

An examination of how the fourth industrial revolution will impact on labour in South Africa

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Abstract

The 4th industrial revolution is best placed in developed countries because developing countries such as South Africa are still left behind. South Africa as part of globalization has to adapt to the 4th industrial revolution however, the country does not seem to be ready for this revolution. Some key fixtures of the 4th industrial revolution are however seen in South Africa but the resistance is high in the labor market.

For this paper, it was necessary to review qualitative data and quantitative data that was used in other journal articles that are similar to this paper. The findings of this paper are based on how the labor market, trade unions and the society at large understand and welcome the 4th industrial revolution. Trade union activists and job seekers are against the introduction of the 4th industrial revolution in South Africa. The 4th industrial revolution is commonly termed as the Internet of Things (IoT) which suggests that the presence of a human in industries is no longer necessary. Others say the 4th industrial revolution is the Virtual Reality (VR) and Artificial Intelligence (AI).

South African people are divided when it comes to the 4th industrial revolution, others think the revolution will speed up the work while others think the revolution will take away their jobs. The main objective of the paper was to examine how labour will cope with the 4th industrial revolution in South Africa. The paper addressed the fundamental concerns associated with the fourth industrial revolution and the impact of this revolution in South Africa. The paper has examined how people will benefit from the 4th industrial revolution due to easy upskilling/training in their lines of work. The paper also investigated if all workers will necessarily be affected negatively or positively by the 4th industrial revolution.

Keywords: Industrial Revolution, Internet of Things, Artificial Intelligence, Robotics, Virtual Reality, Trade Unions, Labour market, Development, Unemployment, Transformation.

Introduction

Veblen (1990: 03) states that the industrial revolution started when European countries such as Germany wanted to conquer the world through business initiatives globally. The industrial revolution cannot be separated from World War 1 and World War 2 because both wars were associated with the economy and the industries. Developments and changes in the industrial revolution are mainly influenced by technological developments. The technological developments have affected all industries globally and that forced industries to adapt whenever there is a new technology in place. According to Shen and Boyle (1987: 06), technological advancement changes every time and that led to changes in business operations. The American industrial revolution influences the industrial revolution in many countries globally. America is not the only country in Europe that influence the industrial revolution but Germany also have a big influence in the industrial revolution. Asia is not a big continent and is not too influential but China as the country that is in Asia uplift the economy of Asia as the continent. China is one of the countries that is highly respected in technological innovations. Human robots and many other mechanizations have been developed in China.

McDonough and Braungart (2017: 139) argued that people perceive that the infrastructure developed by the industrial revolution of the nineteenth century looks like a steamship. The industrial revolution is characterized by fossil fuels, chemicals, machines and nuclear reactors.

Mechanization allows machines to work without any human support and follow the predetermined rules which are programmed in the machine. Traditional ways of doing things have been replaced by machines and chemicals. Many businesses are migrating from traditional ways of doing things to new technologies of allowing machines to perform the work. Machines are cost-effective and economical during production. The 4th industrial revolution is aimed at fast-tracking the work and to replace human beings with human robots.

Kamaruddin, Daneil, Rijeng, Bohari and Eng (2019: 104) states that the future language of education has to completely change. The new technology makes it difficult for all sectors to operate without considering the element of technology. The technology was introduced as a form of communication and it later changed to dominate in all fields of life. The 4th industrial revolution introduced new technological skills, digital skills that have a strong impact on human resources. Employment of human beings is soon going to be the issue of the past, the human being is easily being replaced by new and growing technologies. Kamaruddin *et al.* (2019: 103) further indicated that the 4th industrial revolution is predominantly focusing on the production digitization. Products are manufactured by machines that replace human beings. Human robots are viewed as the best alternatives by employers because human robots are always at work and do not require a salary increase. The 4th industrial revolution introduced new systems and machines in many companies in South Africa and that affected the number of people that are employed in companies. A task that can be performed by 5 people or more can be performed by one machine. The need of human beings in companies have been reduced by the existence of human robots. The main reason why companies exist is to make a profit and the use of human robots increase the profit and save a lot for companies.

According to Ramachandran (2018: 07), the industrial revolution is considered as an important factor in the economic, political and social growth in all societies. Modernization of activities during the manufacturing process assist the companies to grow in business. The 4th industrial revolution force companies to adapt to the new ways of doing things or else they lose business. The 4th industrial revolution is about the modernization of industries, transformed industries address contemporary issues of societies. Dombrowski and Wagner (2014: 100) states that academic studies have shown that the 4th industrial revolution is inevitable in modern society it's either industries join the revolution or they lose the market. The technological changes introduced

by the 4th industrial revolution directly affect mental work demands. Production of work will no longer be relying on the thoughts of people but human robots will apply all activities as programmed.

