

GIVEN SOUTH AFRICA'S HIGH UNEMPLOYMENT RATE AND POOR
EDUCATION SYSTEM, WHAT SHOULD GOVERNMENT DO TO AVOID FURTHER
LOSSES AGAINST THE BACKDROP OF THE 4TH INDUSTRIAL REVOLUTION

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GROUP ASSIGNMENT

GROUP NAME: BLACK PANTHERS

WORD COUNT: 3116

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INTRODUCTION

The word “revolution” stands for sudden and drastic change. Historically, revolutions have occurred as emerging technology and new ways of perceiving the world cause a fundamental shift in economic systems and social structures. The pace and scale of the changes brought on by the Fourth Industrial Revolution should not be ignored. Such developments will result in power transitions, income transitions and information shifts. Only by being aware of these developments and the pace at which this happens will we ensure that advancements in information and technology reach everyone and benefit all.

From around 1760 until about 1840, the first industrial revolution spread and it's characterised by the invention of the steam engine. The steam engine facilitated the transition from the agriculture and feudal society to the new production cycle. During this era, coal was the primary source of energy, while the primary means of transportation were the trains. Textile and steel were leading industries in terms of jobs, production value, and investment capital. The second industrial revolution, which began in the late 19th and early 20th centuries, allowed mass manufacturing, fostered by the invention of electricity and the assembly line. In the 1960s, the third industrial revolution began and was marked by the introduction of electronics and information technology to automate production. It saw the rise of electronics, telecommunications and of course computers. It is also referred to as the computer or the digital revolution. The third industrial revolution through new technologies opened the doors to space expeditions, science, and biotechnology. Around the turn of this century, the fourth industrial revolution began and built on the digital revolution. It features a convergence of technologies that blur the boundaries between the physical, digital and biological spheres.

There are three explanations why today's revolutions are not only a continuation of the Third Industrial Revolution, but rather the advent of a Fourth and distinct one: the effect of velocity, scale, and systems. There is no historical precedent for the pace of current breakthroughs. The Fourth is progressing at an exponential rather than a linear rate as opposed to previous technological revolutions. In addition, it disrupts nearly every industry in every region. And the vastness and scope of these changes signal the transformation of entire manufacturing, management, and governance structures. There are endless possibilities for billions of people linked by mobile devices, with unparalleled computing power, storage space, and information access. Yet new technological breakthroughs in areas such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing would increase these possibilities. Technologies of the Fourth Industrial Revolution are rapidly changing the way people make,

