

SOLEMN DECLARATION - GROUP ASSIGNMENT

Solemn declaration by students

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We hereby declare that the assignment which we herewith submit to the North-West University as partial completion of the requirements set for the MBA degree, is our own work.

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1. Introduction

There is no doubt that the first three industrial revolutions provided immense evidence for dynamic shifts in education, society and the economy leading up to establishment of new and innovative educational curricular (Gleason, 2018). In the past Industrial Revolutions, Education and the ability to adapt to the dynamic changes of industry patterns has been the cornerstone to success for many countries. Industrial Revolution does not only imply an accelerated economic growth, furthermore the terms expresses an acceleration of advancement and increase as a result of and through social and economic evolution and transformation. The fourth industrial revolution is often described as an amalgamation of technological advances in artificial intelligence, robotics, advanced materials, 3D printing, quantum computing, Block chain, 5G and various other technologies (KHATHU, 2019).

With the approaching Fourth Industrial Revolution (4IR) many experts and researchers agree that the most sought-after skills with high employment prospects are in science, technology, engineering, arts and mathematics (Kupe, 2020). It is of utmost importance that any country that would like to succeed through swift adaptation socially and economically needs to harness the upcoming Fourth Industrial Revolution through aligning its core educational fundamentals and strategy to the demanding requirements of the anticipated paradigm shift.

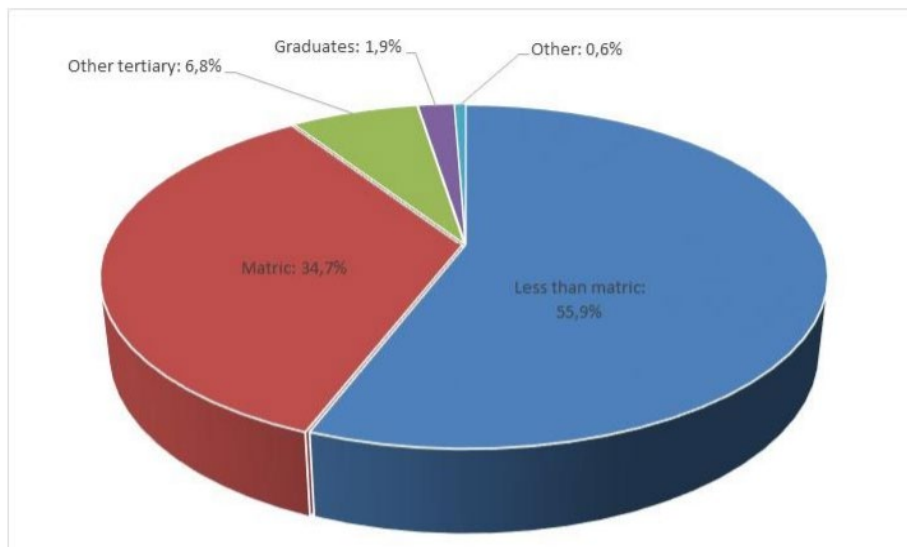
Further to this, SA is now in a technical recession (negative GDP growth) as of 3 March 2020 which will see the country borrowing at increased interest rates which will make growth, combating unemployment and capital investment a challenge going forward. (Jan Janse Van Rensburg, 2015) elaborates that when a country moves into negative aggregate growth it sees the full exposure of the multiplier effect and in most cases the price level index is very inflexible to move downwards and this increases the cost of production forcing producers to embark on section 189 of the Labour Relations Act 75 of 1997.

We will then look at how education assist the South Africa in feeding the job market with what the economy needs to be to harness opportunities that the 4IR might bring along with. This will be viewed looking at the economic drivers of the country's GDP and the potential of the country to attract investment, increase employment in this new era.

2. Education and Training in South Africa

The chart below shows that of the 6.7 million, 55.9% had education level below matric, followed by 34.7% with matric in the fourth quarter of 2019 and only 1.9% of the unemployed people were graduate, with 6.8% having other qualifications as their highest level of

Education(StatsSA, 2019). The data shows that the job market favours those with qualifications and it shows that graduates tend to be absorbed into the job market quicker than those who do not have any formal qualification



Data: (StatsSA, 2019)

The graphical representation above shows that South Africa is a highly illiterate country with more than 50% of the population not having completed matric. This will pose a challenge in moving to 4IR as population will then not be employable looking at high technological jobs that this revolution attracts.

