor - 242304	2	Professionals	4	7,8,9 or 10	4
Accounting Technician - 331302	3	Technicians and associate professionals	3	6	7
Aeroplane Pilot - 315303	3	Technicians and associate professionals	3	6	1
Associate Legal Professional - 341110	3	Technicians and associate professionals	3	6	2
Bid Assistant - 333909	3	Technicians and associate professionals	3	6	1
Boat Driver / Coxswain - 315205	3	Technicians and associate professionals	3	6	2
Bookkeeper - 331301	3	Technicians and associate professionals	3	6	59
Building Associate - 312301	3	Technicians and associate professionals	3	6	8
Building Inspector - 335913	3	Technicians and associate professionals	3	6	2
Business Support Coordinator - 333910	3	Technicians and associate professionals	3	6	24
Censorship Inspector - 335908	3	Technicians and associate professionals	3	6	1
Chef - 343401	3	Technicians and associate professionals	3	6	3266
Civil Engineering Technician - 311201	3	Technicians and associate professionals	3	6	8
Clothing, Textile and Footwear Manufacturing Process Control Technician - 313903	3	Technicians and associate professionals	3	6	2
Commercial Sales Representative - 332201	3	Technicians and associate professionals	3	6	7
Community Worker - 341201	3	Technicians and associate professionals	3	6	1
Computer Network Technician - 351301	3	Technicians and associate professionals	3	6	11
Credit or Loans Officer - 331201	3	Technicians and associate professionals	3	6	17
Electric Substation Operations Manager - 311302	3	Technicians and associate professionals	3	6	1
Electrical Engineering Technician - 311301	3	Technicians and associate professionals	3	6	3
Electronic Engineering Technician - 311401	3	Technicians and associate professionals	3	6	9
Environmental Science Technician - 314102	3	Technicians and associate professionals	3	6	2
Events Manager - 333201	3	Technicians and associate professionals	3	6	154
Fisheries Officer - 335912	3	Technicians and associate professionals	3	6	1

Food and Beverage Manufacturing Process Controller - 313907	3	Technicians and associate professionals	3	6	12
Food and Beverage Technician - 311903	3	Technicians and associate professionals	3	6	28
Gaming Operations Compliance Officer - 335916	3	Technicians and associate professionals	3	6	1
Golfer - 342102	3	Technicians and associate professionals	3	6	7
Hydrotherapist - 325502	3	Technicians and associate professionals	3	6	9
ICT Communications Assistant - 351201	3	Technicians and associate professionals	3	6	14
Interior Decorator - 343202	3	Technicians and associate professionals	3	6	1
Interior Designer - 343201	3	Technicians and associate professionals	3	6	4
Law Clerk - 341107	3	Technicians and associate professionals	3	6	2
Maintenance Planner - 312202	3	Technicians and associate professionals	3	6	117
Marketing Coordinator - 333908	3	Technicians and associate professionals	3	6	64
Massage Therapist - 325501	3	Technicians and associate professionals	3	6	57
Mechanical Engineering Technician - 311501	3	Technicians and associate professionals	3	6	12
Office Administrator - 334102	3	Technicians and associate professionals	3	6	101
Office Supervisor - 334101	3	Technicians and associate professionals	3	6	174
Outdoor Adventure Guide - 342302	3	Technicians and associate professionals	3	6	46
Personal Assistant - 334302	3	Technicians and associate professionals	3	6	125
Photographer - 343101	3	Technicians and associate professionals	3	6	2
Production Assistant (Film, Television or Radio) - 352106	3	Technicians and associate professionals	3	6	1
Property Manager - 333401	3	Technicians and associate professionals	3	6	6
Purchasing Officer - 332302	3	Technicians and associate professionals	3	6	39
Recruitment Consultant / Officer - 333301	3	Technicians and associate professionals	3	6	1
Retail Buyer - 332301	3	Technicians and associate professionals	3	6	3
SaFETy Inspector - 325705	3	Technicians and associate professionals	3	6	3
Sales Representative (Business Services) - 333903	3	Technicians and associate professionals	3	6	246
Sales Representative (Personal and Household Goods) - 332203	3	Technicians and associate professionals	3	6	1
Set Designer - 343204	3	Technicians and associate professionals	3	6	1
Sound Technician - 352103	3	Technicians and associate professionals	3	6	4
Special Services Contracting Agent - 333902	3	Technicians and associate professionals	3	6	1
Sports Development Officer - 342201	3	Technicians and associate professionals	3	6	13
Sports Official - 342203	3	Technicians and associate professionals	3	6	1
Telecommunications Technical Officer or Technologist - 352201	3	Technicians and associate professionals	3	6	3
Visual Merchandiser - 343203	3	Technicians and associate professionals	3	6	1
Web Technician - 351401	3	Technicians and associate professionals	3	6	3
Account Clerk (Public Relations / Communication) - 441905	4	Clerical support workers	2	3,4 or 5	5
Accounts Clerk - 431101	4	Clerical support workers	3	3,4 or 5	653
Admissions Clerk - 422901	4	Clerical support workers	4	3,4 or 5	18

Back Office Process Consultant - 411102	4	Clerical support workers	5	3,4 or 5	11
Bookmaker - 421201	4	Clerical support workers	6	3,4 or 5	1
Call or Contact Centre Agent - 422206	4	Clerical support workers	7	3,4 or 5	38
Coding Clerk - 441301	4	Clerical support workers	8	3,4 or 5	4
Compensation and Benefits Clerk - 441603	4	Clerical support workers	9	3,4 or 5	1
Contact Centre Resource Planner - 422204	4	Clerical support workers	10	3,4 or 5	2
Contract Administrator - 441902	4	Clerical support workers	11	3,4 or 5	24
Cost Clerk - 431102	4	Clerical support workers	12	3,4 or 5	48
Courier - 441201	4	Clerical support workers	13	3,4 or 5	2
Data Entry Operator - 413201	4	Clerical support workers	14	3,4 or 5	16
Debt Collector - 421401	4	Clerical support workers	15	3,4 or 5	28
Dispatching and Receiving Clerk / Officer - 432102	4	Clerical support workers	16	3,4 or 5	15
Enquiry Clerk - 422501	4	Clerical support workers	17	3,4 or 5	66
Filing or Registry Clerk - 441501	4	Clerical support workers	18	3,4 or 5	6
General Clerk - 411101	4	Clerical support workers	19	3,4 or 5	601
Hotel or Motel Receptionist - 422401	4	Clerical support workers	20	3,4 or 5	1889
Human Resources Clerk - 441601	4	Clerical support workers	21	3,4 or 5	51
Inbound Contact Centre Consultant - 422201	4	Clerical support workers	22	3,4 or 5	6
Insurance Administrator - 431201	4	Clerical support workers	23	3,4 or 5	1
Office Machine Operator - 441502	4	Clerical support workers	24	3,4 or 5	1
Order Clerk / Officer - 432103	4	Clerical support workers	25	3,4 or 5	14
Payroll Clerk - 431301	4	Clerical support workers	26	3,4 or 5	51
Production Coordinator - 432201	4	Clerical support workers	27	3,4 or 5	8
Program or Project Administrators - 441903	4	Clerical support workers	28	3,4 or 5	29
Receptionist (General) - 422601	4	Clerical support workers	29	3,4 or 5	733
Secretary (General) - 412101	4	Clerical support workers	30	3,4 or 5	33
Skills Development Administrator - 441602	4	Clerical support workers	31	3,4 or 5	2
Statistical Clerk - 431203	4	Clerical support workers	32	3,4 or 5	1
Stock Clerk / Officer - 432101	4	Clerical support workers	33	3,4 or 5	119
Switchboard Operator - 422301	4	Clerical support workers	34	3,4 or 5	179
Tourist Information Officer - 422101	4	Clerical support workers	35	3,4 or 5	15
Transport Clerk - 432301	4	Clerical support workers	36	3,4 or 5	3
Travel Consultant - 422102	4	Clerical support workers	38	3,4 or 5	91
Warehouse Administrator / Clerk - 432104	4	Clerical support workers	39	3,4 or 5	2
Alarm, Security or Surveillance Monitor - 541402	5	Service and Sales workers	2	3,4 or 5	1
Amusement, Fitness or Sport Centre Attendant - 515302	5	Service and Sales workers	2	3,4 or 5	20
Animal Attendant / Groomer - 516401	5	Service and Sales workers	2	3,4 or 5	29
Bar Attendant - 513201	5	Service and Sales workers	2	3,4 or 5	1124
Barista - 513202	5	Service and Sales workers	2	3,4 or 5	24
Body Therapist - 514202	5	Service and Sales workers	2	3,4 or 5	175
Bus Hostess - 511102	5	Service and Sales workers	2	3,4 or 5	7
Butler - 515202	5	Service and Sales workers	2	3,4 or 5	135
Cafe Worker - 513102	5	Service and Sales workers	2	3,4 or 5	18

