International Journal of Social Science Research and Review

http://ijssrr.com
editor@ijssrr.com
Volume 6, Issue 1
January, 2023
Pages: 214-226

Reflection on the Proliferation of the Fourth Industrial Revolution and Its Implications on Rural Areas in South Africa

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http://dx.doi.org/10.47814/ijssrr.v6i1.890

Abstract

The Fourth Industrial Revolution (4IR) is the fourth major industrial event since the 1980s. This event affected everyone and changed the world. It's a dilemma in a world where the wealthy are advancing but the poor are falling behind, especially in rural areas. In a third-world country with a rural majority, like South Africa, many black people will be disadvantaged by the 4IR. The 4IR has implications for people in rural areas. The rich make up the economy of the first world, whilst the third world is largely rural. Rural areas frequently lag in development. For instance, mobile phone coverage is patchy in many rural areas while being available in suburban and semi-suburban areas. The 4IR, which is technology-based, has socio-economic effects on those who live in rural areas. Rural communities are unable to function in a 4IR world, so they are not profiting from it. One of the implications of the 4IR is job loss and an increased unemployment rate due to a deficiency of necessary and potential technical skills. Thus, this article intends to explore the proliferation of the 4IR and its implications on rural areas in South Africa. To realize this, the authors employed a qualitative research approach in the form of a document review. The economics theory of Asymmetric Information (AI) was applied to support the argument and ground of this article. The AI theory was established by George Akerlof, Michael Spence, and Joseph Stiglitz in the 1970s. The AI theory enables those with information to make wise judgments while those without are at a constant disadvantage. In terms of participation, rural communities will be excluded, not through their fault, but due to technological advances. The study concludes by highlighting the implications of the 4IR in rural areas. One of the implications found in this article is increased inequality. Recommendation: To ensure that all citizens have access to information on an equal basis, it is necessary for the government and business to work toward restoring economic competitiveness and improving the quality of governance. The disclosure of information and increased openness on information can help to narrow the information gap that exists between those who are informed (urban) and those who are not informed (rural) residents.

Keywords: *Asymmetric Information Theory; Fourth Industrial Revolution; Rural Areas; Inequality; South Africa*

Introduction

In 2016, Professor Klaus Schwab of the World Economic Forum (WEF) announced that the Fourth Industrial Revolution (4IR) was on the horizon (Azhar, 2017; Xu, David & Kim, 2018). After publishing a book with the same name, he coined the phrase "Fourth Industrial Revolution" (4IR), which was a popular topic of conversation at the annual meeting of the World Economic Forum held in Davos, Switzerland. What precisely does "4IR" stand for? Professor Claus Schwab, the man who established the World Economic Forum, came up with the term (Xu et al., 2018; Rushdi, 2018). It has to do with the technological revolution that is causing the borders between the physical, digital, and biological domains to become less distinct (Xu et al., 2018). The technology, such as artificial intelligence, may be triggered by speech, virtual assistants, driverless cars, health care centres, mobile supercomputing, and many more events of a similar kind (Effoduh, 2016; Xu et al., 2018). This also encompasses things like robots with artificial intelligence, self-driving automobiles, neurotechnology that enhances the brain, and a great deal of other recent developments (Karabegovic & Husak, 2018). The prospect of the terrible economic ramifications that may follow if these unavoidable technical breakthroughs are not embraced is what drives the conversation forward. The authors of this article concur with the above scholars that the 4IR is generally about the dramatic changes in technologies. These powerful technologies seem to be making life easier and enabling the achievement of things that were thought to be impossible in the past. This phenomenon is anticipated to change everything especially socio-economic issues such as transport, jobs, industries, skills and education to name a few. The government of South Africa has established a commission on 4IR and adopted a stance that is a response to the rapidly changing, sophisticated, and adaptable communications networks that are the foundation of an increasingly globalized economy. This position recognizes the necessity of a national digital strategy (Department of Trade and Industry, 2017). This will be necessary and will force a change away from the sectoral silos in which policy has traditionally been created and toward a national policy that will enable the necessary integration across the public sector. This transition will be driven by the necessity of the situation. To meet the requirements of the contemporary economy, there will be a necessity for cooperation between the private sector and the public sector (DTI, 2017; Karabegovic & Husak, 2018).

