

## Digital transformation for women after covid and the current effects of climate change in Africa.

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### ABSTRACT

This article aimed to investigate the current climate change effects as well as challenges related to digital transformation for women post-covid era. The study was qualitative in nature. Literature was sourced from online repositories. The findings revealed that among other things, COVID-19's effects in Africa included employment losses, greater job insecurity, rising poverty levels, an increase in unpaid caregiving, an increase in domestic violence instances, and cyber hazards. Regarding the digital transformation for women in Africa, it was established that digital illiteracy, a lack of representation of women, a lack of internet access, and a lack of access to mobile phones were some of the major issues affecting women. Women can serve as change agents in addressing the effects of climate change, according to research on climate change in Africa. In general, the article showed that women in Africa are falling behind when it comes to digital change. For improving the digital transformation for women, a number of potential solutions were put out. Among these are developing gender-sensitive legislation, expanding access to and utilization of technology, and preventing cyberbullying that targets women and girls.

**Keywords:** covid, climate change, pandemic, health, digital transformation, poverty, business, sustainable development goals

### 1.INTRODUCTION

The process of digital transformation is how firms integrate digital technologies into every aspect of their operations to bring about profound change (Hung, Hoa, Hai & Nguyen, 2023). The integration of digital technology into every aspect of a business, substantially altering how you run things and provide value to clients, is also known as "digital transformation" (Antonopoulou, Begkos, & Zhu, 2023). Access to digital opportunities vary between genders and research has

shown that women have been adversely affected by lack of digital opportunities(Oktay Yılmaz & Ünlü, 2022).

The COVID-19 pandemic wreaked havoc on a global scale. The adverse effects range from myriad deaths, closure of business, reduced income generation for economies from tourism, increased burden of caregiving by women, cancellation of outdoor leisure, job losses, just to mention a few (Onyekuru, Ihemezie, Ezea, Apeh, & Onyekuru, 2023; Joshi, Lopus, Hannah, Ernst, Kilungo, Opiyo, Ngayu, Davies & Evans, 2022). The effects of COVID-19 pandemic varied between economies and Africa was adversely affected by the pandemic. This is so because bulk of the African economies have poor health facilities, poor access to internet and limited information and communication technology, poor policies as well as numerous political, economic, and social challenges (Nchake & Shuaibu, 2022a). The pandemic increased the marginalisation of women, and their capacity remains weak in as far as participation in key issues such as climate change, job creation in the productive sectors of the economy (Berg et al., 2022).The objectives of the study are:

- (1) To examine how digital transformation can be achieved in the post-COVID-19 pandemic era with a specific focus on African women.
- (2) Analyse the current effects of climate change in Africa

Overallly, it can be said that the participation of women in the green economy is very low owing to the diverse challenges they face, and this requires a durable solution (Tandon, 2015).The lack of digital transformation for women is a major issue in Africa because the continent is not technologically developed, and the continent cannot enjoy diverse benefits that comes from the use of technology. Some of these benefits are efficient production processes, entrepreneurial opportunities, employment creation, increased sales from selling of goods and services via e-commerce and increase economic growth. Women who are running technological business pay taxes to the state and this helps to improve the financial position of an economy. The tax is useful for provision of public and merit goods by the state. On the contrary if such women are digitally excluded there is loss of tax revenue. Research shows that economies that do not promote technological business run by women loose an estimated US\$24 billion in tax revenue (Alliance for Affordable Internet, 2023).

The digital challenges faced by women in the business and other sectors can be solved through digital transformation. From a technological perspective, women suffer from gender bias, unequal remuneration, institutional barriers, digital illiteracy, limited growth opportunities as well

as lack of exposure to the digital world. It is essential for African economies to prioritise digital transformation for women because it can help to boost gross domestic product (GDP) levels. This will ultimately help in employment creation and reduction of poverty levels. Research shows that advancing women equality in all key economic activities can lead to an addition of US\$ 12 trillion to the global GDP levels by 2025 (Woetzel, Madgavkar, Ellingrud, Labaye, Devillard, Kutcher, Manyika, Dobbs&Krishnan, 2015). Thus, when women are not digitally empowered the African economies will loose the expected contribution in terms of GDP.