Hirschi (2018: 192), states that digitization, as well as the automation of work, is gaining momentum in South Africa, this type of systematic arrangement is frequently referred to as 4th industrial revolution. The 4th industrial revolution has been a concern for many people in South Africa, employees, employers, business people, job seekers and the general people in the country talk about the 4th industrial revolution and the impacts on their well beings. The 4th industrial revolution introduces changes in the current occupations and the elimination of thousands of jobs.

Theoretical perspectives

Jeon and Suh (2017: 263) states that the theory of physical space is more associated with digital space. The physical space is distorted by the 4th industrial revolution and this was also occupied 1st I, 2nd and 3rd industrial revolution. The major inventions and major technologies have been introduced by the industrial revolution. The 1st industrial revolution was mainly about the steam engines invented by James Watt. The 2nd industrial revolution introduced electricity and this was invented by Bell. The 3rd industrial Revolution introduced computers, internet and mechanization. And lastly, the 4th industrial revolution introduced information technology and artificial intelligence. Therefore, the purpose of this study is to provide and discuss major issues and challenges of the 4th Industrial Revolution using the topic.

Chung (2017: 3539), states that the 4th industrial revolution does not only force private companies to adapt to new technological ideas but also government institutions. Human history has changed over time, from an agricultural society to an industrial society. The industrial revolution invented many methods of doing work. Rapid changes in society are influenced by industrial changes. Information technology affected the way companies and government institutions operate. Clark (2000: 748) argued that the work and family systems are interconnected and support each other. Whatever happens in the working environment affects the social well beings of employees and whatever happens in the family affects the productivity of employees. The 4th industrial revolutions force people to understand the technology and encapsulate the technology in their daily lives.

According to Surry (1997: 04), many professionals in various disciplines have used the theory of innovation diffusion to adapt to new technologies. Instructional technologies are growing on a daily basis and technicians are coming with new ideas almost every day. Diffusion theory is valuable to give effect to how the industrial revolution affects the existence of human beings. Innovation theory has four major fixtures firstly, it ensures that the communication is effective, secondly, the time of production is reduced, thirdly, the work procedure is simple and lastly, the productivity is effective. The 4th industrial revolution introduced systematic methods of performing activities. The world has changed over time, the world is totally different from what it was thirty years ago. Technological changes bring social changes and communication changes but mostly if affect jobs of people and those who are still job seekers. Falkenthal, Breitenbücher, Christ, Endres, Kempa-Liehr, Leymann and Zimmermann (2016: 18) states that the importance of the 4th industrial revolution is well anticipated by forecasting the future. The world without technology seems to be impossible and the technological changes have various societal and environmental impacts but people rather risk everything just for technology. Technology sometimes affects the lives of people but the industrial revolution introduced machines that can be used in hospitals. On perspectives of business, the 4 industrial revolutions are making business sense but on the side of employees, the 4th industrial revolution is a threat to the job market. Businesses embrace 4 industrial revolutions because it increases productivity and lesser disturbance during production. On the other hand, employees will lose their employment and job seekers will not get employed. Governments globally, are in pursuit of smart services to provide public services easily. 4th industrial revolution has a basic element of smart services which ensures that the communication channels are clear between government and public sector employees.

McNulty (1968: 640) states that the 4th industrial revolution is essential for all levels of society and all types of businesses and government institutions. The development of the 4th industrial revolution is consistent with changes in society. Societal changes increase the demand for new ways of doing things. Technological advancement reduces job opportunities even though few job opportunities might be created. The balance between jobs created by the technology and jobs lost is tremendously noticed. The 4th industrial revolution in South Africa is not addressing the triple challenges of people in South Africa, unemployment, poverty and inequality. Prisecaru (2016: 57) argued that the industrial revolution has witnessed many changes over the years. Industrial changes over the years did not influence the market systems in the world but supported the systems that are

already being used by individual countries. The transition of industries encouraged globalization and industrialization which was mainly in support of the capitalist system.