Call Centre Salesperson - 524401	5	Service and Sales workers	2	3,4 or 5	60
Caretaker - 515301	5	Service and Sales workers	2	3,4 or 5	68
Checkout Operator - 523101	5	Service and Sales workers	2	3,4 or 5	29
Child Care Worker - 531101	5	Service and Sales workers	2	3,4 or 5	7
Commercial Housekeeper - 515103	5	Service and Sales workers	2	3,4 or 5	1544
Cook - 512101	5	Service and Sales workers	2	3,4 or 5	1273
Domestic Housekeeper - 515201	5	Service and Sales workers	2	3,4 or 5	87
Escort - 516201	5	Service and Sales workers	2	3,4 or 5	20
Event Stylist - 524102	5	Service and Sales workers	2	3,4 or 5	20
First Aid Attendant - 532901	5	Service and Sales workers	2	3,4 or 5	2
Food Service Counter Attendant - 524601	5	Service and Sales workers	2	3,4 or 5	73
Gallery or Museum Guide - 511301	5	Service and Sales workers	2	3,4 or 5	3
Hair or Beauty Salon Assistant - 514102	5	Service and Sales workers	2	3,4 or 5	18
Hairdresser - 514101	5	Service and Sales workers	2	3,4 or 5	1
Hotel Service Manager - 515101	5	Service and Sales workers	2	3,4 or 5	1772
Housekeeping Service Manager - 515102	5	Service and Sales workers	2	3,4 or 5	386
Lifeguard - 541901	5	Service and Sales workers	2	3,4 or 5	19
Nail Technician - 514204	5	Service and Sales workers	2	3,4 or 5	2
Nanny - 531103	5	Service and Sales workers	2	3,4 or 5	4
Office Cashier - 523102	5	Service and Sales workers	2	3,4 or 5	228
Out of School Hours Care Worker - 531104	5	Service and Sales workers	2	3,4 or 5	4
Personal Care Assistant - 532904	5	Service and Sales workers	2	3,4 or 5	3
Railway Steward - 511104	5	Service and Sales workers	2	3,4 or 5	33
Retail Supervisor - 522201	5	Service and Sales workers	2	3,4 or 5	83
Sales Assistant (General) - 522301	5	Service and Sales workers	2	3,4 or 5	276
Sales Clerk / Officer - 524903	5	Service and Sales workers	2	3,4 or 5	88
Sales Demonstrator - 524201	5	Service and Sales workers	2	3,4 or 5	32
Salon Manager - 522102	5	Service and Sales workers	2	3,4 or 5	12
Security Officer - 541401	5	Service and Sales workers	2	3,4 or 5	332
Service Station Attendant - 524501	5	Service and Sales workers	2	3,4 or 5	5
Skin Care Therapist - 514201	5	Service and Sales workers	2	3,4 or 5	77
Somatologist - 514207	5	Service and Sales workers	2	3,4 or 5	60
Special Forces Operator - 542203	5	Service and Sales workers	2	3,4 or 5	2
Therapy Aide - 532905	5	Service and Sales workers	2	3,4 or 5	1
Ticket Seller - 523103	5	Service and Sales workers	2	3,4 or 5	35
Tour Guide - 511302	5	Service and Sales workers	2	3,4 or 5	105
Waiter - 513101	5	Service and Sales workers	2	3,4 or 5	5182
Zookeeper - 516403	5	Service and Sales workers	2	3,4 or 5	5
Telecommunications Technician - 672205	6	Skilled agricultural, forestry, fishery, craft and related trades workers	3	6	1
Air-conditioning and Refrigeration Mechanic - 642701	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	16
Automotive Engine Mechanic - 653109	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	26
Boatbuilder and Repairer - 684907	6	Skilled agricultural, forestry, fishery, craft and related	2	3,4 or 5	20

		trades workers			
Boiler Maker - 651302	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	3
Bricklayer - 641201	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	12
Butcher - 681103	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	6
Carpenter - 641502	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	40
Carpenter and Joiner - 641501	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	47
Carver - 661702	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	7
Computer Engineering Mechanic / Service Person - 672203	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	2
Concreter - 641401	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	2
Confectionary Baker - 681201	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	49
Data and Telecommunications Cabler - 672201	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	8
Diesel Mechanic - 653306	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	3
Diver - 684101	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	11
Electrical Equipment Mechanic - 671206	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Electrician - 671101	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	72
Electronic Equipment Mechanician - 672104	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Fitter and Turner - 652302	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	24
Florist - 684911	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	9
Furniture Finisher - 682301	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Game Farmer - 612902	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	2
Glazier - 642501	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Green Keeper - 611303	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	25
Horticultural Farmer - 611202	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Hunter - 622401	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	81
Landscape Gardener - 611302	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	93

Livestock Farmer - 612101	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	4
Mechanical Equipment Repairer - 653302	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	4
Mechanical Fitter - 653303	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Metal Polisher - 652401	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Mixed Crop Farm Production Manager / Foreman - 611401	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Painter - 643101	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	123
Pastry Cook - 681202	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	34
Plumber - 642601	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	31
Poultry Farmer - 612201	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Refrigeration Mechanic - 642702	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	2
Rigger - 651501	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	4
Roof Thatcher - 642103	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	8
Roof Tiler - 642101	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Shoemaker - 683601	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Skipper (Fishing Boat) - 622201	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	2
Steel Fixer - 651403	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Tailor - 683101	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	7
Upholsterer - 683401	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	4
Welder - 651202	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	4
Wine Taster / Grader - 681504	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	9
Agricultural Mobile Plant (Equipment) Operator - 734101	7	Plant and machine operators and assemblers	2	3,4 or 5	97
Boiler or Engine Operator - 718201	7	Plant and machine operators and assemblers	2	3,4 or 5	1
Bus Driver - 733101	7	Plant and machine operators and assemblers	2	3,4 or 5	1
Charter and Tour Bus Driver - 733102	7	Plant and machine operators and assemblers	2	3,4 or 5	1
Chauffeur - 732201	7	Plant and machine operators and assemblers	2	3,4 or 5	104
Crane or Hoist Operator - 734301	7	Plant and machine operators and assemblers	2	3,4 or 5	6
Delivery Driver - 732101	7	Plant and machine operators and assemblers	2	3,4 or 5	135