2.1 SA's Basic Education Preparedness for 4IR

Computer skills are needed in preparation of 4IR and only few schools have access to computers with other having passed Grade 12 without computer skills. Coding critical technical skills for future jobs in preparation for 4th Industrial Revolution is not part of the curriculum, this skill is very important to take up for learners studying non-technical subjects. Teachers in primary and high schools have not been equipped with the necessary skills to teach curriculum that is aligned with new era that is upon us. The resourced schools have a better advantage to provide learners with the right skills for 4IR, while rural and townships school are at disadvantage (KHATHU, 2019).

5.02 Quality of math and science education

In your country, how do you assess the quality of math and science education [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world] | 2014–15 weighted average

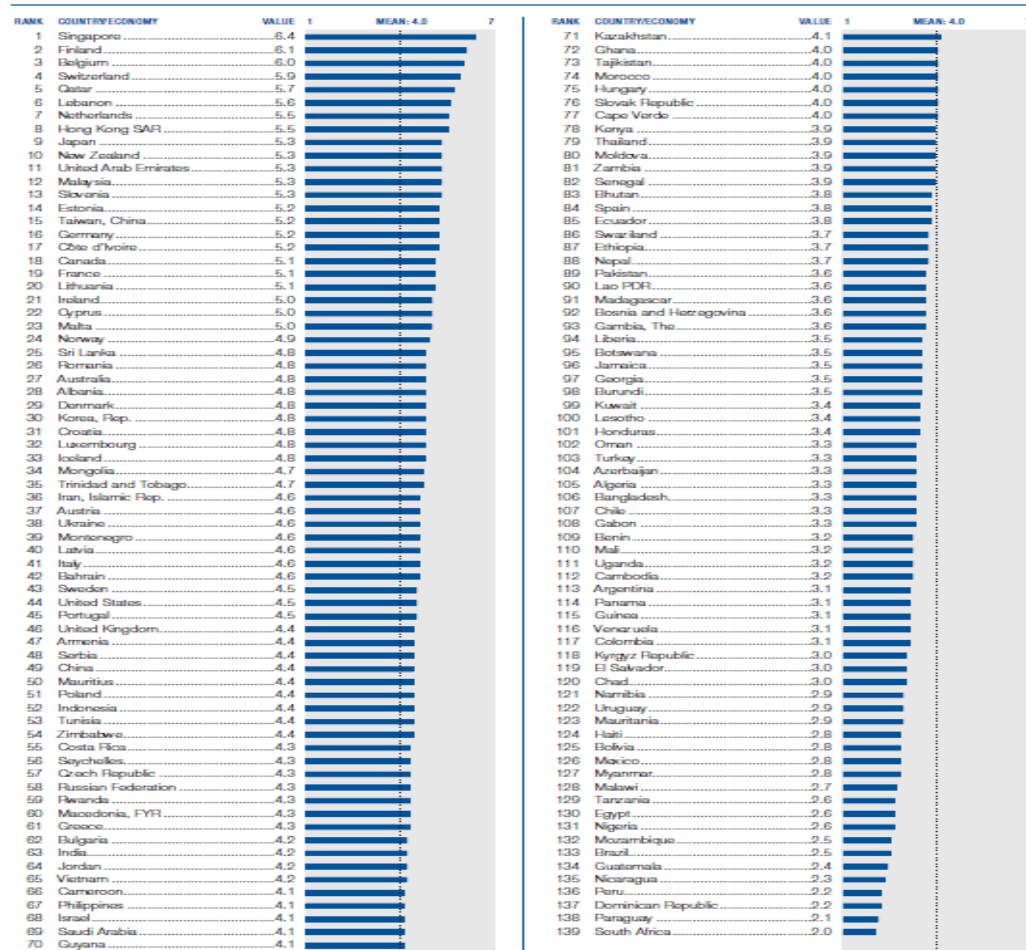


Figure 1: Quality of Math and Science education - WEF 2016

With reference to the high-tech opportunities related to 4IR, maths and science becomes pivotal. South Africa is ranked 139 on the quality of maths and science education according to the WEF report in 2016. Countries that are ranked high like Germany which is highly industrialized have the following systems in place which South Africa and the rest of the African continent might use as a benchmark;