There is nothing inherently present in 4IR technologies that will lead to the expansion of the economy, the development of new jobs, or the empowerment of communities that are now marginalized (Rushdi, 2018). There is evidence of the so-called third industrial revolution, and some people view the current digital development as little more than an intensification. It should not be assumed that technological advances would automatically result in increases in wages or productivity (Rushdi, 2018). Not until there is the creation of a solid collection of complimentary policies for both the government and the private sector (Lee, Yun, Pyka, Won, Kodama, Schiuma, Park, Jeon, Park, Jung, Yan, Lee, & Zhao, 2018). On the contrary, this is the case until there are specific policy interventions that are supported by evidence and accomplish something new than what has been done in the past. Previous attempts to put rules into effect have been unsuccessful, and the advent of more advanced technologies would exacerbate existing disparities in wealth (Meiring, Kannemeyer & Potgieter, 2018). It is possible to conclude from this that the difficulty presented by the fourth industrial revolution (4IR) is glaringly obvious. Therefore, there is a need to equip both enterprises and individuals with the necessary technical expertise to participate in the global economy. This may be accomplished through education and training (Lee, et al, 2018). Access to high-speed Internet and the training required to use it effectively should be made available to the general public so that they may carve out fulfilling lives for themselves in the brave new world of technology (Karamuzaman, Hamid, Mutalib & Rasul, 2019). It is time that technology concerns were also given equal attention, and a proactive, world-leading collaborative approach should be implemented in the economy of the continent. This should be done as soon as possible (Lee, et al, 2018). This paradox of digital inequality is undoubtedly the single most critical issue to any nation's policymaking at this time (Karabegovic & Husak, 2018; Lee, et al, 2018). Therefore, inequality is seen as

the problem which motivated authors to undertake this article to understand the spread and implications of the 4IR extensively.

The research question to be answered in this article is as follows; what are the effects of living in various economies, such as the first world and the third world, which are alternately characterized by individuals who live in suburban regions and rural areas? To what degree, then, do these different groups of individuals have access to information that may be used to help them make decisions regarding the 4IR environment? This article will outline the purpose of the study, Research methodology, theoretical framework, and literature review, a summary of theoretical findings, conclusion and recommendation.

Purpose of the Study

The purpose of this article is to explore the proliferation of the Fourth Industrial Revolution (4IR) and its implications for rural areas in South Africa. In the course of this article, we will analyze the effects that 4IR has on the communities that are located in rural areas of South Africa and the degree to which their ability to maintain their current standard of living will be jeopardized.

Research Methods and Materials

The article adopted a conceptual research design, which is characterized by the extensive review of secondary data or documents. In other words, conceptual research is a type of qualitative research. Jaakkola (2020) cited in Mamokhere, Mabeba & Kgobe (2022:61) sees conceptual research as a methodology wherein research is conducted by observing and analyzing already present information on a given topic. It is related to abstract concepts or ideas. Philosophers have long used conceptual research to develop new theories or interpret existing theories in a different light. The conceptual research framework constitutes a researcher's combination of previous research and associated work and explains the occurring phenomenon. It systematically explains the actions needed in the course of the research study based on the knowledge obtained from other ongoing research and other researchers' point of view on the subject matter. Equally, Regoniel (2015) and Mamokhere, Mabeba & Kgobe (2022:61), opine that a conceptual framework represents the researcher's synthesis of the literature on how to explain a phenomenon. It maps out the actions required in the course of the study, given his previous knowledge of other researchers' points of view and his observations on the subject of research. In other words, the conceptual framework is the researcher's understanding of how the particular variables in his study connect. Thus, it identifies the variables required in the research investigation. It is the researcher's "map" in pursuing the investigation. As McGaghie, Bordage & Shea (2001) put it: The conceptual framework "sets the stage" to present the particular research question that drives the investigation being reported based on the problem statement. The problem statement of a thesis gives the context and the issues that caused the researcher to conduct the study. Conceptual research doesn't involve practical experimentation but instead relies on the researcher analyzing available information on a given topic.

The researchers adopted this design because conceptual papers ultimately create new knowledge by building on carefully selected sources of information combined according to a set of norms. In the case of conceptual papers, arguments are not derived from data in the traditional sense but involve the assimilation and combination of evidence in the form of previously developed concepts and theories (Hirschheim, 2008; Mamokhere, Mabeba & Kgobe, 2022). In that sense, conceptual papers are not without empirical insights but rather build on theories and concepts that are developed and tested through empirical research.

Below are some of the important steps that researchers followed when conceptualizing and conducting this article. The model below was followed;