Digital transformation for women will help African economies to attain some of the Sustainable Development Goals (SDGs). For example: SDG 5 which focuses on attainment of gender equality. Additionally, transformation can be useful for supporting industrial innovation initiatives and this ultimately leads to attainment of SDG 9. To add more, digital transformation is useful for reducing the current gaps between men and women and this will help African economies to increase chances of achieving SDG 10 of reduced inequalities(United Nations, 2023).

This article seeks to examine how digital transformation can be achieved in the post-COVID-19 pandemic era with a specific focus on African women. In the article a discussion on current effects of climate change in Africa will be tackled as well. The article is structured as follows: Section 2 presents the research methodology. Section 3 is going to be based on the findings and discussion. Section 4, 5 covers the discussion on digital transformation for women in Africa and nexus between women, digital transformation, and climate change respectively. The conclusion will come under section 6.

## **2. METHODOLOGY**

This article was based on qualitative research methods. Data was collected from diverse online repositories such as Google Scholar. Documentary analysis was employed in the study to analyse these articles. The inclusion and exclusion criteria is presented in the table below.

**Table 1: Inclusion and Exclusion criteria**

| Topic  | Inclusion Criteria   | Exclusion Criteria   |
|--|--|--|
| COVID-19 and Digital Transformation          | - Peer-reviewed articles in English - Focus on digital transformation related to COVID-19 - Empirical studies, reviews, or policy analysis -                                   | - Non-English papers - Editorials, opinions without empirical or analytical data - Studies not focused on COVID-19's impact on digital transformation - Publications before Dec 2019 |
| Digital Transformation for Women After COVID | - Peer-reviewed, English articles - Focus on women's digital inclusion, empowerment, barriers post-COVID-19 - Studies related to Africa or with implications for African women | - Papers not addressing women or gender-specific digital issues - Studies pre-COVID without post-pandemic relevance - Non-empirical articles - Non-English or without full text      |
| Current Effects of Climate Change in Africa  | - Peer-reviewed empirical or review articles in English - Focus on climate change impacts on African regions   | Studies not focused on Africa -  |

**Source: Own Construct (2025)**

Table 1 describes shows the inclusion and exclusion criteria which was used to determine which papers were chosen for review. Inclusion criteria specify the necessary characteristics for a study to be considered relevant, such as being peer-reviewed, written in English, and focused on a specific topic, such as COVID-19's impact on digital transformation, women's digital empowerment after COVID, or climate change effects in Africa. Exclusion criteria specify characteristics that invalidate studies that were not selected, such as being non-English, opinion pieces, or inappropriate to the topic or era.

### **3. FINDINGS AND DISCUSSION**

This section presents the findings and discussion. The entire section is structured as follows: Section 3.1 covers discussion on COVID-19 effects on women in Africa. Section 4 and 5 covers the discussion on digital transformation for women in Africa and nexus between women, digital transformation, and climate change respectively.

### **3.1 COVID-19 effects on women in Africa**

The COVID-19 adversely affected women in diverse ways. Research shows some women who run informal business have closed them down due to the pandemic (Torres, Armah, Zereyesus, & Annim, 2021). The effects of COVID-19 pandemic are going to be discussed as below.

#### ***3.1.1 Job losses***

A lot of jobs were lost due to the pandemic in Africa and even globally. This effect was felt both in the formal and the informal sector. The hardest hit was the informal sector: studies have shown that 74% of women in Sub-Saharan Africa work in the informal sector (World Bank, 2023). Additionally, some of the African informal businesses do not have insurance that covers them from such unexpected events hence they were greatly affected by the pandemic.

Due to the COVID-19 pandemic restrictions that limited movements, a lot of the informal business collapsed and some of the products could be not sold online by the business owners. Lack of digital knowledge and capacity further limited the success of women-led informal business during the pandemic (Chen & Wei, 2023). Although some of the women could sell their services online, due to disruptions of supply chain value the rates of sales were very low. This problem affected both men and women and there are claims the later were more affected (United Nations, 2021). This calls for a need of ensuring that women gain access to digital technologies for enhancing their business.