Electrical and Electronic Equipment Assembler - 721201	7	Plant and machine operators and assemblers	2	3,4 or 5	3
Engineering Production Systems Worker - 718905	7	Plant and machine operators and assemblers	2	3,4 or 5	84
Laundry Machine Operator - 715701	7	Plant and machine operators and assemblers	2	3,4 or 5	34
Mineral Processing Machine Operator - 711201	7	Plant and machine operators and assemblers	2	3,4 or 5	1
Passenger Coach Driver - 733103	7	Plant and machine operators and assemblers	2	3,4 or 5	3
Photographic Developer and Printer - 713201	7	Plant and machine operators and assemblers	2	3,4 or 5	13
Physical Asset Manager - 121903	7	Plant and machine operators and assemblers	2	3,4 or 5	1
Pressing Machine Operator (Laundry) - 715703	7	Plant and machine operators and assemblers	2	3,4 or 5	3
Railway Signal Operator - 731201	7	Plant and machine operators and assemblers	2	3,4 or 5	1
Sewing Machine Operator - 715301	7	Plant and machine operators and assemblers	2	3,4 or 5	2
Taxi Driver - 732202	7	Plant and machine operators and assemblers	2	3,4 or 5	3
Train Driver - 731101	7	Plant and machine operators and assemblers	2	3,4 or 5	7
Truck Driver (General) - 733201	7	Plant and machine operators and assemblers	2	3,4 or 5	4
Builder's Worker - 831301	8	Elementary occupations	1	1 or 2	721
Busser - 862101	8	Elementary occupations	1	1 or 2	68
Caddie - 862925	8	Elementary occupations	1	1 or 2	19
Car Park Attendant - 851101	8	Elementary occupations	1	1 or 2	15
Caretaker / cleaner - 811204	8	Elementary occupations	1	1 or 2	923
Carpet Cleaner - 812104	8	Elementary occupations	1	1 or 2	3
Cloak Room Attendant - 862103	8	Elementary occupations	1	1 or 2	45
Commercial Cleaner - 811201	8	Elementary occupations	1	1 or 2	2682
Crane Chaser - 831308	8	Elementary occupations	1	1 or 2	3
Crop Production Farm Worker / Assistant - 821101	8	Elementary occupations	1	1 or 2	11
Domestic Cleaner - 811101	8	Elementary occupations	1	1 or 2	314
Earthmoving Worker - 831303	8	Elementary occupations	1	1 or 2	1
Electrical or Telecommunications Trades Assistant - 862918	8	Elementary occupations	1	1 or 2	11
Event Assistant - 862913	8	Elementary occupations	1	1 or 2	241
Farm Maintenance Worker - 862916	8	Elementary occupations	1	1 or 2	72
Fast Food Cook - 841101	8	Elementary occupations	1	1 or 2	32
Fencer - 831311	8	Elementary occupations	1	1 or 2	1
Food and Beverage Factory Worker - 832904	8	Elementary occupations	1	1 or 2	27
Food Trade Assistant - 841202	8	Elementary occupations	1	1 or 2	62
Forestry Worker - 821501	8	Elementary occupations	1	1 or 2	1
Game Farm Worker / Assistant - 821203	8	Elementary occupations	1	1 or 2	94
Garden Workers - 821401	8	Elementary occupations	1	1 or 2	524
Glass Processing Worker - 832906	8	Elementary occupations	1	1 or 2	38
Handyperson - 862202	8	Elementary occupations	1	1 or 2	1776
Home Improvement Installer - 862201	8	Elementary occupations	1	1 or 2	9
Hotel Cellar Hand - 862104	8	Elementary occupations	1	1 or 2	51
Ironer or Presser - 812103	8	Elementary occupations	1	1 or 2	1
Irrigationist - 821102	8	Elementary occupations	1	1 or 2	2

Kitchenhand - 841201	8	Elementary occupations	1	1 or 2	900
Laundry Worker (General) - 812101	8	Elementary occupations	1	1 or 2	967
Livestock Farm Worker / Assistant - 821201	8	Elementary occupations	1	1 or 2	2
Logging Assistant - 821502	8	Elementary occupations	1	1 or 2	1
Luggage Porter - 862102	8	Elementary occupations	1	1 or 2	720
Meat Packer - 832102	8	Elementary occupations	1	1 or 2	1
Mechanic's Assistant - 862919	8	Elementary occupations	1	1 or 2	12
Packer (Non Perishable Products) - 832101	8	Elementary occupations	1	1 or 2	6
Paving and Surfacing Worker - 831306	8	Elementary occupations	1	1 or 2	1
Plastics, Composites and Rubber Factory Worker - 832902	8	Elementary occupations	1	1 or 2	1
Plumber's Assistant - 831304	8	Elementary occupations	1	1 or 2	6
Railway Track Worker - 831307	8	Elementary occupations	1	1 or 2	4
Recycling or Rubbish Collector - 861101	8	Elementary occupations	1	1 or 2	4
Scout - 821103	8	Elementary occupations	1	1 or 2	2
Sheltered Workshop Worker - 862914	8	Elementary occupations	1	1 or 2	2
Store Person - 833402	8	Elementary occupations	1	1 or 2	99
Swimming Pool Cleaner - 812902	8	Elementary occupations	1	1 or 2	8
Tea Attendant - 811203	8	Elementary occupations	1	1 or 2	58
Textile, Clothing and Footwear Factory Worker - 832909	8	Elementary occupations	1	1 or 2	1
Ticket Collector - 862926	8	Elementary occupations	1	1 or 2	1
Vehicle Detailer (Valet Servicer) - 812201	8	Elementary occupations	1	1 or 2	1
Washroom Attendant - 812903	8	Elementary occupations	1	1 or 2	2
Waste Material Sorter and Classifier - 861202	8	Elementary occupations	1	1 or 2	6
Waterside Worker - 833303	8	Elementary occupations	1	1 or 2	2
Mixed Crop and Livestock Farm Worker / Assistant - 821301	8	Elementary occupations	1	1 or 2	6

Table C2 Employment occupation according to Job Titles (SIC 6410 for 2016)

Employment occupation according to job titles (and OFO codes) 2016 6410	OFO	OFO NAME	SKILL LEVEL	NQF	TOTAL
Advertising and Public Relations Manager - 122201	1	Managers	3 or 4	6 to 10	16
Agricultural Farm Manager - 131101	1	Managers	3 or 4	6 to 10	13
Amusement Centre Manager - 143106	1	Managers	3 or 4	6 to 10	4
Application Development Manager - 133104	1	Managers	3 or 4	6 to 10	1
Aquaculture Farm Manager - 2015-131201	1	Managers	3 or 4	6 to 10	1
Arts / Culture Manager - 143104	1	Managers	3 or 4	6 to 10	3
Betting Agency Manager - 2015-143101	1	Managers	3 or 4	6 to 10	3
Business Training Manager - 121202	1	Managers	3 or 4	6 to 10	40
Café (Licensed) or Restaurant Manager - 141201	1	Managers	3 or 4	6 to 10	600
Call or Contact Centre Manager - 143905	1	Managers	3 or 4	6 to 10	3
Caravan Park and Camping Ground Manager - 143906	1	Managers	3 or 4	6 to 10	4
Catering Production Manager - 141203	1	Managers	3 or 4	6 to 10	45
Chief Information Officer - 133101	1	Managers	3 or 4	6 to 10	37
Cinema or Theatre Manager - 2015-143103	1	Managers	3 or 4	6 to 10	1
Cleaning Services Manager - 143902	1	Managers	3 or 4	6 to 10	121
Community Development Manager - 134402	1	Managers	3 or 4	6 to 10	6
Compensation and Benefits Manager - 121203	1	Managers	3 or 4	6 to 10	1
Construction Project Manager - 132301	1	Managers	3 or 4	6 to 10	4
Corporate General Manager - 121901	1	Managers	3 or 4	6 to 10	142
Corporate Services Manager - 2015-121902	1	Managers	3 or 4	6 to 10	87
Credit Manager - 121103	1	Managers	3 or 4	6 to 10	10
Customer Service Manager - 122105	1	Managers	3 or 4	6 to 10	55
Data Management Manager - 133103	1	Managers	3 or 4	6 to 10	2
Defence Force Senior Officer - 2015-111201	1	Managers	3 or 4	6 to 10	2
Director (Enterprise / Organisation) - 112101	1	Managers	3 or 4	6 to 10	193
Director of Marketing - 122103	1	Managers	3 or 4	6 to 10	14
Employee Wellness Manager - 121205	1	Managers	3 or 4	6 to 10	1
Engineering Manager - 132104	1	Managers	3 or 4	6 to 10	19
Environmental Manager - 134901	1	Managers	3 or 4	6 to 10	8
Facilities Manager - 143901	1	Managers	3 or 4	6 to 10	207
Faculty Head - 134503	1	Managers	3 or 4	6 to 10	1
Finance Manager - 121101	1	Managers	3 or 4	6 to 10	304
Financial Markets Business Manager - 134603	1	Managers	3 or 4	6 to 10	3
Fitness Centre Manager - 143107	1	Managers	3 or 4	6 to 10	6
Fleet Manager - 2015-132405	1	Managers	3 or 4	6 to 10	2
Gaming Manager - 143102	1	Managers	3 or 4	6 to 10	2
General Manager Public Service - 111202	1	Managers	3 or 4	6 to 10	56
Guest House Manager - 141102	1	Managers	3 or 4	6 to 10	35
Head of Department (Teacher) - 134507	1	Managers	3 or 4	6 to 10	1