- Germany has very good ICT infrastructure which directly translates to very high levels of ICT uptake in both individuals and businesses.
- According to the World Economic Forum Global Information and Technology report of 2016, Germany's quality of education system ranks 10th of the 139 countries assessed. In other words, the quality of education system in Germany meets the needs of a competitive economy.
- Germany's perceived quality of education system continues to provide the right set of skills to engage in an innovation-driven globalised economy (Silja Baller, 2016).

- The country's education system continues to attract many international students across the world with the technical degrees being the main attraction and retains part of the graduates as working population.
- The quality of math and science education is very good with a ranking of 16 out of 139 countries across the world(Silja Baller, 2016).
- Germany's literacy rate stood at 99% in 2018, a very good indicator of the ability to make simple arithmetic calculations; a basic requirement in the STEM curricular for the upcoming 4IR(Microtrends, 2020).
- It is of vital importance to note that the education system must complement what the economy and job market needs. The education system must align itself with the main GDP drivers so that local employment is increased. We will have a look at this later in the report and align these two very important aspects of job creation, retention and skills transfer.

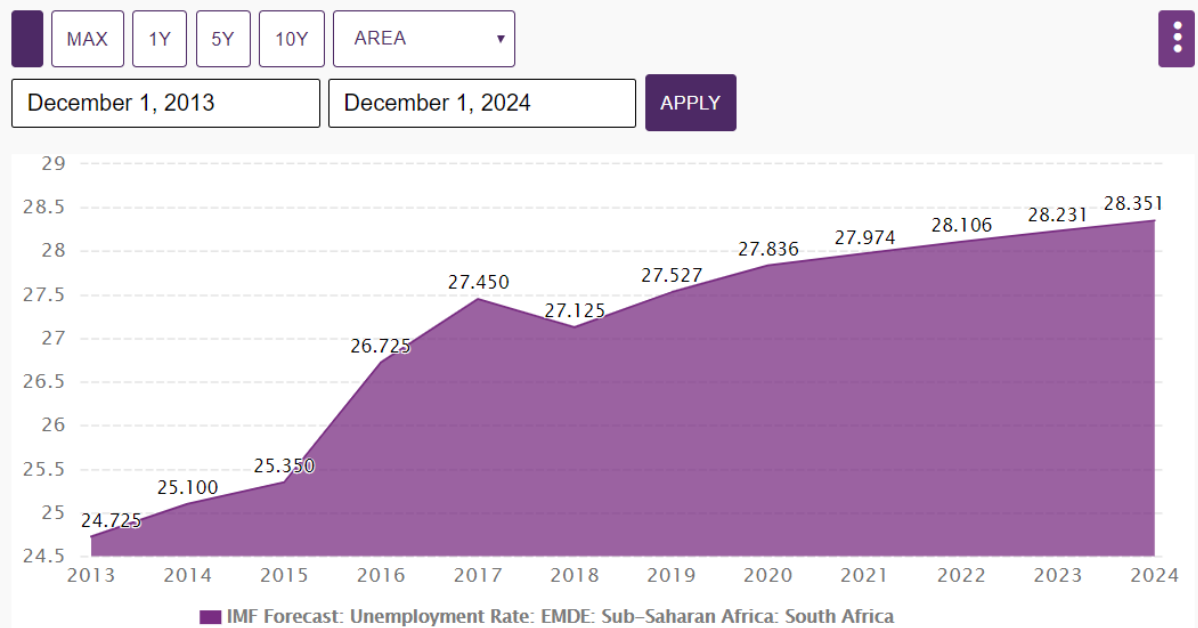
3. Current and Projected Unemployment in South Africa

Unemployment rate has been increasing steadily in South Africa since the 2007/2008 economic recession. In the second quarter of 2019 unemployment rate increased to 29%, becoming the worst since 2008(Omarjee, 2019).