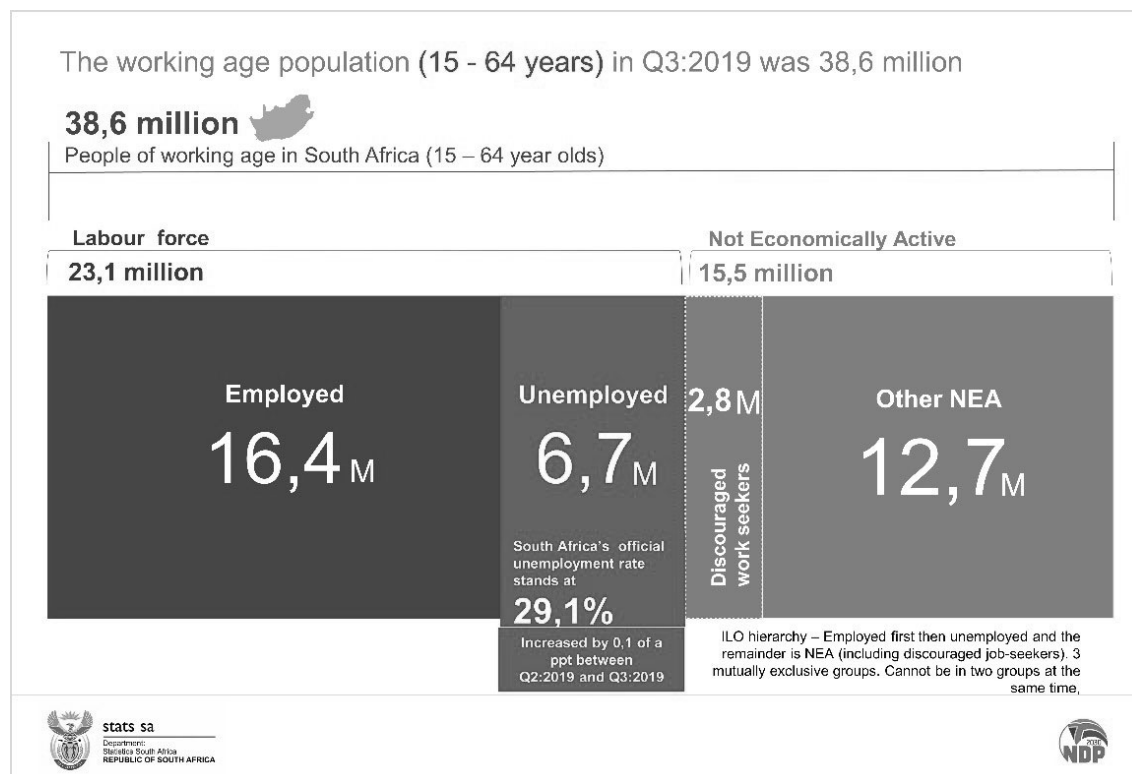
share, and distribute value. Like with the previous revolutions, this is going to transform economies, industries and individuals radically.

SOUTH AFRICA'S UNEMPLOYMENT

1. South Africa's unemployment rate

The Quarterly Labour Force Survey (QLFS) findings for the fourth quarter of 2019 suggest that, relative to the third quarter of 2019, the official unemployment rate remained unchanged at 29.1%. Furthermore, the survey indicates “that the number of working persons increased by 45 000 to 16.4 million, and the number of unemployed persons decreased by 8 000 to 6.7 million in Q4: 2019 relative to Q3: 2019, resulting in an increase of 38 000 in labour”.

In Q4:2019, the working-age population in South Africa increased by 145 000 compared to Q3:2019. According to the survey “the number of discouraged job-seekers increased by 62 000 and those who were not active on the labour market for reasons other than discouragement increased by 45 000 which resulted in a net increase of 107 000 among those who were not economically active” (The Quarterly Labour Force Survey, 2020).



Stats SA said manufacturing production in December dropped by 5.9% year-on-year. Another concern is the production in the car manufacturing industry — seen as a producer of jobs — has plummeted nearly 25%.

Stats SA said in a statement, “The working-age population increased by 145,000 or 0.4% in the fourth quarter of 2019 compared to the third quarter of the same year. Compared to Q4: 2018, the working-age population increased by 594,000 or 1.6%.” The Labour market cannot absorb new entrants.

A large portion (55.9%) of the 6.7 million unemployed people have not completed school. Matriculants constituted 34.7% of the unemployed, 6.8% of the unemployed had post-school education and 1.9% are university graduates.

2. Youth unemployment

There is strong agreement that youth unemployment is severe in South Africa. This figure sits at 40.1% in South Africa. The Quarterly Labour Force Survey reports that “in Q4:2019 there were approximately 10.3 million people aged 15–24 years. The share of these young people who were not in employment, education or training (NEET) fell from 32.3% in Q3:2019 to 32.0% (3.3 million) in Q4:2019 by 0.4 percentage point. Of the 20.4 million young people aged 15-34, 40.1% in Q4:2019 were not in employment, education or training (NEET) – a decline for 0.3 percentage point from Q3:2019” (Quarterly Labour Force Survey, 2020).

The situation is increasingly seen as a national emergency, as the high level of youth unemployment is expected to lead to a growing sense of alienation among youth and increased rates of dissatisfaction and impatience (National Planning Commission 2012). Exiting unemployment is extremely difficult for one of these unemployed young people and it is estimated that a large number of today's unemployed young people will never find formal sector employment (National Planning Commission, 2012:106).