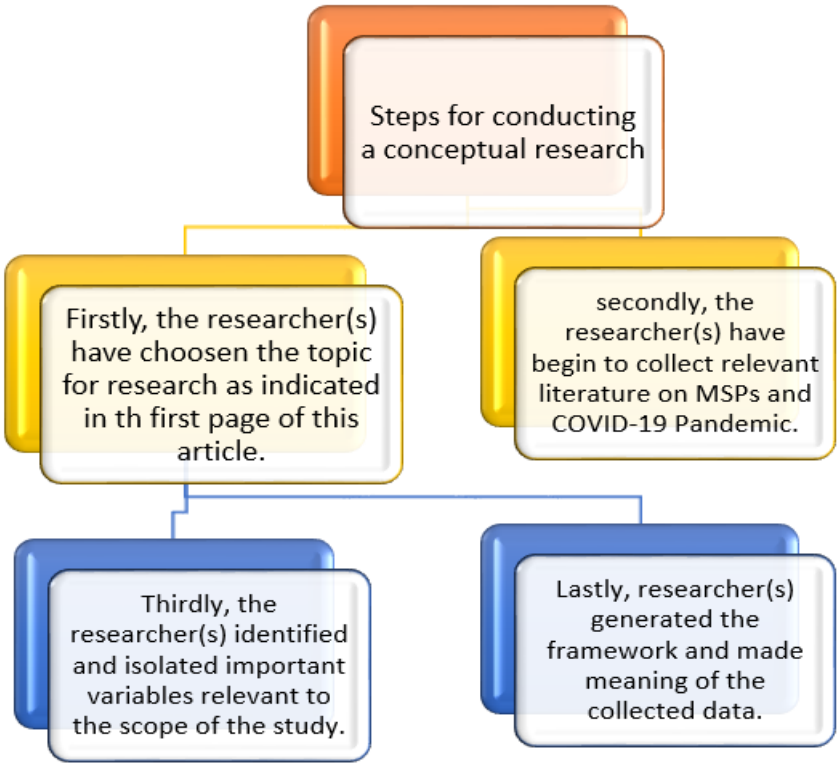

Figure 1: Steps for conducting a conceptual paper

Source: Mamokhere, Mabeba & Kgobe (2022:62)

Once again, the article adopted the conceptual research design, thereby reviewing existing literature. Methodologically, the article begins where the researchers collectively conceptualize the title of the study. The researchers selected a topic within their field of expertise. Given the researcher's field of study, the researchers have adopted a topic under public administration and development studies. According to **Figure 1** above, the researchers collected data through a review of existing literature. The data for this article was generated from peer-reviewed journal articles, books, government legislation, and internet sources as outlined by Sundani & Mamokhere (2021:143). The data collection focused on the proliferation of the 4IR and its implications on rural communities in the South African context. The data was also collected from different databases and sources such as Google Scholar, Google, J-Gate, Scopus, and university libraries using the key themes of this article. Jaakkola (2020) indicates that "the materials used should be preferably scientific journals, research papers published by well-known scientists, and similar materials". Therefore, the researchers of this article extensively reviewed secondary data to validate the argument of this article. The next section outline how the data was analyzed.

Data Analysis

Data analysis in qualitative research is defined as the process of systematically searching and arranging the interview transcripts, observation notes, or other non-textual materials that the researcher accumulates to increase the understanding of the phenomenon (Wong, 2008; Mamokhere, Mabeba &

Kgobe, 2022:62). The process of analysing qualitative data predominantly involves coding or categorising the data. It involves making sense of huge amounts of data by reducing the volume of raw information, followed by identifying significant patterns, and finally drawing meaning from data and subsequently building a logical chain of evidence (Patton, 2002). Sundani et al. (2021:143) indicate that analysing qualitative data entails reading a large number of transcripts looking for similarities or differences, and subsequently finding themes and developing categories. In this regard, the article adopted the Critical Discourse Analysis (CDA) approach to analyse conceptualised documents or secondary data. Mullet (2018) concur that the CDA is a qualitative analytical approach for critically describing, interpreting, and explaining how discourses construct, maintain, and legitimize social inequalities. The CDA approach is mostly used in qualitative research as opposed to quantitative, which focuses on statistics. The existing literature on the implications of the 4IR on rural areas has been explored, and other emerging variables were systematically reviewed and synthesised. In other words, the secondary data was carefully consulted from different sources such as journal articles, books, government legislation, and internet sources. The next section focuses on the theoretical framework to support this conceptual research as it is deemed significant.

Theoretical Framework

In the course of this article, the economics theory of Asymmetric Information (AI) will be utilised developed in the 1970s by George Akerlof, Michael Spence, and Joseph Stiglitz. In his study titled "The Market for Lemons," which was awarded the Nobel Prize in Economics, American economist George Akerlof showed how asymmetric knowledge, in which one side of a possible transaction is more informed than the other party, can cause markets to completely collapse (Marcel, Ortan & Otgon, 2010; Bergh, Ketchen, Orandi, Heugens & Boyd, 2019). The concept of information asymmetry is central to the study of decision-making in economics (Chiyachantana, Nuengwang, Taechapiroontong & Thanarung, 2013). This concept focuses on situations in which one party to a transaction possesses more or better knowledge than the other party (Marcel et al., 2010; Bergh *et al*., 2019). In these kinds of circumstances, an information gap has the potential to produce power imbalances inside a given transaction (Chiyachantana *et al*. 2013). This, in turn, has the potential to occasionally cause the transactions to go awry, leading to a sort of market failure in the worst possible scenario (Chiyachantana *et al*. 2013).

In situations in which people do not receive the same knowledge at the same time, this implies that individuals will have different behaviours and can make various judgments, both of which have the potential to damage the performance of the firm (Marcel et al., 2010; Bergh *et al*., 2019). As a result, according to the notion of information asymmetry, the information that individuals have access to and the choices they can make based on the information that they possess are of utmost importance (Bergh *et al*., 2019). The information asymmetry models operate on the premise that there are two parties involved in a transaction, but only one of them has access to the pertinent information (Marcel et al., 2010; Bergh *et al*., 2019). Asymmetric information models can be useful in some circumstances, such as those in which one party can enforce specific aspects of an agreement or successfully react to the forgoing of certain portions, while the other side is unable to do either of those things (Marcel et al., 2010; Bergh *et al*., 2019). There is the potential for some cases of selection models, in which the uninformed party could lack knowledge when negotiating an agreed-upon understanding of a transaction (Chiyachantana, Nuengwang, Taechapiroontong & Thanarung, 2013). On the other hand, in the case of moral hazard, the party that is uninformed either does not have access to information on the performance of the agreed-upon transaction or is unable to take action in response to a breach of the agreement (Chiyachantana *et al*. 2013).