Materials and methods

Peer-reviewed journal articles were used to discuss the problems facing African countries and particularly in the SADC region. Newspapers and conference reports informed the results of this paper, the impact of the industrial revolution and the relationship amongst African countries played a significant role in reaching the conclusions. This paper employed a secondary data research method which is normally conceptualized as the desktop research. Secondary research or desk research is a research method that includes the already existing data. Existing data is summarized and organized to increase the overall efficiency of research. Secondary research includes research material published in research reports and similar documents (Bhat, 2017). For this paper, it was necessary to review qualitative data and quantitative data that was used in other journal articles that are similar to this paper. According to Zhou and Nunes (2016: 308), secondary research is commonly recognized as adequate to review the literature and make conclusions on a specific problem. This paper relied on books, journal articles indexed in various databases, business reports and qualitative information based on interviews that took place in various television and radio stations.

Results and Discussion

Principa (2019: 05) reported that the increase in consumer engagement was the result of the 4th industrial revolution. The industrial revolution has the good and the bad however, the bad things seem to affect many people. The 3rd industrial revolution introduced many good things such as improvements in quality of life, increases in income levels globally.

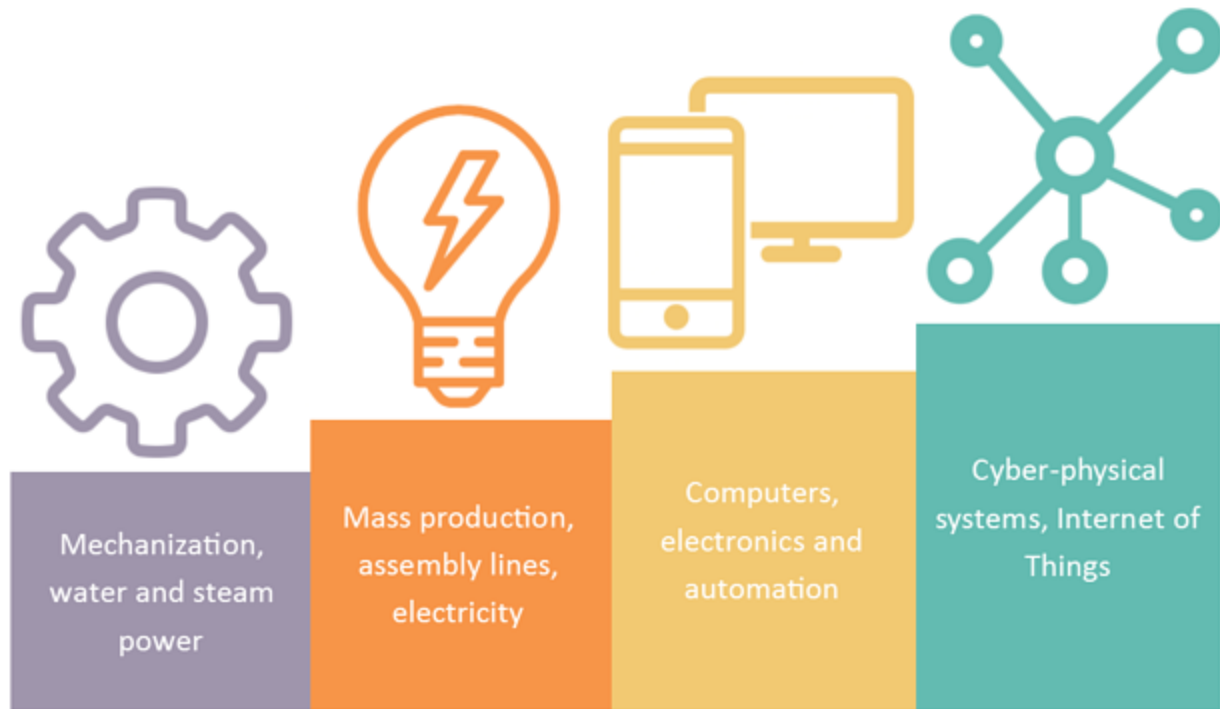


Figure 1: 4th industrial revolutions

Source: Principa (2019)

The above figure indicates that each industrial revolution introduced new technologies. The 1st industrial revolution introduced mechanization, water and steam power, the second industrial revolution introduced mass production, assembly lines and electricity. The third industrial revolution introduced computers, electronics and automation and lastly, the 4th industrial revolution introduced cyber-physical systems and the internet of things. The 4th industrial revolution is changing the ways of production completely and the introduction of the artificially intelligent. Human beings are replaced by human robots and machines to produce products. Trailhead (2018: 06) states that the changes in employment affect the productivity of work. Changes in employment are taking place in different production levels, artificial intelligence is dominant in the 4th industrial revolution. The introduction of the 4th industrial revolution is aimed at reducing production costs and to maximize profits. Artificial intelligence can perform a number of activities at once and replace as many as 5 human beings. 4th industrial revolution is dislocating human beings and contribute to the unemployment of the country. The 4th industrial revolution transforms many jobs in government institutions and private institutions globally. The artificial intelligence is forcing people to be trained on how to use the latest technologies. Fewer skills will

suffer therefore, education and skilling of human beings are necessary. Lifelong learning and talent development are important in the public sector and private sector institutions in order to ensure that employees are on par with technological changes.