Health and SaFETy Manager - 121206	1	Managers	3 or 4	6 to 10	6
Hotel or Motel Manager - 141101	1	Managers	3 or 4	6 to 10	1122
ICT Project Manager - 133102	1	Managers	3 or 4	6 to 10	2
Importer or Exporter - 142101	1	Managers	3 or 4	6 to 10	5
Information Systems Director - 2015-133106	1	Managers	3 or 4	6 to 10	1
Information Technology Manager - 133105	1	Managers	3 or 4	6 to 10	41
Interactive and Direct Marketing Strategist - 2015-122104	1	Managers	3 or 4	6 to 10	1
Internal Audit Manager - 121104	1	Managers	3 or 4	6 to 10	4
Licensed Club Manager - 2015-141202	1	Managers	3 or 4	6 to 10	1
Logistics Manager - 132402	1	Managers	3 or 4	6 to 10	8
Manufacturer - 2015-132101	1	Managers	3 or 4	6 to 10	1
Office Manager - 134904	1	Managers	3 or 4	6 to 10	190
Operations Foreman (Non Manufacturing) - 134916	1	Managers	3 or 4	6 to 10	23
Operations Manager (Non Manufacturing) - 134915	1	Managers	3	6 to 10	91
Payroll Manager - 121102	1	Managers	3 or 4	6 to 10	10
Personnel / Human Resource Manager - 121201	1	Managers	3 or 4	6 to 10	78
Policy and Planning Manager - 2015-121301	1	Managers	3 or 4	6 to 10	1
Practice Manager - 2015-134906	1	Managers	3 or 4	6 to 10	1
Production / Operations Manager (Manufacturing) - 132102	1	Managers	3 or 4	6 to 10	10
Production / Operations Manager (Mining) - 132201	1	Managers	3 or 4	6 to 10	2
Production / Operations Supervisor (Forestry) - 2015-131103	1	Managers	3 or 4	6 to 10	7
Programme or Project Manager - 121905	1	Managers	3 or 4	6 to 10	40
Publisher - 2015-134917	1	Managers	3 or 4	6 to 10	6
Quality Manager - 2015-132107	1	Managers	3 or 4	6 to 10	1
Quality Systems Auditor - 2015-132109	1	Managers	3 or 4	6 to 10	1
Quality Systems Manager - 121908	1	Managers	3 or 4	6 to 10	2
Reception Manager - 141103	1	Managers	3 or 4	6 to 10	285
Recruitment Manager - 121204	1	Managers	3 or 4	6 to 10	2
Rector (Educational) - 2015-134505	1	Managers	3 or 4	6 to 10	2
Research and Development Manager - 122301	1	Managers	3 or 4	6 to 10	9
Reservations Manager - 141204	1	Managers	3 or 4	6 to 10	263
Retail Manager (General) - 142103	1	Managers	3 or 4	6 to 10	25
Sales and Marketing Manager - 122101	1	Managers	3 or 4	6 to 10	81
Sales Manager - 122102	1	Managers	3 or 4	6 to 10	171
Security Services Manager - 143904	1	Managers	3 or 4	6 to 10	25
Senior Government Manager - 111207	1	Managers	3 or 4	6 to 10	5
Small Business Manager - 134903	1	Managers	3 or 4	6 to 10	1
Sports Centre / Facility Manager - 143108	1	Managers	3 or 4	6 to 10	6
Supply and Distribution Manager - 132401	1	Managers	3 or 4	6 to 10	20
Sustainability Manager - 121909	1	Managers	3 or 4	6 to 10	3
Warehouse Manager - 132404	1	Managers	3 or 4	6 to 10	4
Accountant (General) - 241101	2	Professionals	4	7,8,9 or 10	123

Accountant in Practice - 241106	2	Professionals	4	7,8,9 or 10	1
Accounting Officer - 242209	2	Professionals	4	7,8,9 or 10	32
Actor - 2015-265501	2	Professionals	4	7,8,9 or 10	12
Animal Behaviourist - 2015-213101	2	Professionals	4	7,8,9 or 10	1
Assessment Practitioner - 242403	2	Professionals	4	7,8,9 or 10	1
Biokineticist - 2015-226905	2	Professionals	4	7,8,9 or 10	1
Book or Script Editor - 264102	2	Professionals	4	7,8,9 or 10	3
Business Administrator - 242210	2	Professionals	4	7,8,9 or 10	3
Communication Coordinator - 243201	2	Professionals	4	7,8,9 or 10	11
Company Secretary - 242203	2	Professionals	4	7,8,9 or 10	8
Compliance Officer - 2015-242207	2	Professionals	4	7,8,9 or 10	1
Computer Network and Systems Engineer - 252301	2	Professionals	4	7,8,9 or 10	2
Conservator - 262103	2	Professionals	4	7,8,9 or 10	1
Content Presenter - 2015-264205	2	Professionals	4	7,8,9 or 10	2
Copywriter - 264201	2	Professionals	4	7,8,9 or 10	1
Corporate Communication Manager - 243203	2	Professionals	4	7,8,9 or 10	5
Corporate Treasurer - 2015-242204	2	Professionals	4	7,8,9 or 10	1
Dancer or Choreographer - 2015-265301	2	Professionals	4	7,8,9 or 10	18
Database Designer and Administrator - 252101	2	Professionals	4	7,8,9 or 10	7
Digital Artist - 2015-216601	2	Professionals	4	7,8,9 or 10	9
Editor - 2015-264202	2	Professionals	4	7,8,9 or 10	1
Electrical Engineer - 215101	2	Professionals	4	7,8,9 or 10	2
Electrical Engineering Technologist - 215102	2	Professionals	4	7,8,9 or 10	1
Entertainer or Variety Artist - 2015-265901	2	Professionals	4	7,8,9 or 10	1
Event Producer - 243204	2	Professionals	4	7,8,9 or 10	73
Examination Supervisor - 2015-235904	2	Professionals	4	7,8,9 or 10	1
External Auditor - 241104	2	Professionals	4	7,8,9 or 10	3
Financial Accountant - 241107	2	Professionals	4	7,8,9 or 10	28
Financial Investment Advisor - 241301	2	Professionals	4	7,8,9 or 10	1
Food and Beverage Scientist - 213205	2	Professionals	4	7,8,9 or 10	1
Gallery or Museum Curator - 2015-262102	2	Professionals	4	7,8,9 or 10	1
Human Resource Advisor - 242303	2	Professionals	4	7,8,9 or 10	46
ICT Business Development Manager - 243402	2	Professionals	4	7,8,9 or 10	2
ICT Systems Analyst - 251101	2	Professionals	4	7,8,9 or 10	5
Information Services Manager - 262202	2	Professionals	4	7,8,9 or 10	4
Internal Auditor - 242211	2	Professionals	4	7,8,9 or 10	22
Interpreter - 264301	2	Professionals	4	7,8,9	1