In the year 2020 the official unemployment rate remained the same at 29.1% as compared to the 3rd quarter of 2019. The Quarterly labour Survey (StatsSA) results further indicated that there has been an increase of 45000 in the number of employed people to 16.4 Million and a decrease by 8000 in the number of unemployed people to 6.7 million(StatsSA, 2019).

The formal sector employment increased by 117000 making it the largest record in quarter four, followed by Agriculture by 6000(StatsSA, 2019).

View South Africa's Forecast: Unemployment Rate from 1980 to 2024 in the chart:



Data: (CEIC, 2020)

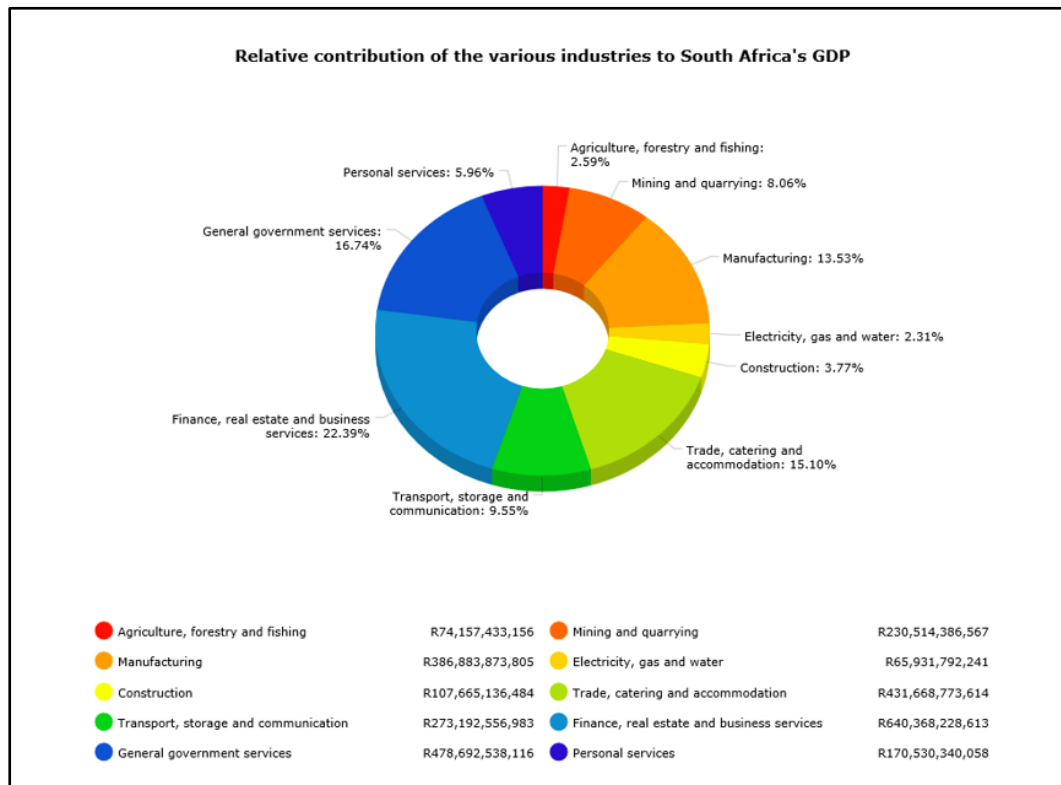
Statistics shows that South Africa will retain unemployment rate at very high levels due to the economy that is growing very slowly. The contributors to slow economic growth in the country have not been dealt in totality to be in situation to adopt the new 4IR challenges. The following are some but a few of these challenges:

- Uncertainty in government policy and framework (land ownership, nationalization, etc.)
- Management of state-owned enterprises and their strategic importance to the country
- Corruption and lack of skills on key government departments
- Minimum wage bill

The abovementioned will detour harnessing the opportunity that 4IR might bring to the fore and worsen the current state South Africa is in. Integration and alignment of unemployment rate with the economic drivers and investment will assist in looking at the picture holistically.