#### ***3.1.2 Increased job insecurity***

A number of companies that were affected by the pandemic have not yet recovered financial and some of them are still operating below capacity (Mancuso, Messeni Petruzzelli, & Panniello 2023). Due to this fact, some of the companies have reduced working hours of the workers in a bid to cope with the covid aftermath. This poses job insecurity to women and men and this can also have emotional effects as in this world one requires a stable job for survival. Moreover, some of the companies are still retrenching workers to lessen the financial burden.

#### ***3.1.3 Harsh working environment in health sector***

According to statistics, women make up 90% of social care workers and 85% of nurses working in the global health sector (da Silva et al., 2023). According to these figures, women represent a larger proportion of the workforce in the healthcare industry and it is important to note that some of them were exposed to the pandemic due to the health facilities that lacked enough

technological equipment. This is further supported by the fact that the demand for smart medical devices and other digital accessories used in the health sector were on high demand and in short supply during the covid era (Chandra, Kumar, Thankur, Chattopadhyaya, Alam & Kumar, 2022).

Research shows women in the healthcare were exposed to harsh working conditions especially those in the African region and some of the challenges they faced were lack of ventilators and other equipment to use (World Health Organisation,2021).The health sector work environment during the pandemic was characterised by high admission rates of patients, burnouts, spread of the covid virus to workers just to mention but a few(Alwesmi, Dator, & Karavasileiadou, 2022). These effects were varied but the Global South was more affected as relative to the Global North, since the former is characterised by high unemployment levels, high poverty levels, poor health care infrastructure, political turmoil, prevalence of natural disasters such as floods.(Siddiqa, 2021; Bakaboukila Ayessa & Hakizimana, 2021; Cantelmo, Fatouros, Melina & Papageorgiou, 2022). Therefore, the covid made it worse for bulk of the African economies to operate efficiently. The above discussion shows that digital transformation is also key even in institutions where women work. Thus, digital transformation for women need to be achieved at institutional level as well as from the grassroots levels too.

#### ***3.1.4 Increased unpaid care work***

Research shows that the increased cases of COVID-19 pandemic led to a lot of illness and some of the hospital facilities were overcrowded(Kamis, Stolte, West, Fishman, Brown, Brown & Farmer, 2021). As such, some of the COVID-19 patients were send back home. This increased a burden on women to look after the sick covid patients (Dugarova, 2020). Some women were forced to take leave days from work so that they offer care services to their loved ones. All this was unpaid work and it also exposed women to the deadly disease.

This discussion shows the vulnerability of women during covid. This effect of unpaid work increases the number of challenges women experience and further widens the inequality gap. Some of the developed economies had better facilities that were used to accommodate covid patients. These facilities contained the necessary technological equipment. In the African context, especially in remote areas for example in Zimbabwe, there were nosuch facilities(Makoni, 2020). Thus, if there were modern health facilities with technological equipment, women were going to be relieved of unpaid work since they were going to take the sick patients to these facilities.

### ***3.1.5 Increased poverty levels***

Poverty is a multidimensional aspect and can be described using diverse proxies such as access to nutritious food, shelter, water and sanitation, peace, access to education and healthcare just to mention a few (Agboola and Balcilar 2012, 1; Tsiboe, Armah, Zereyesus, & Annim, 2023). The high number of job losses in different industries led to loss of incomes. This exposed women and families to high poverty levels. Thus, in some context the COVID-19 pandemic has redressed some of the gains made by different economies in as far as the attainment of Sustainable Development Goal (SDG) 1 of poverty reduction (Pradhan, Yadav, Ghosh & Prashad 2023). This also affected even people who were dependant on the breadwinners who were laid off due to the pandemic.

Research shows that an estimated 55 million Africans could have been forced into dire poverty due to the COVID-19 pandemic (Koudjom, Tamwo, & Kpognon, 2022). Given these high poverty levels, women who lack technological skills could not tap into job opportunities that were offered online. COVID-19 pandemic led to more business shifting online, thus only those people who possessed technological skills managed to escape a certain degree of poverty by maximising on online business and job opportunities. For women in Africa especially in remote and marginalised areas, who suffer from digital exclusion, their poverty levels could have worsened during the pandemic. This shows the extent to which digital transformation for women should be prioritised by African economies in this forth industrial revolution era.