The adaptation of the AI theory has benefited this article to understand the imbalance or inequality imposed by the 4IR in South Africa. The application of the economics theory of asymmetric information showed that those who will be at an advantage in the era of 4IR are going to be citizens who

have access to all of the knowledge they require to make educated decisions . Information indeed assists individuals in making informed decisions; yet, the essay contends that those living in rural regions are undernourished in terms of information and, as a result, will not be able to fully engage in the 4IR or reap its benefits. They will suffer a devastating blow to their economy as a result of technological progress.

Literature Review

Historical Development of Industrial Revolutions

What exactly is meant by the term "the fourth industrial revolution"? It is necessary to have an understanding of the previous three industrial revolutions to comprehend the fourth industrial revolution (Schwab, 2015). The beginnings of the industrial revolution may be traced back to England in the 17th century (Rushdi, 2018). The first industrial revolution was characterized by the development of steam trains and the mechanization of the manufacturing process (Aikman, 2017; World Economic Forum, 2019). During this period in England, a group of individuals who came to be known as the Luddites emerged and made an effort to put an end to the first industrial revolution by damaging machinery that was used for the manufacturing of goods (PWC, 2017; Rushdi, 2018). The Luddites were unsuccessful, and many of them were executed; yet, the first industrial revolution took place despite the opposition they provided.

Michael Faraday, a British scientist, discovered electricity when he was 21 years old. This discovery sparked the second industrial revolution, which took place mostly in the United States (Rushdi, 2018). It was found that if an electric conductor is moved when it is in close proximity to a magnet, electricity may be generated (Effoduh, 2016). Running a conductor that is located close to a magnet to generate electricity is still today's most common method of doing so wherever in the globe (Effoduh, 2016). Moving the conductor, which is situated in close proximity to a magnet, results in the production of electricity. This is true regardless of whether the energy is produced by a coal-fired power station, a nuclear power station, or a hydroelectric station (Rushdi, 2018). The electric motor is put to extensive use in the manufacturing of items on assembly lines in factories, which led to the advent of mass production (Rushdi, 2018). The phenomenon known as electromagnetic is responsible for the production of electric motors as well as electricity (Rushdi, 2018). The development of semiconductors in the 1950s was largely responsible for the onset of the third industrial revolution (Rushdi, 2018; Akileswaran & Hutchinson, 2019). These were substances that, under certain conditions, may be said to carry electricity (Rushdi, 2018). The introduction of transistors and the electronic age was made possible by semiconductors (Rushdi, 2018; Akileswaran & Hutchinson, 2019). Mobile devices, laptops, and televisions all get their power from transistors.

The convergence of recent advances in digital technology, robotics, and biological sciences is at the heart of the fourth wave of the industrial revolution. Artificial Intelligence (AI) is the driving force behind this transformation (Xu et al., 2018). The term "artificial intelligence" refers to a branch of computer science that aims to give robots the same level of intellect as humans (Xu, et al., 2018). Because of advancements in artificial intelligence, aeroplanes are now able to fly independently without the need for pilots, and vehicles are now able to drive themselves without the need for drivers. All of these advancements are gradually replacing humans with machines (Xu, et al., 2018). 4IR will aid in the creation of technologies that can utilize electric conductivity to identify fatal illnesses, test for breast cancer, and read medical pictures (Rushdi, 2018). The expertise that 4IR can bring to bear in fields such as artificial intelligence, machine learning, and blockchain will help combat issues like social fragmentation and exclusion, and it will also promote national cohesion (Xu, et al., 2018). From what has been stated up to this point, it is reasonable to deduce that humans will eventually be replaced by more

sophisticated bit machines. People will be needed to operate and analyze the output from these machines when they become available.

The Implications of the 4IR on Rural Areas in Terms of Socio-Economic Development

It has been determined that not only the majority of South Africans are living in poverty, but the inequality gap has also grown since the birth of democracy in 1994. South Africa is already one of the most unequal countries that have been documented on the globe. The wealth gap that now exists is continuously large, with the top one per cent of the country holding seventy percent of the total wealth and the poorest sixty percent of the population controlling seven percent of the total wealth (Meiring et al., 2018). The unfortunate aspect of the situation is that South Africa has the lowest Gini coefficient out of all 149 nations in the globe, which means that the country's income inequality is among the worst in the world. The Gini coefficient is a measure of the differences in income between different groups of individuals (Harmse, 2013; Meiring et al., 2018). The Gini coefficient for South Africa falls anywhere between 0.660 and 0.696. (Harmse, 2013). The Gini coefficient is a measurement of income inequality that can range from 0 to 1, with 0 indicating a society in which everyone has the same amount of wealth and 1 indicating a society in which everyone has the same amount of wealth (Harmse, 2013). Based on these metrics, South Africa is one of the countries throughout the world that routinely ranks among the most unequal (Harmse, 2013). The Gini coefficient in South Africa is 0.7, which is not an accurate measurement and may be observed in societies that have been through a period of civil strife (Harmse, 2013).