				or 10	
Kindergarten Assistant - 2015-234202	2	Professionals	4	7,8,9 or 10	1
Landscape Architect - 216201	2	Professionals	4	7,8,9 or 10	1
Legal Manager - 2015-261107	2	Professionals	4	7,8,9 or 10	1
Librarian - 2015-262201	2	Professionals	4	7,8,9 or 10	1
Management Accountant - 241102	2	Professionals	4	7,8,9 or 10	20
Management Consultant - 242101	2	Professionals	4	7,8,9 or 10	56
Market Campaign Analyst - 243104	2	Professionals	4	7,8,9 or 10	1
Marketing / Communication Strategist - 243202	2	Professionals	4	7,8,9 or 10	4
Marketing Practitioner - 243103	2	Professionals	4	7,8,9 or 10	52
Mathematician - 212102	2	Professionals	4	7,8,9 or 10	1
Mechanical Engineer - 2015-214401	2	Professionals	4	7,8,9 or 10	3
Multimedia Designer - 216603	2	Professionals	4	7,8,9 or 10	4
Musician (Instrumental) - 2015-265203	2	Professionals	4	7,8,9 or 10	5
Occupational Instructor / Trainer - 242402	2	Professionals	4	7,8,9 or 10	11
Organisation and Methods Analyst - 2015-242102	2	Professionals	4	7,8,9 or 10	1
Organisational Risk Manager - 242208	2	Professionals	4	7,8,9 or 10	7
Paramedical Practitioner - 2015-224101	2	Professionals	4	7,8,9 or 10	2
Park Ranger - 213307	2	Professionals	4	7,8,9 or 10	274
Policy Analyst - 242202	2	Professionals	4	7,8,9 or 10	1
Printing and Publishing Equipment Sales Representative - 243304	2	Professionals	4	7,8,9 or 10	3
Professional Principal Executive Officer - 241205	2	Professionals	4	7,8,9 or 10	2
Quality Assurance Analyst (Computers) - 251901	2	Professionals	4	7,8,9 or 10	1
Registered Nurse (Community Health) - 222104	2	Professionals	4	7,8,9 or 10	1
SaFETy, Health, Environment and Quality (SHE&Q) Practitioner - 226302	2	Professionals	4	7,8,9 or 10	6
Sales Representative (Educational Products and Services) - 243303	2	Professionals	4	7,8,9 or 10	1
Skills Development Facilitator / Practitioner - 242302	2	Professionals	4	7,8,9 or 10	6
Sport Psychologist - 2015-263406	2	Professionals	4	7,8,9 or 10	3
Sports Scientist - 2015-224102	2	Professionals	4	7,8,9 or 10	9
Student Support Service Officer - 242404	2	Professionals	4	7,8,9 or 10	1
Systems Administrator - 252201	2	Professionals	4	7,8,9 or 10	11
Tax Professional - 241103	2	Professionals	4	7,8,9 or 10	4
Teacher of English To Speakers of Other Languages - 2015-235301	2	Professionals	4	7,8,9 or 10	12
Technical (ICT) Support Services Manager - 2015-252902	2	Professionals	4	7,8,9 or 10	4
Technical Director - 2015-265405	2	Professionals	4	7,8,9 or 10	1
Training and Development Professional - 242401	2	Professionals	4	7,8,9 or 10	28
University Lecturer - 231101	2	Professionals	4	7,8,9 or 10	1

Web Designer - 216604	2	Professionals	4	7,8,9 or 10	10
Web Developer - 251302	2	Professionals	4	7,8,9 or 10	8
Workplace / Industrial Relations Advisor - 242304	2	Professionals	4	7,8,9 or 10	4
Environmental Scientist - 2015-213302	2	Professionals	4	7,8,9 or 10	2
Accounting Technician - 331302	3	Technicians and associate professionals	3	6	8
Agricultural Technician - 2015-314201	3	Technicians and associate professionals	3	6	4
Associate Legal Professional - 341110	3	Technicians and associate professionals	3	6	3
Boat Driver / Coxswain - 315205	3	Technicians and associate professionals	3	6	1
Bookkeeper - 331301	3	Technicians and associate professionals	3	6	72
Building Associate - 312301	3	Technicians and associate professionals	3	6	4
Business Support Coordinator - 333910	3	Technicians and associate professionals	3	6	9
Chef - 343401	3	Technicians and associate professionals	3	6	3672
Civil Engineer - 2015-214201	3	Technicians and associate professionals	3	6	2
Civil Engineering Technician - 311201	3	Technicians and associate professionals	3	6	7
Commercial Sales Representative - 332201	3	Technicians and associate professionals	3	6	26
Community Worker - 341201	3	Technicians and associate professionals	3	6	1
Computer Network Technician - 351301	3	Technicians and associate professionals	3	6	8
Credit or Loans Officer - 331201	3	Technicians and associate professionals	3	6	7
Disabilities Services Officer - 2015-341202	3	Technicians and associate professionals	3	6	1
Electrical Engineering Technician - 311301	3	Technicians and associate professionals	3	6	3
Electronic Engineering Technician - 311401	3	Technicians and associate professionals	3	6	5
Engineering Supervisor - 2015-312103	3	Technicians and associate professionals	3	6	4
Environmental Science Technician - 314102	3	Technicians and associate professionals	3	6	5
Events Manager - 333201	3	Technicians and associate professionals	3	6	157
Fisheries Officer - 335912	3	Technicians and associate professionals	3	6	1
Food and Beverage Manufacturing Process Controller - 313907	3	Technicians and associate professionals	3	6	10
Food and Beverage Technician - 311903	3	Technicians and associate professionals	3	6	28
Gaming Operations Compliance Officer - 335916	3	Technicians and associate professionals	3	6	1
Golfer - 342102	3	Technicians and associate professionals	3	6	6
Hydrotherapist - 325502	3	Technicians and associate professionals	3	6	10
ICT Communications Assistant - 351201	3	Technicians and associate professionals	3	6	15
Interior Decorator - 343202	3	Technicians and associate professionals	3	6	4
Maintenance Planner - 312202	3	Technicians and associate professionals	3	6	142
Marketing Coordinator - 333908	3	Technicians and associate professionals	3	6	83
Massage Therapist - 325501	3	Technicians and associate professionals	3	6	66
Mechanical Engineering Technician - 311501	3	Technicians and associate professionals	3	6	3
Medical Secretary - 2015-334401	3	Technicians and associate	3	6	2

		professionals			
Miller - 2015-313909	3	Technicians and associate professionals	3	6	1
Office Administrator - 334102	3	Technicians and associate professionals	3	6	81
Office Supervisor - 334101	3	Technicians and associate professionals	3	6	193
Outdoor Adventure Guide - 342302	3	Technicians and associate professionals	3	6	29
Personal Assistant - 334302	3	Technicians and associate professionals	3	6	124
Production / Operations Supervisor (Manufacturing) - 2015-312201	3	Technicians and associate professionals	3	6	13
Property Manager - 333401	3	Technicians and associate professionals	3	6	5
Purchasing Officer - 332302	3	Technicians and associate professionals	3	6	39
Recruitment Consultant / Officer - 333301	3	Technicians and associate professionals	3	6	2
Retail Buyer - 332301	3	Technicians and associate professionals	3	6	1
SaFETy Inspector - 325705	3	Technicians and associate professionals	3	6	1
Sales Representative (Business Services) - 333903	3	Technicians and associate professionals	3	6	229
Sound Technician - 352103	3	Technicians and associate professionals	3	6	5
Special Services Contracting Agent - 333902	3	Technicians and associate professionals	3	6	1
Sports Coach or Instructor - 2015-342204	3	Technicians and associate professionals	3	6	11
Sports Development Officer - 342201	3	Technicians and associate professionals	3	6	14
Statistical and Mathematical Assistant - 2015-331401	3	Technicians and associate professionals	3	6	2
Stock and Station Agent - 2015-333906	3	Technicians and associate professionals	3	6	2
Supply Chain Practitioner - 2015-333905	3	Technicians and associate professionals	3	6	2
Television Equipment Operator - 2015-352104	3	Technicians and associate professionals	3	6	1
Web Technician - 351401	3	Technicians and associate professionals	3	6	1
Account Clerk (Public Relations / Communication) - 441905	4	Clerical support workers	2	3,4 or 5	30
Accounts Clerk - 431101	4	Clerical support workers	3	3,4 or 5	648
Admissions Clerk - 422901	4	Clerical support workers	4	3,4 or 5	22
Back Office Process Consultant - 411102	4	Clerical support workers	5	3,4 or 5	8
Call or Contact Centre Agent - 422206	4	Clerical support workers	7	3,4 or 5	56
Compensation and Benefits Clerk - 441603	4	Clerical support workers	9	3,4 or 5	1
Contract Administrator - 441902	4	Clerical support workers	11	3,4 or 5	11
Cost Clerk - 431102	4	Clerical support workers	12	3,4 or 5	49
Courier - 441201	4	Clerical support workers	13	3,4 or 5	2
Data Entry Operator - 413201	4	Clerical support workers	14	3,4 or 5	19
Debt Collector - 421401	4	Clerical support workers	15	3,4 or 5	6
Dispatching and Receiving Clerk / Officer - 432102	4	Clerical support workers	16	3,4 or 5	10
Enquiry Clerk - 422501	4	Clerical support workers	17	3,4 or 5	99
Filing or Registry Clerk - 441501	4	Clerical support workers	18	3,4 or 5	10
General Clerk - 411101	4	Clerical support workers	19	3,4 or 5	639