4. Economic

4.1 GDP drivers



Data:(southafricanmi, 2020)

4IR introduces robotics and less manual labour which specifically focuses on the following sectors which contributes 39.81% of South Africa's GDP at 6 March 2019;

- Manufacturing
- Mining and quarrying
- Agriculture
- Electricity, gas and water
- Transport, storage and communication

This means that more jobs will be created in the above mentioned sectors but these sectors have seen a decline in growth year on year according to (southafricanmi, 2020). Youth unemployment increased to 27.1% at the end of 2018 from 26.5% at end of 2016. The decline has been worsened by a high level of political uncertainty which led to a decline in foreign investor confidence and low skills in the country (AFDB, 2020).

The budget speech tabled on 26 February 2020 by Minister of Finance Mr. Tito Mboweni reflected a budget deficit of 6.85% which necessitates borrowing and capital expenditure on

the local economy by government with a view of resuscitating the construction industry, electricity generation and manufacturing.

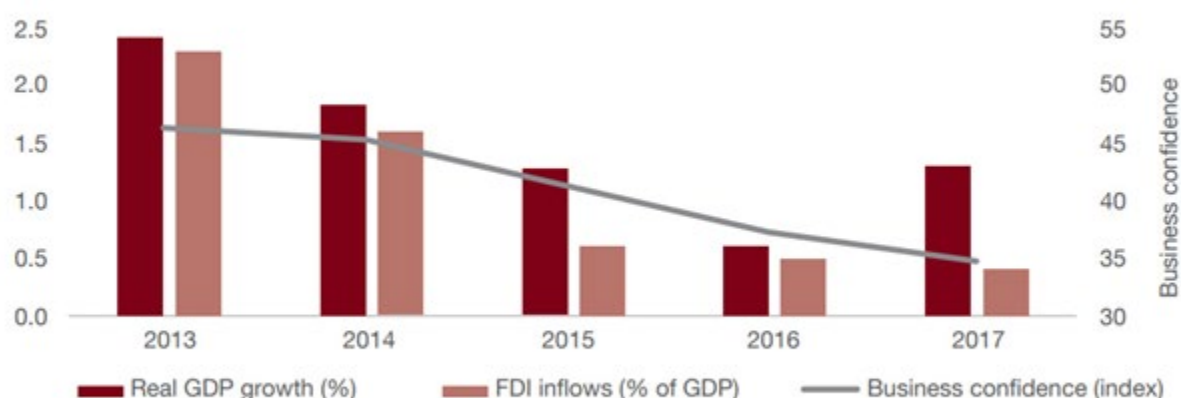
Government spending on its own should be done correctly to not affect price level index negatively as this normally increases inflation which then becomes counterproductive to GDP growth according to (Jan Janse Van Rensburg, 2015).

Looking at the DGP split per sector, it is evident that South Africa is not a highly industrial country, there are other sectors that are a major contributor to the country's GDP which maybe should be looked at and more done to grow these industries to curb unemployment that we spoke about in section 3 of the report. Looking at jobs that might be faced off and those that might be brought about by the 4IR, South Africa must position itself to indirectly benefit the most on the other sectors that might not need high levels of intellect which dovetails with the country's literacy levels.

This will then assist with getting enough time to re-configure the education system and have a 10 to 20-year view of shifting the economic drivers and repositioning the country in the global map while gaining experience and benchmarking with the rest of the world. This will further give the country time to sort out the immediate challenges including but not limited to current credit rating and investor confidence.

4.2 Foreign investment

Exhibit 1
Slippery slope of economic decline



Sources: Business Monitor International (BMI), Bureau for Economic Research (BER), United Nations Conference on Trade and Development (UNCTAD), PwC's Strategy& analysis

(Awolusi *et al.*, 2016) established a positive correlation between FDI (Foreign Direct Investment) and the growth of the economy. They suggest that the correct utilization of FDI can enhance South African economic growth. The South African economy has experienced

an annualized GDP decline of 1.4% in the last quarter of 2019 at the back of a contraction of 0.8% as opposed to the 0.1% that the market expected. The recent power cut experienced by the country have gravely affected seven of the ten key industries with most of them showing negative results. From an expansion of 0.1% South Africa saw a year on year reduction of 0.5% in terms of GDP (TradingEconomics, 2020).