In 1994, the Gini coefficient for Brazil was comparable to that of South Africa. However, since that year, inequality in Brazil has decreased due to rapid increases in secondary school enrollment and graduation rates without sacrificing quality, the introduction of conditional cash transfers, and consistent economic growth (Harmse, 2013). However, India's inequality levels are far lower than those found in Brazil and South Africa, which stands in stark contrast to the economies of both South Africa and Brazil. Poverty rates in India are significantly greater than those seen in South Africa. Since the introduction of democracy, there has been a slight drop in the levels of poverty in the region; nevertheless, since 1994, there has also been a substantial increase in the degree of economic disparity. There are a great number of factors that contribute to this inequality, but some of the most important ones are the unequal initial assets that citizens have after 1994 in the form of human capital, unequal access to financial capital, and unequal ownership patterns. There are also a great number of reasons that contribute to this inequality. All of these and other endowments contributed to establishing a very uneven growth trajectory, which ensured that households with greater levels of inheritances profited from the limited economic growth that was seen during this period (Deloitte, 2018; Karabegovic & Husak, 2018). During the years of economic expansion, the South African economy was characterized by a growth path that was both skills-intensive and capital-intensive, and it did not generate a sufficient quantity of low-wage jobs, the creation of which is essential to both reductions in unemployment and inequality (Saul & Shawn, 2018; Kamaruzaman et al, 2019). The economy overall In addition to that, it sought to identify the primary drivers, impediments, and policy initiatives for the country's socioeconomic change (Western Cape Department of Agriculture, 2018). As a result of the high levels of wealth inequality and the poor intergenerational mobility that were inherited from apartheid, the inequities were handed on from one generation to the other, with indicators signalling that the situation was becoming worse (Cilliers, 2018). Despite the emphasis placed on education and skills as the means that could pull people from inequality, because many poor South Africans are unemployed and unskilled, it was noted that wealth inequality was much higher than income inequality. This is because many poor South Africans are unable to find work. After all, they lack the necessary skills (Meiring et al., 2018; World Bank, 2018; Dabbagh, 2018). It seems unlikely that the government would be able to meet the National Development Plan targets of eradicating poverty and decreasing inequality by the year 2030. (University of Johannesburg, 2019).

Even while it will surely offer a lot of advantages, they need to be careful that it does not widen the gap that is already rather large between South Africa's rich people and its poor people (IFR, 2019; UJ, 2019). Whether it be for the better or the worse, South Africa is on the cusp of a technological revolution that is fundamentally altering how its people interact with the rest of the world and with one another (Rushdi, 2018; UJ, 2019). The Fourth Industrial Revolution is primarily distinguished by the convergence of previously developed and newly developed technologies that have been built on the foundations of earlier industrial revolutions, most notably the Third Industrial Revolution, which came before the fourth industrial revolution and anticipated the development of, among other things, automation, computing, and telecommunications. The 4IR is primarily characterized by the amalgamation of the existing and the new technologies that have been built on the blocks of previous industrial revolutions (Naude, 2017; Rushdi, 2018). Much of the conversation seems to revolve around the future employment and employability of people as we are confronted with a world where the meaning and value of work begin to shift. The rapid integration of technology into our lives is raising concerns that some jobs, particularly those that do not require specialised skills, will be eradicated or replaced by emergent technologies. It has recently been estimated that as many as 47% of jobs in the United States are at risk of being replaced by technologies (*Sonja, 2022).* The majority of South Africans who are economically marginalized from the formal sector are mostly black people, and they reside in geographically disadvantaged areas such as rural areas and townships (Meiring et al., 2018; World Bank, 2018). Access to technology resources, such as dependable internet connectivity and network coverage, is already challenging, if not impossible, for some members of these segments of South African society as a result of the structure of the South African economy and the spatial make-up of the nation (Meiring et al., 2018; UJ, 2019). Applying the theory of asymmetric economics will make it abundantly evident that they will be deprived of knowledge and will not be able to fully participate in the benefits that will be brought about by 4IR.