Hotel or Motel Receptionist - 422401	4	Clerical support workers	20	3,4 or 5	2024
Human Resources Clerk - 441601	4	Clerical support workers	21	3,4 or 5	50
Inbound Contact Centre Consultant - 422201	4	Clerical support workers	22	3,4 or 5	13
Medical Receptionist - 2015-422602	4	Clerical support workers	25	3,4 or 5	1
Order Clerk / Officer - 432103	4	Clerical support workers	25	3,4 or 5	6
Outbound Contact Centre Consultant - 2015-422202	4	Clerical support workers	25	3,4 or 5	1
Payroll Clerk - 431301	4	Clerical support workers	26	3,4 or 5	46
Production Coordinator - 432201	4	Clerical support workers	27	3,4 or 5	13
Program or Project Administrators - 441903	4	Clerical support workers	28	3,4 or 5	29
Receptionist (General) - 422601	4	Clerical support workers	29	3,4 or 5	736
Secretary (General) - 412101	4	Clerical support workers	30	3,4 or 5	33
Securities Services Administrative Officer - 2015-431202	4	Clerical support workers	30	3,4 or 5	3
Skills Development Administrator - 441602	4	Clerical support workers	31	3,4 or 5	1
Statistical Clerk - 431203	4	Clerical support workers	32	3,4 or 5	1
Stock Clerk / Officer - 432101	4	Clerical support workers	33	3,4 or 5	116
Switchboard Operator - 422301	4	Clerical support workers	34	3,4 or 5	182
Tourist Information Officer - 422101	4	Clerical support workers	35	3,4 or 5	12
Transport Clerk - 432301	4	Clerical support workers	36	3,4 or 5	5
Travel Consultant - 422102	4	Clerical support workers	38	3,4 or 5	117
Warehouse Administrator / Clerk - 432104	4	Clerical support workers	39	3,4 or 5	2
Alarm, Security or Surveillance Monitor - 541402	5	Service and Sales workers	2	3,4 or 5	2
Amusement, Fitness or Sport Centre Attendant - 515302	5	Service and Sales workers	2	3,4 or 5	29
Animal Attendant / Groomer - 516401	5	Service and Sales workers	2	3,4 or 5	30
Bar Attendant - 513201	5	Service and Sales workers	2	3,4 or 5	1081
Barista - 513202	5	Service and Sales workers	2	3,4 or 5	77
Body Therapist - 514202	5	Service and Sales workers	2	3,4 or 5	118
Bus Hostess - 511102	5	Service and Sales workers	2	3,4 or 5	15
Butler - 515202	5	Service and Sales workers	2	3,4 or 5	153
Cafe Worker - 513102	5	Service and Sales workers	2	3,4 or 5	20
Call Centre Salesperson - 524401	5	Service and Sales workers	2	3,4 or 5	47
Caretaker - 515301	5	Service and Sales workers	2	3,4 or 5	65
Checkout Operator - 523101	5	Service and Sales workers	2	3,4 or 5	31
Child Care Worker - 531101	5	Service and Sales workers	2	3,4 or 5	7
Child or Youth Residential Care Assistant - 2015-531105	5	Service and Sales workers	2	3,4 or 5	3
Commercial Housekeeper - 515103	5	Service and Sales workers	2	3,4 or 5	1876
Cook - 512101	5	Service and Sales workers	2	3,4 or 5	1107
Domestic Housekeeper - 515201	5	Service and Sales workers	2	3,4 or	172

				5	
Event Stylist - 524102	5	Service and Sales workers	2	3,4 or 5	29
First Aid Attendant - 532901	5	Service and Sales workers	2	3,4 or 5	2
Food Service Counter Attendant - 524601	5	Service and Sales workers	2	3,4 or 5	148
Gallery or Museum Guide - 511301	5	Service and Sales workers	2	3,4 or 5	1
Hair or Beauty Salon Assistant - 514102	5	Service and Sales workers	2	3,4 or 5	15
Hairdresser - 514101	5	Service and Sales workers	2	3,4 or 5	3
Hostel Parent - 2015-531106	5	Service and Sales workers	2	3,4 or 5	5
Hotel Service Manager - 515101	5	Service and Sales workers	2	3,4 or 5	1954
Housekeeping Service Manager - 515102	5	Service and Sales workers	2	3,4 or 5	437
Integration Aide - 2015-531203	5	Service and Sales workers	2	3,4 or 5	3
Lifeguard - 541901	5	Service and Sales workers	2	3,4 or 5	21
Nail Technician - 514204	5	Service and Sales workers	2	3,4 or 5	3
Nanny - 531103	5	Service and Sales workers	2	3,4 or 5	3
Office Cashier - 523102	5	Service and Sales workers	2	3,4 or 5	260
Out of School Hours Care Worker - 531104	5	Service and Sales workers	2	3,4 or 5	3
Personal Care Assistant - 532904	5	Service and Sales workers	2	3,4 or 5	3
Railway Steward - 511104	5	Service and Sales workers	2	3,4 or 5	32
Refuge Worker - 2015-516901	5	Service and Sales workers	2	3,4 or 5	1
Rental Salesperson - 2015-524902	5	Service and Sales workers	2	3,4 or 5	5
Retail Supervisor - 522201	5	Service and Sales workers	2	3,4 or 5	62
Sales Assistant (General) - 522301	5	Service and Sales workers	2	3,4 or 5	276
Sales Clerk / Officer - 524903	5	Service and Sales workers	2	3,4 or 5	111
Salon Manager - 522102	5	Service and Sales workers	2	3,4 or 5	11
Security Consultant - 2015-541906	5	Service and Sales workers	2	3,4 or 5	1
Security Officer - 541401	5	Service and Sales workers	2	3,4 or 5	402
Service Station Attendant - 524501	5	Service and Sales workers	2	3,4 or 5	19
Skin Care Therapist - 514201	5	Service and Sales workers	2	3,4 or 5	62
Somatologist - 514207	5	Service and Sales workers	2	3,4 or 5	88
Therapy Aide - 532905	5	Service and Sales workers	2	3,4 or 5	1
Ticket Seller - 523103	5	Service and Sales workers	2	3,4 or 5	42
Tour Guide - 511302	5	Service and Sales workers	2	3,4 or 5	127
Transport Conductor - 2015-511201	5	Service and Sales workers	2	3,4 or 5	4
Waiter - 513101	5	Service and Sales workers	2	3,4 or 5	5351
Zookeeper - 516403	5	Service and Sales workers	2	3,4 or 5	5
Air-conditioning and Refrigeration Mechanic - 642701	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	8