In South Africa, there are countless reasons for unemployment which subject young people to terrible economic situations. Julie Kwach reported in an online article that the “top causes of unemployment include:

- A weak education system that does not satisfy the current career demands
- Mismatch in national labour demand and supply systems
- Lack of entrepreneurial goodwill making difficulties for young people to engage in productive businesses
- 2008/2009 global recession effects that continue to shake the market
- The active role of trade union federations in governance
- Redundant economic growth discouraging potential investors

- Legacy of apartheid that still holds down youths from minority groups” (Youth unemployment in South Africa: Current SA unemployment rate, types of unemployment, causes, and consequences to the economy, 2019).

Government and several stakeholders have invested and investigated possible solutions and strategies to tackle the problem. Since 1990, there has been a wide variety of policy initiatives and a number of measures to tackle youth unemployment. This massive collaborative endeavour has yielded limited results.

3. The effect of the coronavirus pandemic on unemployment

There is little doubt that the current coronavirus inspired lockdown will have severe consequences for South Africa’s economy. Fin24 reported that “many of the world's biggest and most resilient economies face unemployment levels reminiscent of the 'Great Depression' of the 1930s” (Analysis - SA's desperately tough path post-coronavirus).

According to a World Economic Forum article, James Bullard, president of the US Federal Reserve Bank's St. Louis branch, estimated “that the unemployment rate will hit 30% in the second quarter and that the gross domestic product will drop by 50%. At the height of the Great Depression in 1933, when the unemployment rate rose to 24.5%, US unemployment was at its highest. According to the Bureau of Labor Statistics, after the Great Recession, US unemployment peaked at 10.2% in October 2009” (Coronavirus: US unemployment rate could hit 30%, 2020)

The South African economy is currently in a technical recession because we had two consecutive quarters of negative growth in the Gross Domestic Product (GDP). And if one adds the current coronavirus pandemic, the lockdown we are experiencing and possible load-shedding when the economy reopens than it's not hard to see that we run the risk of rising unemployment rates. According to Fin24 “FNB expects the SA economy to enter a short but deep recession this year, predicting a 4.5% y/y contraction for the year, far greater than the 1.5% contraction recorded in 2009 during the global financial crisis. The effect of the pandemic would strike SA especially hard because systemic reforms and 'saving or consolidating for a rainy day' had not been implemented South Africa sits with the highest inequality in the world and the country also has an unemployment rate at 29.1%. If these projections come to pass, the unemployment rate is projected to rise significantly higher with Business South Africa predicting a possible loss of some 150,000 jobs per month. FNB predicts that the country's unemployment will rise from 29.1% in 2019 to around 31% in 2020. It would make it the highest reported unemployment rate, which is in line with the ongoing fall in GDP growth” (Analysis - SA's desperately tough path post-coronavirus).

SOUTH AFRICA'S POOR EDUCATION SYSTEM

According to a new report by Amnesty International, “The South African education system continues to be dogged by extreme inequality and persistent underperformance that have deep roots in apartheid’s history but are still not adequately addressed by the current Government. The consequence is a multitude of schools with crumbling infrastructure, overcrowded classrooms and weak educational outcomes” (Amnesty International, 2020).

1. Poor infrastructure

Countrywide public schools are plagued by inadequate infrastructure, teacher absenteeism and water and sanitation shortages. This is according to the report of the School Monitoring Survey (SMS), released by the Minister of Basic Education Angie Motshekga. The Minister admitted that the department’s greatest problem remains the sub-standard infrastructure at schools. Only 59% of our schools in the country meet the minimum infrastructure requirements, physical infrastructure specifications and standards. A disturbing reality is that there is running water in just 76% of our schools. This means we also have schools where children need to carry drinking water to school. Meanwhile, the department says it’s working around the clock to achieve its three-year target of eradicating pit toilets at the country’s schools.