What does the Fourth Industrial Revolution signify for the socio-economic situations that are currently being experienced in South Africa? This is another topic that has to be answered. The Fourth Industrial Revolution is like a blade with two sides, one of which is positive and the other of which is bad (Rushdi, 2018). Despite this, it is difficult to predict with any degree of precision or assurance the effects that these implications will have on the economy, employment, and equality (UJ, 2019). This does give rise to crucial problems, upon which the nation has to engage in serious introspection, and for which it needs to make efforts to seek answers and solutions (UJ, 2019). The technological improvements in the automobile industry will have a huge influence on the future of mobility in countries all over the world, including South Africa (UJ, 2019). They will make a significant contribution to lowering the rates of fatalities, accidents, and congestion on the roads (UJ, 2019). In the financial services industry, which is one of the country's core industries, technology has already significantly altered how banking is done. As a result, the majority of banking services have been digitized, and as a consequence of this, more services will move to digital (UJ, 2019). There are now three retail banks in South Africa that do not have any physical branches but instead do all of their business online. These banks are the Discovery, Tyme, and Zero banks. This is helping to make banking more accessible and efficient, and it has put the consumer at the centre of attention. As a result, banking costs should go down as a direct result of these developments (UJ, 2019). The reduction of costs will, however, mean that the costs are being absorbed somewhere else in the economic value chain and that somewhere else is labour. This is because the fourth industrial revolution will come with a negative impact on certain job types, which will increase poverty. The reduction of costs will, however, mean that the costs are being absorbed somewhere else in the economic value chain (Azhar, 2017; Karabegovic & Husak, 2018). There are always going to be positive and negative aspects associated with every change. Because 4IR is too disruptive and unexpected, it is impossible to forecast which of these will play out prominently with it. This is because every new introduction of it will have a distinct impact, making it difficult to predict which of these will play out prominently. On the other hand, there are a few indicators that are now displaying unfavourable patterns, which is something that can be seen in the light of the declaration made by the banks.

For instance, in 2019, Standard Bank stated that it would eliminate 91 branches as part of its ongoing transition to digital banking, with the majority of the closures taking place by the middle of the year. In addition, this choice was likely to have an impact on employees in the neighbourhood of 1,200 different occupations. The bank took the choice to realign its retail and business banking delivery model to the changing demands of its clients in light of the growing adoption of digital banking products and services. This was the motivation for the decision and the decision had implications for those who reside in rural areas. There is not a shred of doubt in my mind that the number of workers will decrease as a direct result of banks reorganizing their business models to bring them into conformity with their increased use of digital products and services. This will lead to a rise in the number of people without jobs and the number of people living in poverty, and the rural poor will be the principal sufferers of this condition of things. Equally, MultiChoice, which is a subsidiary of Naspers, made a public intention to reduce the number of employees they employ to better communicate with their customers through digital means. The repercussions of the 4IR will result in a reduction in the need for human labour and will be felt across the board. The car manufacturing industry is adopting a greater proportion of automated technologies, which will inevitably lead to a reduction in the number of available employment opportunities (Xu, et al., 2018). The continued development and deployment of autonomous cars will, in addition, play a role in the rise in the number of driving occupations that are rendered obsolete. When robotic technology is utilized in the performance of medical-surgical operations, fewer human hands will also be required in operating theatres. This means that more people will not receive employment, and those who already have jobs will lose them (Xu, et al., 2018). This will include jobs in call centres, retail, and administration that are typically done by citizens from rural communities, and the lack of different expertise will leave them without jobs. Additionally, jobs that are manual and repetitive will also be at risk of being replaced by automation and artificial intelligence. A country with an unemployment rate that is already very high would suffer severe repercussions as a result of the loss of a significant number of postings as a result of automation. What would the Gini coefficient look like if these career opportunities were eliminated? What will happen to the disparity in income levels? (Harmse, 2013). The physical arrangement of South Africa is a component that contributes to inequality and should be taken into consideration while thinking about 4IR, as the application of this concept will mostly take place in suburban regions. The majority of South Africa's poor people, who are found at the lower end of the inequality gap, live in rural areas and on the outskirts of urban cities, villages, and townships (World Bank, 2018). Because the technological infrastructure in these areas is either inadequate or non-existent, it is difficult for these already marginalized and dejected poor citizens to benefit from the fourth industrial revolution and to actively participate in the value that is brought by technological amplification.

Theoretical Findings

According to the asymmetric economics theory, it is found that for the youth of today to be successful in the 4IR, they need to increase the amount of knowledge and information that they have, in addition to cultivating the necessary skills, so that they can make the right decisions. Additionally, this set of talents ought to include the ability to solve problems. They can develop answers to the complicated problems that are plaguing society, such as climate change, unemployment, and illnesses since they possess problem-solving skills. The capacity to think critically is another skill that will serve well in this era of the 4IR. It also became clear that the people who live in rural areas are not as exposed as those who live in urban and suburban areas. As a result, they will be missing certain information, which will make it difficult for them to deal with the requirements of the fourth industrial revolution in a manner that is suitable and appropriate. They will only be beneficiaries in the sense that they will be consumers of the output of the fourth industrial revolution, but they will be victims in the sense that they will be negatively affected by the consequences of that. Think about the teaching and learning practices that encourage collaboration, critical thinking, and problem-solving skills to address the urgent issues that plague our society, such as revitalizing urban and rural areas, reinvesting in the agro-processing industry, and