### ***3.1.6 Increased cases of domestic violence and online dangers***

Lack of digital transformation limit the capacity of women to address some of the challenges they face such as domestic violence and sexual exploitation. Globally, for instance, the number of people who die from domestic violence has increased under lockdown, with around one death per week in European Union (EU) (European Parliament, 2023). There have also been instances of abuse in Africa, including domestic and sexual abuse of women and girls, intimate partner violence (IPV), sexual harassment, child marriage, female genital mutilation (FGM), and domestic violence that is aggravated during lockdowns (Moon, Lim & Kim, 2023; Asratie, 2022).

Additionally, with the rise in online learning, there have been more instances of child exploitation, harassment and abuse (United Nations Women in Africa, 2023). Research shows that technology can be used to tame some of these social ills. UNICEF (2023) claims that technological solutions can increase awareness and reduce a user's risk of violence. For instance, the mobile app Safetipin crowdsources and maps real-time data from users to provide

information on public safety and the software uses location safety scores to assist its users, mostly women and girls, in making travel plans and locating safe lodging (UNICEF, 2023).

However, if women in Africa lack technological know-how and access to smart phones, they cannot enjoy the benefits of Safetipin technology. Additionally, some economies make use of cutting-edge software programs like Virtual Safe Spaces (VSS) to make it easier for people to access information and services in a way that is secure, culturally acceptable, and accessible to them, even in places where physical services are scarce (UNICEF, 2023). Therefore, digital transformation for women in Africa should cover economic and social aspects that have an impact on women. Thus, policy makers on digital transformation post covid era should ensure that women are not exposed and girls are not exposed to the aforementioned online dangers.

#### **4.DIGITAL TRANSFORMATION FOR WOMEN IN AFRICA**

Digital transformation can be in the form of process transformation, business model transformation as well as organisational digital transformation. Africa is still lagging in as far as harnessing digital technology usage is concerned (Kohnert, 2021). Women who run their business need to be empowered so that they can be change agents for internal organisational digital transformation in their business. This applies to women in the production sector, unless they are fully empowered, they may not be active in initiating process transformation in their workspaces.

Business model transformation is the process of fundamentally changing how an organization functions and provides value to consumers in order to enhance performance, compete more effectively, and adapt to shifting market conditions (Öberg, 2023). African women are involved in business, and some of them need advice on how to modify their enterprises now that the pandemic has altered the climate.

Low rates of digital transformation for women in Africa are attributed to a number of challenges. Some of these will be discussed below and the discussion is going to be centred on women in Africa.

##### **4.1 Key Challenges**

###### ***4.1.1 Digital illiteracy***

Digital illiteracy can be defined as the inability to learn, evaluate, and find knowledge through digital platforms and online media with the help of effective technology use (Fernando & Kumar Jain, 2022). The use of the internet is very essential in as far as digital transformation is concerned.

The highest gender disparity gap in mobile internet use is seen in Sub-Saharan Africa, where women are 37% less likely than males to use it (Gilwald&Patridge, 2022). In addition, many women and girls lack the knowledge and abilities needed to participate in the digital world, which contributes to their continued economic exclusion (Tetteh, 2023).

Poorly designed curriculum that do not incorporate information and communication technology studies, lack of computer laboratories as well as some cultural values where male students are prioritised over females in terms of educational access all contribute to digitalilliteracy(Nchake & Shuaibu, 2022b; Makiwa & Steyn, 2016). All these aspects must be addressed to ensure that women benefit from digital transformation.

#### ***4.1.2 Lack of women representation***

The technological industry in Africa is more male dominated and women constitutes a smaller fraction (United Nations, 2021). Technology is shaping the global village at large and its use is very crucial to business. Research shows that an estimated 230 million jobs in Africa will require digital skills by the year 2030 (Porfido & Marks, 2020).

However, if we look at the current challenges faced by women and the readiness of African economies and institutions to provide a platform for digital transformation for women, a lot may be left out. Chief important to note is the fact that since women are fewer in tech related jobs, they also suffer from poor representation in as far as decision making on digital transformation issues. As such their needs in as far as digital transformation is concerned may not be well addressed due to the lack of sufficient presentation.