Research by Amnesty International has found “Multiple cases of schools in Gauteng and Eastern Cape with inadequate infrastructure and without basic facilities in violation of both the Government’s national minimum standards of regulation and its international human rights obligations. These included:

- badly maintained buildings that had never been renovated, many of them dating back to the apartheid era;
- overcrowded classrooms without basic equipment and materials such as furniture and textbooks;
- lack of security exacerbating the problems of vandalism and burglary.
- hazardous buildings;
- poor maintenance, in some cases putting the safety and security of learners at risk; and
- unhygienic, poorly maintained and unsafe sanitation, with some schools only having pit toilets;

The correlation between the conditions of school infrastructure and their impact on the learning outcomes was well recorded” (Amnesty International, 2020).

2. Overcrowded classes

Classroom constraints are impacting learning in some schools because classes are grossly overcrowded. According to the Amnesty International report “for one district, a district head said that a shortage of classrooms meant that two years-grades 1 and 2-had to be taught together but received only 2,5 hours of tuition a day due to the lack of available teachers. In another school, there are 16 classrooms for 978 students, leading to a teacher-to-pupil ratio of 1:70 in some cases double the stipulated ratio of 1:35. Requests for new classrooms have gone unheeded since 2014: delivery of four pre-fab classrooms only allowed the school to accommodate new learners and did little to alleviate their current overcrowding” (Amnesty international, 2020).

3. Poor educational outcomes

South Africa spends around 6% of its GDP on education since the end of apartheid, more than most other BRICS countries. Nicholas Spaull, in a report on South Africa’s Education Crisis, states that “South Africa has the poorest education system amongst all middle-income countries that take part in cross-national educational achievement evaluations. We perform worse than other African low-income nations. The annually published figures from the grade 12 National Senior Certificate (NSC) exam are misleading because they do not take into account those pupils who never get to grade 12. Of 100 pupils starting school, only 50 will transfer to grade 12, 40 will pass and only 12 will qualify for university. Many 18-24-year-old persons who do not pursue any form of post-secondary education are at a distinct economic disadvantage will struggle to find full-time employment” (South Africa’s Education Crisis:

The quality of education in South Africa 1994-2011).

South Africa participates in three major international assessments of educational achievement: TIMSS, PIRLS and SACMEQ. Those assessments demonstrate how South African pupils 'performance has improved compared to previous South African pupils' groups and compared to other countries involved in those studies.

According the Amnesty International Report “In 2017, the PIRLS reported that 97% of South Africa's grade 4 children scored the lowest of the 50 countries taking part in a reading and literacy test, with 78% of grade 4 students unable to read for meaning. Rural provinces performed worst: 91% of Grade 4 children in Limpopo were unable to read for meaning, with equally high figures in the Eastern Cape (85%) and Mpumalanga (83%) respectively. Disparities were especially evident for mother tongue: 93% of Grade 4 students tested in Sepedi could not read for language, with similarly high percentages for Setswana (90%),

Tshivenda (89%), isiXhosa (88%), Xitsonga (88%), isiZulu (87%) and isiNdebele (87%). It also emerged that 62% of South African primary schools did not have school libraries. Another standardised regional study focused on evaluating 61,396 grade 6 pupils from 2,779 math and literacy schools across 15 southern African countries placed South Africa at the 8th spot for mathematics and 10th place for reading. A research conducted by Stellenbosch University over a decade has consistently shown that South Africa is underperforming with around 20% of South African children doing very well in a range of tests in literacy, language and mathematics, with the remaining 80% doing very poorly” (Amnesty International, 2020).

WHAT SHOULD GOVERNMENT DO TO AVOID JOB LOSSES AGAINST THE BACKDROP OF THE 4TH INDUSTRIAL REVOLUTION

It is anticipated that the Fourth Industrial Revolution will bring change and displacement, including work losses from artificial intelligence and automation. Besides South Africa’s high unemployment rate of 29.1%, the remainder of Africa is facing educational and infrastructural problems, rendering it a high-risk area.