reviving the health system (World Bank, 2018). The problems that are faced by the African continent are vast, unique, and complicated, and they require the mobilization of all of the motive forces, especially the youth of the country, to think critically, creatively, and collaboratively to tackle the problems of bridging the digital divide, technological exclusion, and global alienation, which will be in line with the asymmetric economics theory. In addition, the issues that are faced by the African continent are vast, unique, and complicated (Azhar, 2017). Because creativity is dependent on a comprehensive education that covers a variety of subjects and fields of study, including the human sciences and the technological sciences, the information that young people currently have will make it possible for them to become inventive (Rook, Salvatori, van Moyland & Rosa, 2017; Dabbagh, 2018). The younger generation has to have an understanding of intellectual property issues. The young will be able to ask challenging and perceptive questions if they receive an education that prepares them for the fourth industrial revolution (Dabbagh, 2018). Educational institutions must transform into vibrant nodes of innovation ecosystems; this may be accomplished by integrating creative and critical thinking, as well as teamwork and problem-solving, into the instructional content (Dabbagh, 2018).

Conclusion and Recommendation

To become a contemporary, triumphant, rich, fair, and humane society, the country must reinvent who its inhabitants are and what they can do, and acquire the necessary knowledge. To provide all citizens equitable access to information, the government and businesses must reverse the decrease in economic competitiveness and quality of governance. The fourth industrial revolution might exacerbate inequality between rural and urban areas. This relies on the firms and labour relations South Africa wants through defining minimum requirements. Primary and secondary schools in South African rural areas are still too weak; technical and vocational institutions are too tiny and have an outdated curriculum. South Africa's government should provide a comprehensive set of public assistance programs to foster entrepreneurship and innovation in rural areas. South Africa may achieve this by fostering greater entrepreneurship in elementary and vocational education and by embracing digital technology in teaching and learning. This will ensure that everyone is well-informed in line with asymmetric economic theory and participate in the fourth industrial revolution.

The 4IR changes the economy. Those who think the fourth industrial revolution is irrelevant are aiming for subservience. Everywhere, factories will shrink and enter a post-work future, when labour-intensive tasks will be automated. Some vocations will perish while others will transform throughout the fourth industrial revolution. The fourth industrial revolution will provide new employment, but all communities need the right knowledge to be competitive. If rural populations are trained and educated in the use of technical developments needed to thrive in the fourth industrial revolution, the economic asymmetry theory criterion of knowledge to make an informed decision will be satisfied. Unless poor and rural populations are included, inequality will prevail.

References

Aikman, D.2017. The Fourth Industrial Revolution. Switzerland: World Economic Forum.

Akileswaran, K and Hutchinson, G. 2019. Adapting for the 4IR: Africa’s Development in the Age of Automation. Tony Blair Institute for Global Change. England and Wales. 50 Broadway, London. SW1H0BL.

Azhar, S., 2017. The Fourth Industrial Revolution and Labour: A Marxian Theory of Digital Production. *Review of Socio-Economic Perspectives*. Vol.2, No: 1 June 2917. Pp.103 -124.

Bergh, D.D., Ketchen, D.J., Orlandi, I., Heugens, P.P.M.A.R and Boyd, B.K. 2019. Information Asymmentry in Management Research: Past Accomplishment and Future Opportunities. Journal of Management Vol.45, Issue 1. Pp122-158.

Chiyachantana, C.N., Nuengwang, N., Taechapiroontong, N and Thanarung, P. 2013. The Effects of Information Disclosure on Information Asymmentry. Investment and Financial Innovation. Vol.10. Issue. 1Pp 225-234.

Cilliers, J. 2028. Made in Africa Manufacturing and the Fourth Industrial Revolution. Africa in the World Report 8 April 2018. Institute for Security Studies.

Dabbagh, A. 2018. Preparing for the Future of the 4th Industrial Revolution – A need for an Educational Reform in the Arab World. eAGE18, ASREN. 2nd December 2018.Marriot Hotel. Amman. Jordan.

Deloitte. 2018. Preparing tomorrow's workforce for the Fourth Industrial Revolution for business: A Framework Action. Global Business Coalitions for Education.

Department of Trade and Industry.2017. Industrial Action Plan. Part 1, IPAP 2017/18 – 2019/2020. Pretoria: Department of Trade and Industry.

Effoduh, J.O. 2016. "The Fourth Industrial Revolution by Klaus Schwab. "*The Transnational Human Rights Review* 3. Retrieved at; http://digitalcommons.

Harmse, L.2013. South Africa Gini Coefficient: Causes, Consequences and Possible responses. A Research Project for MBA at the University of Pretoria. Pretoria: Gordon Institute of Business. University of Pretoria.

Hirschheim, R. 2008. Some guidelines for the critical reviewing of conceptual papers. Journal of the Association for Information Systems, 9 (8), 432–441. DOI: http://doi.org/10.17705/1jais.00167.

Institute for Futures Research. 2019. NEDLAC Futures of Work in South Africa. Pretoria: Institute for Futures Research.

Jaakkola, E. 2020. Designing conceptual articles: four approaches. AMS Review, 10 (1-2), 18–26. DOI: http://doi.org/10.1007/s13162-020-00161-0.