#### ***4.1.3 Gender bias***

Gender bias is a key factor that limit the capacity of women to be effective in as far as digital transformation is concerned. According to the International Labour Organization (2017), gender bias is the accidental and automatic mental associations that are based on gender and are influenced by customs, norms, values, culture, or experience. Societies or communities that still perceive that women should not do technical courses or jobs puts a limit on women's potential and as such it may take long for such digital transformation to be realised. There is need for communities and African economies to ensure that they address some of the cultural values that limit the progression of women into the digital space.

#### ***4.1.4 Lack of access to internet and mobile phones***

Lack of access to internet and mobile phones limit the prospects of digital transformation for women in Africa. Lack of internet and mobile phones also limit women to access digital banking services as well as other e-commerce activities. Around 400 million individuals on the African continent lack access to digital financial services, with women making up an estimated 60% of this number (Kouladoum, Wirajing, & Nchofoung, 2022) (Porfido & Marks, 2020). These impediments to the digital economy are much more prevalent for women who live in rural areas and come from low-income families (Porfido & Marks, 2020). These statistics shows that more need to be done to ensure that women get access to digital services.

Research shows that girls in particular continue to endure higher rates of poverty and poorer levels of schooling in rural areas due to limited access to digital technology (Dunne, Humphreys & Szyg, 2021). In terms of phone and internet availability, rural Africa falls behind urban areas (Porfido & Marks, 2020). According to estimates, typical cellular networks are currently inaccessible to 100 million individuals who reside in rural and distant areas (Porfido & Marks, 2020). These people will be excluded from the technological benefits. Thus, a solution is required to solve this anathema.

#### **4.1.5 Lack of infrastructure and support services**

Some of the African economies such as Zimbabwe have been trying to improve the status of digital technology through the introduction of computer lessons from grassroots levels (Dzinoreva & Mavhunga, 2022). However, poor information and communication technology infrastructure limit scores from benefiting from the use of technology. The most affected areas are the rural places (Moyo-Nyede & Ndoma, 2020). Thus, young girls and women continue to lack the exposure to digital technology.

Additionally, some of the schools for example in Zimbabwe where computer programs were launched, there is no internet and experts who can help to teach on digital technology (Nhengu, 2023). Unless these challenges are addressed, digital transformation remains a pipeline dream for African women. Digital transformation is very key for women and young females especially after covid pandemic. This is so since several services are now offered virtually, and women and young girls need to be equipped so that they enjoy the diverse benefits from the use of digital technology.

## **5.NEXUS BETWEEN WOMEN, DIGITAL TRANSFORMATION, AND CLIMATE CHANGE**

This section seeks to discuss the link between women, digital transformation, and climate change. Climate change is a Sustainable Development Goal (SDG) number 13 and African economies have a mandate of achieving climate friendly practises by 2030 (United Nations, 2023). It is everyone's duty to ensure that anti-climate change practises are abolished to save the environment and the global community at large from adverse climate change effects. Equally related to this, achieving gender equality is an important aspect for all economies on an international scale and it is SDG number 5. Digital transformation is an important aspect for all economies as it enhances economic growth, and this can be linked to SDG 9 of fostering innovation and supporting industrialisation (United Nations, 2023). The above explanation shows that women, digital transformation, and climate change are key issues embedded in the SDGs.

Digital technology is an effective tool which is now used in different sectors of economies to address diverse challenges (Rtyshcheva, 2020). It is noteworthy to point that the effects of climate change vary and technological experts on a global scale have been devising solutions to counter such effects through climate technologies. The Google Flood Hub warning system is one example of a technological system used to address climate change (Song, Park, Lee & Song, 2019). It employs machine learning technology to warn individuals in danger when rivers, oceans, and lakes pose a hazard to life or property. Artificial intelligence (AI) can also be used to enhance hazard predictions for localized long-term events like sea level rise and for quick, extreme occurrences like hurricanes, among other possibilities (Guikema, 2020).

Furthermore, given some of the challenges that are faced by women both pre-and post- covid in as far as digital transformation is concerned, the effects of climate change may not be effectively tackled. This is further supported by the fact there are few women who are into the technological space in Africa. Thus women in Africa need to be digitally empowered so that they can use their expertise to address climate change effects in Africa.

