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Is Southern Africa
ready for the
Fourth Industrial Revolution?

A new technological revolution that will drastically alter our way of life, work, and interpersonal interactions is imminent.

Due to the digital and technological gap, the fourth industrial revolution (4IR) could lead to greater inequities between economies as communities are impacted by the slow process of upskilling workers to work with new and advanced technologies. However, a competitive advantage can be gained by any society that quickly adopts new technologies. In 2020, CoE-HUMAN supported an important segment of research to investigate how 4IR is and would impact human development within South Africa. The output was included in a Development Southern Africa special issue entitled "The 4th Industrial Revolution and Human Development"'
and is now released. The issue can be accessed here:
https://www.tandfonline.com/cdsa20
Research from our grantees funded by the DSI-NRF, through the CoE-HUMAN, is featured below discussing important issues related to the 4IR and Human Development.

The findings show areas of both concern and of hope. For example, despite 4IR's potential to improve human well-being in sustainable and creative ways, over half of Africa's labour is susceptible to digital transformation if steps are not taken to rapidly bring sub–Saharan African workforces up to speed (Alabi & Mutula, 2022).

Artificial intelligence and average wages in Southern Africa: A panel VAR approach (2022a) and Effect of automation on unemployment: The case of Southern Africa (2022b)

Dr Godfred Anakpo and Prof Umakrishnan Kollamparambil

Dr Godfred Anakpo

Prof Umakrishnan Kollamparambil

- Increased human productivity is one of the anticipated key benefits of 4IR through the advancement of technologies such as Artificial Intelligence (AI). Using the same global data, Anakpo & Kollamparambil (2022a) examined the impact of AI on average wages in Southern Africa. Findings indicate that AI is positively correlated with gross domestic product per capita. However, AI also correlates positively with unemployment and inflation, and shows a strong negative link with average wages in Southern Africa. The authors argue for policy that promotes skills development and wage stabilisation, alongside the redistribution of income. *https://doi.org/10.1080/037683 5X.2021.1967111*.
The associations between technological advancement and economic growth are complex with many concerned that automation in the workplace may further contribute to unemployment. In a second study, Anakpo & Kollamparambil (2022b) assessed if this was the case in Southern Africa. They found that automation had a positive relationship with unemployment rates, and that increases in foreign direct investment and business outputs reduced unemployment, highlighting the complexity of these relationships.

- According to the study's conclusions, a policy strategy focusing on wage stabilisation, income redistribution, advanced learning, and skills development training that fosters competitiveness to computerisation is recommended. *https://doi.org/10.1080/0376835X.2021.1978931*

Characteristics, enablers, and barriers affecting entrepreneurial behaviour for academics in low- and middle-income countries: A scoping review

Mr Alfred Farrel

Mr Alfred Farrel

- In this paper, Farrell et al. (2022) argue that academic researchers also need to become entrepreneurs to fully leverage technological advancements. Based on the scoping review methodology developed by the Joanna Briggs Institute, this study sought to comprehensively identify the evidence and research gaps related to academic entrepreneurial activation.
The authors report that the most common characteristics of academic entrepreneurs included hunger for success, desire for independence, innovation, creativity, futuristic thinking, and self-esteem. However, for entrepreneurship to flourish, donor support, strong regulatory systems, political and macroeconomic stability are needed.

- According to the study, there is a need for the creation of low-and-middle-income country (LMIC) relevant intention-based theoretical frameworks (or the improvement of current models) that consider the resource-limited environments in which LMIC higher education institutions and their academics operate as well as the role they are expected to play in addressing the socioeconomic conditions in which they exist. *https://doi.org/10.1080/0376835X.2022.2027230*

Human development for the fourth industrial revolution: Which way for Sub-Saharan Africa?

Dr Adefunke Olanike Alabi and Prof Stephen Mutula

Dr Adefunke Olanike Alabi

Prof Stephen Mutula

- The fourth industrial revolution has raised severe concerns regarding human development in both developed and developing countries. Using time series data spanning from 2003 to 2019, Alabi & Mutula (2022) looked at how 4IR affected countries in sub-Saharan Africa (SSA). Out of the 46 countries in SSA, 11 were chosen as the study's sample based on their position on the Global Competitiveness Index. The results demonstrate the need for a paradigm shift in pedagogy, the environment, and the curriculum.