Kamaruzanman, F.M., Hamid, R., Matalib, A.A and Rasul, M.S. 2019. Conceptual Framework for Development of 4IR Skills for Engineering Graduates. Global Journal of Engineering Education. Vol.1. Issue1. Pp.54-61.

Karabegovic, I and Husak, E. 2018. The Fourth Industrial Revolution and the Role of Industrial Robots: A with Focus on China. *Journal of Engineering and Architecture*. Vol.18. No.1. June 2018.pp 67-75.

Lee, M., Yun, J.J., Pyka, A., Won, D., Kodama, F., Schiuma, G., Park, H., Jeon, J., Park, K., Jung, K., Yan, M., Lee, S.Y and Zhao, X. 2018. How to Respond to the Fourth Industrial Revolution or the Second Information Technology Revolution? Dynamic New Combinations between Technology, Market, and Society through Open Innovation. Journal of Open Innovation: Technology, *Market, and Complexity*. Vol.4. Issue, 21. pp 1 – 24.

Mamokhere, J, Mabeba, S.J, and Kgobe F.K.L. 2022. The contemporary challenges municipalities face in effectively implementing municipal service partnerships. *EUREKA: Social and Humanities*, *2*, pp.58-69.

Marcel, B., Ortan, I and Otgon, T.2010. Information Asymmetry Theory in Corporate Governance Systems. Annals of the University of Oradea: *Economics*. Vol. 1, Pp.1-7.

McGaghie, W.C., Bordage, G, and Shea, J.A. 2001. Problem Statement, Conceptual Framework, and Research Question. Academic Medicine, 76 (9), 923–924. DOI: http://doi.org/10.1097/00001888-200109000-00021.

Meiring, T., Kannemeyer, C., Potgieter, E. 2018. The gap between rich and poor: South African society's biggest divide depends on where you think you fit in. Cape Town: SALDRU, UCT. (SALDRU Working Paper Number 220).

Mullet, D. R. 2018. A General Critical Discourse Analysis Framework for Educational Research. Journal of Advanced Academics, 29 (2), 116–142. DOI: http://doi.org/10.1177/1932202x18758260.

Patton, M.Q. 2002. Qualitative research and evaluation methods. Thousand Oaks. Cal.: Sage Publications, 4.

PWC. 2017. Fourth Industrial Revolution for the Earth. Harnessing the 4th Industrial Revolution. UK: World Economic Forum.

Regoniel, P.A. 2015. Conceptual framework: A step-by-step guide on how to make one. Simply Educate. Me. Available at: https://simplyeducate.me/2015/01/05/conceptual-framework-guide/.

Rook, D., Salvatori, A., van Moyland, J and Rosa, P. 2017. Innovation Patterns: Upgrading Sectoral Classification for the Fourth Industrial Revolution. Working Paper – V.70. March 2017. Kensho technologies.

Rushdi, A.R. 2018. Making Sense of the 4th Industrial Revolution. Malaysian Industry Government Group for High Technology. Malaysian Foresight Institute.

Saul, L and Shawn, C. 2018. Trade and Industry Policy Strategies for the Department of Trade and Industry. World Economic Forum and the Fourth Industrial Revolution in South Africa. South Africa: TIPS. Retrieved at https://www.tips.org.za/research-archive/trade-and industry/item/download/1722_cf04f6a06c4e94caba97246ca4381357.

Schwab, K. 2015. The Fourth Industrial Revolution: What it means and How to respond. Snapshot. December 12, 2015. Pp 1-9.

Sonja, V. 2022. Fourth Industrial Revolution-Beyond Competencies. Johannesburg: University of Johannesburg. Retrieved at https://www.uj.ac.za/news/fourth-industrial-revolution-beyond-competencies/.

Sundani, N.D and Mamokhere, J. 2021. The impact of student-lecturer relationship on good decision-making and quality promotion in the institutions of higher education and training. African Perspectives of Research in Teaching & Learning, 5 (2), 136–147.

University of Johannesburg. 2019. Leading Africa into the Fourth Industrial Revolution to Solve Future Challenges. Johannesburg: University of Johannesburg.

Western Cape Department of Agriculture. 2018. The Future of Western Cape Agricultural Sector in the Context of the Fourth Industrial Revolution: Synthesis Report. Cape Town: Western Cape Department of Agriculture.

Wong, L. P. 2008. Data analysis in qualitative research: A brief guide to using NVivo. Malaysian family physician: the official journal of the Academy of Family Physicians of Malaysia, 3 (1), 14–20.

World Bank. 2018. Overcoming Poverty and Inequality in South Africa. An Assessment of Drivers, Constraints and Opportunities. International Bank for Reconstruction and Development. Washington DC: World Bank.

World Economic Forum. 2019. Leading through the Fourth Industrial Revolution Putting people at eh Centre. White Paper. Switzerland: World Economic Forum.

Xu, M., David, J.M and Kim, S.H. 2018. The Fourth Industrial Revolution: Opportunities and Challenge. *International Journal of Financial Research*. Vol.9, No: 2. 2018. Pp.90-95.