### **5.1EFFECTS OF CLIMATE CHANGE IN AFRICA**

Long-term changes in weather and temperature trends are referred to as climate change and such fluctuations may be brought on by significant volcanic eruptions or variations in the sun's activity (United Nations, 2023). The global village as a whole is affected by climate change in a variety of ways, and research indicates that there are climatic impacts on gender. Women can be

victims of climate change; they can also act as change agents, and they can be influential in the attainment of SDGs.

### ***5.1.2 Women as victims of climate change***

Due to gender norms, inequality, and poverty, women are impacted differently and more severely by climate change and migrations caused by it (United Nations, 2023). Research shows that one in four households in Africa are run or head by a woman (De Walle, 2023). Additionally, as discussed prior bulk of women staying in rural areas in the Africa continent rely on subsistence farming and they are exposed to high poverty levels. Climate change in Africa has led to floods, cyclones, destruction of agricultural produce as well as internal displacement of many people (Moyo et al., 2023; Oyelami et al., 2023). These effects make women to be more vulnerable as they make up the bigger fraction of population as compared to men and some rely on subsistence farming in terms of earning a living. Technology can be used in farming as well but this requires financial resources as well as the knowledge of using it.

In Sub-Saharan Africa, according to research, women produce 80% of the food, and more than 60% of all employed women are involved in agriculture (Dieterich, Huang & Thomas, 2016). However, women have less access to land, productive assets, social protection, and technology, which are essential to production, mostly because of gender disparities, roles, and obligations (Ocheje, 2019). Additionally, if some of these women are not empowered digitally and educationally, they may not be even effective in their agricultural production. So it is very important to note that women empowerment in essential and the public and private sector should take a leading role in supporting digital transformation for women.

### ***5.1.3 Women as change agents***

Women are significantly underrepresented in decision-making processes at all levels, despite the fact that they have the specialized expertise and abilities to make an effective contribution to climate change adaptation and mitigation using digital skills and other mechanisms (Revelo, 2021). There is need for women to have access to all opportunities and it is crucial to note that some of the women are into digital technologically related careers and as such their experience and skills can be used to develop tailor made solutions that enhances digital transformation as well as measures that can be used to address the climate change effects.

## 5.2 POSSIBLE SOLUTIONS

This section seeks to present the possible solutions that can be used to improve digital transformation for women. It is important for African economies to address digital transformation challenges centred on women as well as effects of climate change because these are major issues that have a bearing on SDGs. If these issues are addressed, SDG goals 5 and 9 may be achieved by 2030.

Some of these solutions that can be implemented are: crafting gender sensitive policies, improving technological access and usage, contest cultural conventions and gender stereotypes, combat cyberbullying that targets women and girls, making the technology industry more inclusive of women.

### *5.2.1 Crafting gender sensitive policies*

When developing, enacting, and evaluating programs and policies, policymakers in the digital sector need to be aware of the particular needs of women and girls and value their viewpoints and experiences. These policies should be tailor made to meet the digital needs of women and young girl from all walks of life. The main focus should be on women and girls in marginalised and rural areas which are less developed. The policies should ensure that digital technology is embraced from grassroots levels. However, it is important to note that these policies should be backed by enough financial and non-financial resources.

### *5.2.2 Improving technological access and usage*

One of the biggest obstacles preventing women from fully utilizing the benefits of the digital transformation is a lack of access to technologies. The Mobile gender report (2019) shows that women in the African continent are 41% less likely to use internet services as compared to men. Additionally, access to phone and internet services for African women which are key in as far as digital transformation is concerned is still very low.

Research shows that 197 million fewer women than men own a mobile phone, and 313 million fewer women have access to the use mobile internet services (Mobile gender report, 2019).

These statistics are worrisome as they show a huge mobile and internet gender gap. Thus, such women may not be able to participate in e-commerce activities or other commercial activities that improves their standards of living from a technological perspective.