Automotive Engine Mechanic - 653109	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	3
Automotive Motor Mechanic - 2015-653101	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	31
Boatbuilder and Repairer - 684907	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	16
Boiler Maker - 651302	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	2
Bricklayer - 2015-641201	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	4
Butcher - 681103	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	3
Carpenter - 641502	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	8
Carpenter and Joiner - 641501	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	74
Computer Engineering Mechanic / Service Person - 672203	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Concreter - 641401	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Confectionary Baker - 681201	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	43
Diesel Mechanic - 653306	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	3
Diver - 684101	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	7
Electrical Equipment Mechanic - 671206	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Electrician - 671101	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	52
Electronic Equipment Mechanician - 672104	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	11
Fitter and Turner - 652302	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	10
Florist - 684911	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	10
Game Farmer - 612902	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Glazier - 642501	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Green Keeper - 611303	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	23
Grinder - 2015-652404	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
House Builder - 2015-641101	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	4
Hunter - 622401	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	116
Landscape Gardener - 611302	6	Skilled agricultural, forestry, fishery, craft and related	2	3,4 or 5	108

		trades workers			
Mechanical Equipment Repairer - 653302	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	2
Metal Polisher - 652401	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Painter - 643101	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	99
Pastry Cook - 681202	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	22
Plumber - 642601	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	34
Poultry Farmer - 612201	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Rigger - 651501	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	6
Roof Thatcher - 642103	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	3
Skipper (Fishing Boat) - 622201	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Steel Fixer - 651403	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	1
Tailor - 683101	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	5
Telecommunications Technician - 672205	6	Skilled agricultural, forestry, fishery, craft and related trades workers	3	6	6
Welder - 651202	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	7
Wine Taster / Grader - 681504	6	Skilled agricultural, forestry, fishery, craft and related trades workers	2	3,4 or 5	10
Agricultural Mobile Plant (Equipment) Operator - 734101	7	Plant and machine operators and assemblers	2	3,4 or 5	64
Bakery and Confectionary Products Machine Operator - 2015-716105	7	Plant and machine operators and assemblers	2	3,4 or 5	1
Boiler or Engine Operator - 718201	7	Plant and machine operators and assemblers	2	3,4 or 5	8
Bus Driver - 733101	7	Plant and machine operators and assemblers	2	3,4 or 5	26
Chauffeur - 732201	7	Plant and machine operators and assemblers	2	3,4 or 5	95
Delivery Driver - 732101	7	Plant and machine operators and assemblers	2	3,4 or 5	169
Delivery Driver (Motorcycle) - 2015-732102	7	Plant and machine operators and assemblers	2	3,4 or 5	1
Engineering Production Systems Worker - 718905	7	Plant and machine operators and assemblers	2	3,4 or 5	2
Labelling Machine Operator - 2015-718301	7	Plant and machine operators and assemblers	2	3,4 or 5	10
Laundry and Dry Cleaning Machine Operator - 2015-715701	7	Plant and machine operators and assemblers	2	3,4 or 5	18
Passenger Coach Driver - 733103	7	Plant and machine operators and assemblers	2	3,4 or 5	8
Product Assembler - 2015-721901	7	Plant and machine operators and assemblers	2	3,4 or 5	3
Sewing Machine Operator - 715301	7	Plant and machine operators and assemblers	2	3,4 or 5	3
Taxi Driver - 732202	7	Plant and machine operators and assemblers	2	3,4 or 5	3
Train Driver - 731101	7	Plant and machine operators and assemblers	2	3,4 or 5	9

Truck Driver (General) - 733201	7	Plant and machine operators and assemblers	2	3,4 or 5	3
Builder's Worker - 831301	8	Elementary occupations	1	1 or 2	73
Busser - 862101	8	Elementary occupations	1	1 or 2	99
Caddie - 862925	8	Elementary occupations	1	1 or 2	16
Car Park Attendant - 851101	8	Elementary occupations	1	1 or 2	15
Caretaker / cleaner - 811204	8	Elementary occupations	1	1 or 2	820
Carpet Cleaner - 812104	8	Elementary occupations	1	1 or 2	1
Cloak Room Attendant - 862103	8	Elementary occupations	1	1 or 2	64
Commercial Cleaner - 811201	8	Elementary occupations	1	1 or 2	2936
Crop Production Farm Worker / Assistant - 821101	8	Elementary occupations	1	1 or 2	10
Domestic Cleaner - 811101	8	Elementary occupations	1	1 or 2	316
Drainage, Sewerage and Storm Water Worker - 2015-831302	8	Elementary occupations	1	1 or 2	1
Electrical or Telecommunications Trades Assistant - 862918	8	Elementary occupations	1	1 or 2	2
Event Assistant - 862913	8	Elementary occupations	1	1 or 2	224
Farm Maintenance Worker - 862916	8	Elementary occupations	1	1 or 2	97
Fast Food Cook - 841101	8	Elementary occupations	1	1 or 2	26
Food and Beverage Factory Worker - 832904	8	Elementary occupations	1	1 or 2	12
Food Trade Assistant - 841202	8	Elementary occupations	1	1 or 2	85
Forestry Worker - 821501	8	Elementary occupations	1	1 or 2	2
Game Farm Worker / Assistant - 821203	8	Elementary occupations	1	1 or 2	112
Garden Workers - 821401	8	Elementary occupations	1	1 or 2	587
Handyperson - 862202	8	Elementary occupations	1	1 or 2	1876
Home Improvement Installer - 862201	8	Elementary occupations	1	1 or 2	5
Hotel Cellar Hand - 862104	8	Elementary occupations	1	1 or 2	78
Insect Farm Worker / Assistant - 2015-821202	8	Elementary occupations	1	1 or 2	1
Ironer or Presser - 812103	8	Elementary occupations	1	1 or 2	1
Irrigationist - 821102	8	Elementary occupations	1	1 or 2	2
Kitchenhand - 841201	8	Elementary occupations	1	1 or 2	1159
Laundry Worker (General) - 812101	8	Elementary occupations	1	1 or 2	915
Livestock Farm Worker / Assistant - 821201	8	Elementary occupations	1	1 or 2	1
Luggage Porter - 862102	8	Elementary occupations	1	1 or 2	777
Mechanic's Assistant - 862919	8	Elementary occupations	1	1 or 2	22
Mining Support Worker - 2015-831101	8	Elementary occupations	1	1 or 2	1
Packer (Non Perishable Products) - 832101	8	Elementary occupations	1	1 or 2	3
Paving and Surfacing Worker - 831306	8	Elementary occupations	1	1 or 2	1
Plumber's Assistant - 831304	8	Elementary occupations	1	1 or 2	10
Railway Track Worker - 831307	8	Elementary occupations	1	1 or 2	3
Refuse Sorter - 2015-861201	8	Elementary occupations	1	1 or 2	2
Scout - 821103	8	Elementary occupations	1	1 or 2	2
Shelf Filler - 2015-833401	8	Elementary occupations	1	1 or 2	2
Sheltered Workshop Worker - 862914	8	Elementary occupations	1	1 or 2	2
Stage or Studio Hand - 2015-862924	8	Elementary occupations	1	1 or 2	1
Store Person - 833402	8	Elementary occupations	1	1 or 2	151

Swimming Pool Cleaner - 812902	8	Elementary occupations	1	1 or 2	8
Tea Attendant - 811203	8	Elementary occupations	1	1 or 2	21
Textile, Clothing and Footwear Factory Worker - 832909	8	Elementary occupations	1	1 or 2	2
Ticket Collector - 862926	8	Elementary occupations	1	1 or 2	1
Timber and Wood Process Worker - 2015-832903	8	Elementary occupations	1	1 or 2	3
Vehicle Detailer (Valet Servicer) - 812201	8	Elementary occupations	1	1 or 2	4
Washroom Attendant - 812903	8	Elementary occupations	1	1 or 2	45
Water Process Worker - 2015-831313	8	Elementary occupations	1	1 or 2	1
Waterside Worker - 833303	8	Elementary occupations	1	1 or 2	1
Window Cleaner - 2015-812301	8	Elementary occupations	1	1 or 2	1

APPENDIX D - INTERVIEW GUIDE

Hotel School
☎ **084 494 9626**
rminnaar@cut.ac.za
(051) 507 3293

October 2016

Dear Sir/Madam

RE: Combining quantitative and qualitative methods in forecasting qualified labour demand in the South African accommodation industry

To whom it may concern,

The tourism industry is identified by several sub-sectors. One such sub-sector is hospitality, which consists of, among others, accommodation establishments. The lodging or accommodation industry (which consists of hotels, resorts, motels, motor lodges, inns and other types of accommodation), may be defined as an industry which provides hospitality services and generates hospitality income (Gee, 1994: 14;16). Accommodation may include camp-sites, self-catering accommodation, five star hotels and game lodges.

Due to the fact that the tourism industry is well-known for its low skilled labour and for being highly labour intensive, tourism forecasting may be helpful in increasing employment opportunities (Louw & Saayman, 2013). Thus the need for the above-mentioned study, to ascertain the labour demand in the accommodation industry of South Africa over the next five years, according to skill levels, as well as qualifications required for each skill level.