Government is currently addressing this problem in South Africa. Fin24 reported that “it recently formed an inter-ministerial task force to lead the SA's Fourth Industrial Revolution strategy. Trade and Industry Minister Rob Davies said that as a result of the Fourth Industrial Revolution there would be "serious winners and losers," and the country had to plan to reap the gains, or be burdened with the negative consequences” (Analysis - SA's desperately tough path post-coronavirus).

Some of these technologies can cause job losses, particularly those which automate routine tasks. Talent development and upskilling would be vital to creating a more sustainable economy and reduce rising inequalities, not only for SA but for the entire continent. Massive investment is required in the education systems, especially in crucial science and technology subjects.

David Meades identified an article for the World Economic Forum “that there are three issues to consider in the sense of the Fourth Industrial Revolution and its destructive impact on all economies.

- The development of digital skills is paramount;
- All industries are being digitally disrupted, which presents an opportunity for a growing digital economy;
- Public-private partnerships are powerful levers for change” (Here’s how Africa can take advantage of the Fourth Industrial Revolution, 2017).

The examples of troubling work cuts have triggered alarms and demands for policies to prevent this from happening. Ian Klugman wrote in a World Economic Forum article that “Tesla founder Elon Musk wants governments and civil society actors to ensure ethical implementation of machine-learning systems. Microsoft founder Bill Gates wants governments to tax robots to make up for the loss of the migrant workforce” (Why governments need to respond to the Fourth Industrial Revolution, 2018). The governments, in effect, need to establish the conditions that will allow companies to bring these kinds of developments to their clients.

Klugman wrote that “Policy-makers should borrow innovations and technology from innovation-oriented firms to make government services as versatile, efficient, and competitive as private-sector services. They will need to implement new ideas to provide a safety net for those caught up in the change dislocation. Innovators and investors should be at the forefront of this global upheaval. Governments should create conditions that will allow these players to compete and create wealth. When they do, everyone will realise the benefits. This will come not only in the form of improved productivity and growth, but in the cultivation of globally focused tech firms that are unleashed to generate new jobs, services and wealth sources to sustain societies that are finding their way through all the change” (Why governments need to respond to the Fourth Industrial Revolution, 2018).

Skilton and Hovsepian wrote in *The 4th Industrial Revolution* that “Klaus Schwab proposes four principles which he believes will direct our policies and practices as we move forward in this revolution.

1. Focus on systems rather than technologies, because the important considerations will be on the wide-reaching changes to business, society and politics rather than technologies for their own sake.
2. Empower our societies to master technologies and act to counter a fatalistic and deterministic view of progress. Otherwise, there is no room for optimism and positive transformation, and society’s agency is nullified.
3. We need to prioritise futures by design rather than default. Collaboration between all stakeholders must play a central role in how we integrate these transformative technologies. Otherwise, our future will be delivered by default.
4. Focus on key values as a feature of new technologies, rather than as a bug. Technologies used in a way that increases disparity, poverty, discrimination and environmental damage work against the future we seek. For the investment in these

technologies to be justifiable, they must bring us a better world, not one of increased insecurity and dislocation” (The 4th Industrial Revolution, 2018).

CONCLUSION

Historically, these cycles of technology-driven transformation have brought about productivity gains, innovation, prosperity, quality of life improvements, and longevity and health increases. Nations have become wealthier, and technology has helped lift whole populations out of poverty.

Klaus writes that “we have the opportunity to shape the Fourth Industrial Revolution proactively, to be both inclusive and focused on people. This revolution is about far more than technology. In essence, it's a chance to unite global societies, create sustainable economies, adapt and modernise systems of governance, to reduce material and social inequality, and commit to value-based leadership of emerging technologies.

So the Fourth Industrial Revolution is not a prediction of the future but an appeal for action. It is a vision of creating, disseminating, and regulating technology in ways that promote a more empowering, collaborative, and sustainable basis for social and economic growth based on mutual ideals of the common good, human dignity, and intergenerational management” (The Fourth Industrial Revolution).

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