One way to address this problem is to improve connectivity in rural areas, create public digital hubs, and lower the cost of technology and internet services. To guarantee that women and girls can fully benefit from digital services and technology, inclusion must be taken into account while building them. Basic technological literacy activities can assist women and girls to use technology to better their education, employment prospects, and general well-being. To add more, more investments in strengthening digital skills among women and girls is essential so they can use digital technologies successfully. Education and training in digital skills for women can also be revolutionary.

### ***5.2.3 Contest Cultural Conventions And Gender Stereotypes***

There is need to contest the cultural conventions and gender stereotypes that limit digital transformation for women. In order to ensure inclusivity and safety in the digital environment, it is essential to dispel gender preconceptions and cultural conventions that restrict girls.

The digital gender gap may also be closed through mentoring, awareness-building, and strong family ties. For example, in Zimbabwe some of the white garment churches commonly referred to as “*mapostori*” invest little on their children’s education and cases of early child marriages have been reported. On their side such practises seem to be normal but however, it is against the laws as some the kids forced into marriage are underage and some of the kids do not consent to early marriages. These girls are then excluded from accessing educational opportunities where technological curriculum is taught. Thus, there is need to dispel such practises and educate people on the importance of education and digital technology.

### ***5.2. 4 Combat Cyberbullying that Targets Women and Girls***

Women and girls are disproportionately affected by online abuse, which harms their mental health and discourages them from using digital spaces. Online harassment reporting methods, abuse policies, moderating tools, and material takedown procedures can all be utilized as a reaction to safeguard the rights of women and girls.

Another strategy for defending women and girls against cyberbullying and cybercrime is cybersecurity education and training. Training for digital literacy can also assist women and girls in being more aware and active online citizens. In general, safeguarding the rights of women and girls online necessitates a multipronged strategy that considers societal norms and behaviors, regulatory and legal frameworks, education and awareness campaigns, and promoting women's empowerment and involvement in online activities.

### ***5.2. 5 Making the Technology Industry more Inclusive of Women***

Women must be encouraged to enter the technology sector in greater numbers, starting with encouraging them to pursue STEM (Science, Technology, Engineering, and Mathematics) studies. Mentoring programs that pair up young women with more seasoned professionals and provide internships and traineeships can help achieve this goal and empower women in the digital economy for long-term digital change. This can be achieved by implementing pro-women policies in institutions of higher learning. For example, universities can stipulate that 55% in technological courses is reserved for women. This will go a long in bringing the much-needed digital transformation for women in Africa.

To add more, additional strategies that can be helpful include increasing the number of opportunities for women to hold leadership positions, planning workshops and events to introduce girls and women to technology (for instance, coding competitions), assisting women-led businesses, and creating more inclusive workplaces.

### ***5.2.6 Information and Communication Technology Exchange Programmes***

There is need for African economies to create exchange programmes with some of the economies which are technologically advanced such as China. These programmes should be tailor made to ensure that women from developing economies benefit in terms of digital transformation. These programs should address the specific needs of women who are marginalised. To implement this, each African economy should have specific information of the type of digital skills that are required by women.

### ***5.2. 7 Private and Public Partnerships***

There is need for strong partnerships to be created between the public sector as well as the private sector. The African economies should consider collaboration with private stakeholders that are active in the information and communication technology sector. These partnerships will help in resources mobilisation and providing platforms for digital transformation for women. On the private sector part, this can be a way of achieving their corporate social responsibility goals of investing back into the community. These partnerships can be at country level, regional or international level. Therefore, public-private partnerships can be used to complement some of the solutions presented before.

## 6.CONCLUSION

This article sought to explore issues on digital transformation for women in the post-covid era. The article discussed the current effects of climate change and covid. From the discussion it was realized that the effects of covid were job losses, increased job insecurity, increased poverty levels, increased unpaid care work, increased cases of domestic violence and online dangers among others. In as far as digital transformation for women in Africa is concerned it was established that digital illiteracy, lack of women representation, lack of access to internet and mobile phones were some of the key challenges affected women. With regards to climate change in Africa it was established that women can act as change agents and in addressing the effects of climate change. It was also noted that women are victims of climate change. Several possible solutions that can be used to improve digital transformation for women were suggested. Some of them are: crafting gender sensitive policies, improving technological access and usage, combat cyberbullying that targets women and girls among others.

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