Source: (TradingEconomics, 2020)

Credit rating agencies have in the recent past been keeping a close eye on South Africa as the economy struggles to maintain growth but shows a downward trend in growth figures. Moody's is latest credit rating agency to pronounce itself on the South African economy by cutting its anticipated economic growth in South Africa to 0.7% in 2020 from 1.5 % in September 2019. This move is as a result of the continued power cuts by the national electricity supplier Eskom which results in slow economic growth. Eskom which is responsible for 90% of the electricity supply has had problems with its coal plants attributed to the recent floods and the effect thereof was seen in the closing of mines across the country. This has threatened the export sector a key sector in foreign trade (Dludla, 2020).

South Africa's negative outlook with a rating of BB by S&P will not inspire confidence for the investors in the economy. Fitch's on the other hand has its rating on South Africa at BB+ with a negative outlook as well. Moody's which has recently revised its growth expectation on South Africa has its rating on the country at Baaa3 which is negative(Hogg, 2019).The latest corona virus outbreak has resulted in Moody's having to further revise its growth expectation from 0.7% in 2020 down to 0.4% (Writer, 2019).

The South African economic growth forecast of 0.6 % for quarter two of 2020 with the actual growth of -1.40% does not inspire confidence to attract foreign investment. GDP growth rate

is at -0.50% and 0.6 for the second quarter of the year. Unemployment rate is sitting at just over 29 % which is alarming with inflation rate of 4.50% and 4.4% for quarter two.

Prospects of creating new jobs as a result of 4IR looking at the economic indicators as discussed above looks bleak and will be a challenge for the country. Having said that, it is important to understand the jobs that will be brought about by this change and the practicality of them realizing post the statistics we have on education, GDP and investor confidence and other factors.

5. Future jobs

According to a World Economic Forum report, there are 10 skills a country will need for the Fourth Industrial Revolution, namely: Complex Problem Solving, Critical Thinking, Creativity, People Management, and Coordinating with Others, Emotional Intelligence, Judgment and Decision Making, Service Orientation, Negotiation and Cognitive Flexibility. The creativity and empathy will be difficult to fall away during the 4IR and this skill will be appreciated by many due to their demand. Jobs in cookery, writing, tourism, design and medical care for example, where human qualities are essential, will be more resistant to change(CareerJunction, 2020).

Other areas that will see a stable demand for years include Media and Entertainment, Consumer Products, Healthcare, Energy, Professional Services, Information Communication and Technology, Mobility, Infrastructure and Financial or Investor services. The key industries that will safeguard one against unemployment in the future include Artificial Intelligence, Robotics, 3D printing, nanotechnology, quantum computing, biotechnology, The Internet of Things, autonomous transport, aerospace, genomics. In fact, according to one estimate, almost two-thirds of today's kindergarten students will eventually have occupations that don't currently exist (Writer, 2019).

6. Conclusion

The above-mentioned factors, challenges and current status of South Africa as a country depicts that there will be more job losses with the introduction of 4IR. The country's education system does not support the phenomenon from a timing perspective in that the change in curriculum should have been implemented 5 years 5-10 years ago to realize the benefits now.

Further to this, the country's fiscal and economic status cannot accommodate this new era now as there are challenges and opportunities which must be addressed including but not limited to the following;

Mid-term goals

- SOE entities will need to be privatized or a portion of it at least to stimulate competitiveness
- Cost of electricity to be benchmarked with the rest of the world to enable beneficiation of minerals and to allow industrialization which aligns with the prospects of 4IR
- Stats SA to be adequately funded so that long term goals are aligned with data produced
- Government spending must be directed towards infrastructure development to stimulate the economy
- Fruitless irregular expenditure to be stopped immediately and strategic appointments of key state positions to be awarded on merit

Long Term Goals

- Education system to be aligned with 4IR requirements
- Government policy to be so structured that it facilitates foreign investment, facilitates growth of small emerging businesses

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