- The study's key finding is that mean years of schooling (MYS) have a beneficial and significant impact on Human Development. The authors conclude that SSA nations should adopt a human-centric strategy of Human Development for the 4IR. As a result, policymakers need to intensify efforts to enhance citizens' 21st century skills together with infrastructure and innovative capacity. *https://doi.org/10.1080/0376835X.2022.2098090*

CONCLUSION

Even though 4IR may lead to the creation of many new jobs and increase demand for those that already exist, not everyone may have access to the opportunities that the revolution will bring about.
The developed world has paid a lot of attention to the impact of technical innovation on economic growth in recent decades due to its rapid development and possible consequences. How this will play out in developing nations is yet to be seen

THE HEALTHY AGING ADULT SOUTH AFRICA

REPORT CARD 2022

The Healthy Aging Adult South Africa Report Card systematically reviewed national and regional prevalence data published between 2013 and 2020 on **eight major risk factors for non-communicable disease (NCD)** in middle-aged South African adults (45-65 years). This age group are at the highest risk for many of these NCD risk factors (diet, physical activity, tobacco use, alcohol consumption, obesity, hypertension, dyslipidemia, and diabetes mellitus) and national surveillance of these risk factors in South Africa will inform strategies to reduce the growing burden of NCDs in the region.

Each indicator was assigned two grades:
(1) on the availability of prevalence data, and (2) on the question of whether policies exist and are fully implemented for the relevant indicator. Obesity, hypertension, diabetes, and alcohol use all scored an A for the availability of prevalence data.
For policy and implementation, tobacco use, and diet scored A.

HEALTHY AGEING ADULT SOUTH AFRICA REPORT CARD 2022

Key Findings

Physical activity
The ideal method to begin physical activity for this age group is to focus on a low- to moderate-intensity activity, such as walking 5-15 minutes three times per week.

Alcohol Consumption
The report recommends that adults in this age group refrain from drinking or drink in moderation by limiting intake to two drinks or less per day for men and one drink or fewer per day for women, or on days when alcohol is consumed.

Tobacco use
Smoking leads to diseases such as chronic obstructive pulmonary disease (COPD), incapacity, injury to practically every organ system in the body, and premature mortality. The report recommended quitting smoking and that clinicians inquire about tobacco use from all middle-aged persons, offer advice to cease using tobacco, and offer behavioral interventions for quitting, especially to men.

Diet
To track progress towards the goal of a 30% reduction in population salt/sodium intakes, routine monitoring of salt intake in this age group is required. Data on dietary changes and related causes, like food insecurity, are needed to inform interventions and meet other NCD targets.

Dyslipidemia
To improve our measurement accuracy, cut-off points specific for the African population are needed, and the clinical benefit can be significant. There is also a need for national surveys that provide prevalence and recent treatment data specifically for the 45- to 65-year-old age range.

Hypertension
There is a need for more recent national prevalence data to analyse the impact of legislation on middle-aged persons' sodium intakes or blood pressure, as well as whether South Africa is on track to meet either the South African national or global objective.

Diabetes
There is a need for better management that focuses on glycemic control and lowering risk factors for macro- and microvascular illness. If there are no contraindications, physical activity should be strongly encouraged for this age group.

CONCLUSION:
Although national and local prevalence data is available, some indicators, such obesity, hypertension, and diabetes, have more comprehensive data than others, such as diet and physical activity. It is evident that there is a gap between the grades for all indicators' prevalence and policies, with some (such as physical inactivity, alcohol consumption, obesity, hypertension, and diabetes) obtaining higher grades for the availability of prevalence data while others obtain higher grades for policy and implementation (tobacco, diet, and dyslipidemia). The implementation of policies should be prioritised and supported using prevalence data that is currently available for indicators like alcohol consumption, as well as the use of standardized methodology in national and regional prevalence studies.

Quantitative Analysis Training Webinar Series

Working with Wits biostatisticians we developed a six-part webinar series which teaches key concepts in statistical application, using a fast-track method to gain statistical knowledge.

Final Webinar 6:
The scientific method and reporting of scientific research, 24 November 2022
To view previous webinar in the series and other learning resources, visit:
CoE-Human Learning Resource Questionnaire development and factor analysis,
29 September 2022

To view this series click here

To view previous learning resources, visit: CoE-Human Learning Resources

Publications

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