According to Bloem, Van Doorn, Duivestein, Excoffier, Maas and Van Ommeren (2014: 05), the roadmap of the European Union is determining how industries must operate. The new production paradigm is introduced globally and the European Union is at the helm of what processes must be followed and how the 4th industrial revolution must be pushed to all countries. The 4th industrial revolution is affecting all countries and no country can escape this revolution. Globalization forces the 4th industrial revolution to conquer the world in all aspects of life which include public sector institutions and private sector institutions. The introduction of the 4th industrial revolution is not economically empathetic because each country regardless of the economic conditions is expected to implement the 4th industrial revolution. Economic inequalities and social imbalances are not considered by the 4th industrial revolution. Social contradictions are anticipated hence community members and precisely employees will be affected. Loss of jobs and fewer job opportunities is caused mainly by the introduction of the 4th industrial revolution. The societal imbalances existed before the introduction of the 4th industrial revolution however, the introduction of this revolution reduced job opportunities.

Voices 360 (2018: 05) states that the 4th industrial revolution is not new and it can be traced back to the beginning of the last century. All industrial revolutions that we had previously precisely tried to replace human beings. The fourth industrial revolution is, therefore, adding more emphasis on mechanisms to ensure that human beings are replaced by machines. South African labour unions have a negative posture towards the 4th industrial revolution and the main cause of that is because many people will lose their jobs. The fourth industrial revolution in South Africa affects the society at large not only labour market but labour market feel more pressure. The fourth industrial revolution is a threat to human beings and beneficial to businesses and improves profit maximization. The resistance of the fourth industrial revolution by trade unions does not mean that the fourth industrial revolution will not affect South Africa. According to Schwab (2017: 25), the concept of the fourth industrial revolution is the interconnecting and monitoring process chains in the production process. The production process happens with less intervention of human beings and that reduces the number of people needed during the production. Mechanization makes the

production more effective and possible at any time. Human beings are less needed and those who are already in the system are reduced to maximize the profit.

The fourth industrial revolution is not well welcomed by most South African communities. Kaggwa (2018: 02) states that the fourth industrial revolution in South Africa has been discussed in many forums but mainly in labour forums. Labour unions in South Africa discuss this concept of the fourth industrial revolution and acknowledge that this revolution is inevitable but jobs must be protected. It is expected that based on the new technological developments introduced by the fourth industrial revolution, people should appreciate this revolution. The new technology comes with top of the class technology but minimizes the human element in the production. The views of trade unions to fight against the 4th industrial revolution are genuine when the state that people will lose jobs however, unions themselves will perish since artificial humans will not need to join any union. There are so many traditional ideas that will cease to exist if all industries are dominated by robotics such as the need to negotiate salaries, working conditions, staff leaves, staff provident funds, Unemployment Insurance Fund (UIF) and Pay As You Earn tax (PAYE). In other words, workers will not only lose out as a result of the fourth industrial revolution but the government will also lose out because robotics humans will not contribute to paying tax and will not consume products or add in the Gross Domestic Product (GDP) of the country. According to Omarjee (2019: 01), the effect of the 4th industrial revolution in the South African labour market will be more effective in the near future. Jobs that will be lost because of the fourth industrial revolution have not been identified because industries in South Africa are still transforming and adapting to new technologies. The biggest fear is on the new jobs that are already performed by machines. The rise in the restructuring in many organizations in South Africa shows that the 4th industrial revolution is forcing institutions to comply with the automation in the production process.

Conclusion

The fourth industrial revolution might create job opportunities for the few but every one job created, about 20 jobs will be lost. Multisector dialogues held by many companies in South Africa confirmed that the 4th industrial revolution will impact on the national economy and the

relationship between South Africa and other countries. South African government, therefore, needs to develop a policy plan that will address the elements of the fourth industrial revolution. Although all revolutions are by nature troublesome, the fourth industrial revolution has the power to produce complete new businesses or sectors while completely abolishing others.

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