According to CATHSSETA (2014b: 50), there are three CATHSSETA skill levels:

4 High level skills – NQF levels 7-10 (offered by public and private training institutions).
5 Middle level skills – NQF levels 3-6 (offered by public and private training providers).
6 Low level skills – NQF levels 1-2 (offered by public and private training providers).

By forecasting demand for hospitality qualifications and job vacancies in the next five years, the higher education industry in South Africa is able to prepare itself to meet the demands of the hospitality industry. Demand for jobs in the hospitality industry is usually concluded through time series analysis or review of demand by researching past occupancy and sales over one to three years. This study will focus on tourism forecasting data, which will be qualitatively adjusted by means of in-depth interviews.

You have been selected to participate as an interviewee in an in-depth two hour interview during the month of October. The reason for your requested participation is that you are an expert in the human resources or financial information of your organisation.

Although your participation would be appreciated, your participation in this study is voluntary.

Thank you in advance for your willingness to participate in this study.

Kind regards

MS RENEé MINNAAR LECTURER: HOSPITALITY MANAGEMENT

Informed Consent

- Hereby I give consent that Ms Reneé Minnaar and Prof Andrea Saayman may use the information generated from the interview for research purposes and I understand that the results will be treated according to research-related ethics and regulations.
- I am aware that my participation in the interview is entirely voluntary and that I may withdraw at any time.
- I understand that the results will be treated confidentially and privately and that personal information will not be made known to any person or institution.
- I am aware that the interview will be recorded on a tape recorder.

Name: _____

Job title:_____

Signature: _____

Telephone number: _____

Email address:_____

Date: _____

Combining quantitative and qualitative methods in forecasting qualified labour demand in the South African accommodation industry – Answer sheet

Participant code								

Interviewer name			
Province			
Age			
Race			
Gender	**Male**		**Female**
Language			
Highest level of qualification (NQF level)	**Higher education and training**	**5**	**Post-doctoral research degrees, Doctoral degrees,** **Master's degrees,** **Professional qualifications** **Honours degrees** **National degrees** **Higher diplomas**
	Further education and training	**4**	**National certificates** **Grade 12**
	General education and training	**3**	**Grade 9 / ABET level 4**
	From grade 1 to grade 9	**2**	**Write down the highest degree obtained**
	No education	**1**	

Name of Hotel / Accommodation Group	
Number of properties in group in RSA	
Years of existence	

INTERVIEW QUESTIONS

1. We forecast that real revenue (after inflation) in the accommodation industry will grow by the following percentages from the base of 2014:

Year	Low	Middle	High
2015	2.2%	2.4%	2.8%
2016	1.8%	4.5%	7.2%
2017	2.5%	6.9%	11.4%
2018	4.2%	9.4%	16.2%
2019	6.4%	12.0%	20.5%

Do you agree with our forecasts? Circle the most appropriate forecasts in the Table above.

Please adjust the forecasts according to your view:

Year	Respondent forecast
2015	
2016	
2017	
2018	
2019	

What are the reasons for the adjustments?

2. **We forecast that, based on the expected increase in revenue, more employees will be required. Our forecasts for growth in employees per skill level, from 2014 as the base year, are shown below. It excludes employee turnover and retirements; it only includes <u>new</u> positions (in brackets).**

Again, please circle the most appropriate forecast and provide your own forecast.

Total Labour:
All labour, formal and informally employed in the accommodation industry.
2014 total estimate is 99 307 employees

Year	Low Scenario	Middle Scenario	High Scenario	Respondent
2015	0.5% (478)	0.6% (556)	1.4% (1 419)	
2016	1.0% (1 012)	1.4% (1 420)	2.6% (2 626)	
2017	1.6% (1 569)	2.3% (2 239)	4.6% (4 614)	
2018	2.2% (2 170)	3.2% (3 176)	4.8% (4 765)	
2019	2.8% (2 748)	4.0% (4 019)	5.2% (5 174)	

Highly-skilled Labour:
Highly skilled labour are employees who are deemed to have completed higher education and training, such as Certificates, Diplomas, Degrees, Higher diplomas, Master Degrees, Doctorates, etc. Examples of highly skilled jobs are professional, semi-professional and technical occupations; managerial, executive and administrative occupations.

2014 estimate is 6 455 employees

Year	Low Scenario	Middle Scenario	High Scenario	Respondent
2015	0.4% (27)	0.5% (31)	1.4% (92)	
2016	0.8% (50)	1.2% (80)	2.6% (171)	
2017	1.2% (76)	1.9% (126)	4.6% (300)	
2018	1.6% (104)	2.8% (178)	4.8% (310)	
2019	2.0% (132)	3.5% (226)	5.2% (336)	

Skilled Labour:

Skilled labour are employees who are deemed to have completed further education and training, such as grades 10 to 12, short courses and workplace certificates, and having attended FET colleges. Examples of skilled jobs are clerical occupations; sales occupations; transport, delivery and communications occupations; service occupations.

2014 estimate is 45 383 employees

Year	Low Scenario	Middle Scenario	High Scenario	Respondent
2015	0.7% (319)	0.8% (371)	1.4% (648)	
2016	1.3% (591)	2.1% (949)	2.6% (1 200)	
2016	2.0% (908)	3.3% (1 496)	4.6% (2 109)	
2018	2.7% (1 239)	4.7% (2 123)	4.8% (2 178)	
2019	3.5% (1 570)	5.9% (2 686)	5.2% (2 365)	

Semi-and unskilled Labour:

Semi-skilled or unskilled labour are employees who have completed general education and training, such as grades 0 to 12, pre-school and ABET levels 1 to 4. Examples of semi-skilled and unskilled jobs are elementary jobs that are neither highly skilled nor (medium) skilled.

2014 estimate is 15 492 employees

Year	Low Scenario	Middle Scenario	High Scenario	Respondent
2015	0.1% (18)	0.1% (21)	1.4% (221)	
2016	0.2% (33)	0.3% (53)	2.6% (410)	
2017	0.3% (50)	0.5% (83)	4.6% (720)	
2018	0.4% (69)	0.8% (117)	4.8% (743)	
2019	0.6% (87)	1.0% (149)	5.2% (807)	

Informal Labour:

Defined as workers who are employed on a part-time/casual and contract work basis.

2014 estimate is 31 977 employees

Year	Low Scenario	Middle Scenario	High Scenario	Respondent
2015	0.4% (114)	0.4% (133)	1.4% (457)	
2016	0.7% (211)	1.1% (339)	2.6% (846)	
2017	1.0% (324)	1.7% (534)	4.6% (1 486)	
2018	1.4% (442)	2.4% (757)	4.8% (1 534)	
2019	1.8% (560)	3.0% (959)	5.2% (1 666)	

Please provide reasons for the adjustments.

3. In the highly skilled category, if there is the job growth projected above, what kind of jobs do you foresee that the need will be for?

And what would be the minimum qualifications required for this job.

Highly skilled	
Types of Jobs	**Minimum qualifications required**

4. In the skilled category, if there is the job growth projected above, what kind of jobs do you foresee that the need will be for?

And what would be the minimum qualifications required for this job.

Skilled	
Types of Jobs	**Minimum qualifications required**

5. In the semi-skilled category, if there is the job growth projected above, what kind of jobs do you foresee that the need will be for?

And what would be the minimum qualifications required for this job.

Semi-skilled	
Types of Jobs	**Minimum qualifications required**

6. **In the unskilled category, if there is the job growth projected above, what kind of jobs do you foresee that the need will be for?**

And what would be the minimum qualifications required for this job.

Unskilled	
Types of Jobs	**Minimum qualifications required**

7. **In the informal category, if there is the job growth projected above, what kind of jobs do you foresee that the need will be for?**

And what would be the minimum qualifications required for this job.

Informal	
Types of Jobs	**Minimum qualifications required**

8. What is your approximate staff turnover per year according to: Retirement, Resignation, Migration and Death?

	Number of employees	As a percentage of employees in the skill level
Highly skilled		
Skilled		
Semi-skilled		
Unskilled		
Informal		

9. Do you have any further comments about the South African accommodation industry which you deem of importance for this study?

10. Are you willing to review (via email) the adjusted forecasts (taking your comments into consideration) at a later stage?

Thank you for your participation!