

The Digital Economy, Women's Work and Inclusion in Africa: A Pathway to African Development

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ABSTRACT

Globally, women perform two-thirds of labour but earn far less income due to lack of opportunities compared to their male counterparts in professional, technical, and managerial jobs. In Africa, women constitute over 50% of economically active population, but gender gaps in income still persist. Africa is presently undergoing structural transformation giving way for service oriented labour instead of agriculture. The services sector which constitutes the digital economy is growing massively, providing employment opportunities. Individuals use innovative digital tools to work and transact business remotely in the comfort of their homes. This has provided opportunities for many women for businesses and employment that gives them time for childcare as such providing increased income and economic development. This paper examines the potential, opportunities, and barriers in the digital economy for women's inclusion. The paper also examines how women can leverage the digital economy to ease conflict between childcare burden and work, enhancing income and standard of living. The paper adopts qualitative method and conducts systematic review. Findings show that opportunities in the digital economy include digital entrepreneurship and cyber security skills. The paper outlines challenges such as financial, social, and technological barriers that are limiting women's involvement in the digital economy.

Keywords: Digital Economy, Women Inclusion, Women's Work, Africa, Entrepreneurship

INTRODUCTION

Digitization is a very important global phenomenon in the 4th Industrial Revolution which has formed a significant part of the economy which is referred to as "digital economy". Digital economy consists of all economic activities which uses digital technologies, innovations and information and communication technologies (ICT) for online business transactions and e-commerce which takes place across multiple sectors with the aid of internet, mobile technology and data systems. Others include internet of things (IoT), artificial intelligence (AI), virtual reality and block chain. The name "digital economy" due to its origin was first called "internet economy", or the "web economy" because of its reliance on internet connectivity. This was later changed to digital economy by economists and business leaders to reflect the fact that the digital economy is more advanced and complex than the internet economy. Digital economy began from the 3rd industrial revolution up to the 4th with the invention of computer, internet, data and mobile smart phones. This was further accelerated during the COVID-19 pandemic as lockdowns and social distancing required remote economic activities and virtual work such as online shopping, telemedicine and digital entertainment.

Digital economy has brought about digital trade and e-commerce, social media networking platforms, remote work adoption, online sales, mobile apps, AI and automation, and virtual assistants, chatbots, digital payments and crypto currencies as well as digital entertainment and telemedicine. The importance of digital economy in the

21st century cannot be overemphasized. Digital economy reduces processes and procedures of business establishment due to the virtual nature of businesses, reduce costs, increases efficiency and create larger audience and customer networks as well as several streams of income. Other advantages of digital economy includes increased productivity, access to more data, greater convenience Improved customer experience and personalization.

The future of digital economy is hinged on AI and machine learning and digital connectivity as well as mobile apps to transform traditional sectors to service oriented digital sectors in key sectors such as healthcare, agriculture, education and every facet of human endeavour (Yasar K and Pratt, 2024). Following digitization and globalization, African economies have been undergoing structural transformation. This involves shifting economic activities from low-productivity sectors, like agriculture, to higher-productivity sectors such as manufacturing and services. In this case, different sectors of the economy undergo digitization to achieve higher productivity and efficiency. This shift also aims to achieve inclusive and sustainable development, address job creation, and reduce income inequality.

Women's work refers to both paid and unpaid labour, activities and occupations that is traditionally associated with women. This may include domestic tasks, caregiving, and occupations such as being a maid, teacher nurse and other jobs considered as uniquely feminine. Historically, women were consigned to domestic spheres such as childcare, housework, and caring for family members (wives and mothers) due to perception that women are inferior to men both physically and intellectually which validate their exclusion from certain duties and occupations as well as political positions in the society. This notion overtime has resulted to gender inequality in income and economic opportunities which is more pronounced in Africa. In the African context, women's participation in African labor markets is dominated by the informal sector characterized by low-paid and subsistence jobs in most sectors of the economy such as agriculture, domestic work, or street vending. These jobs tend to be unsustainable, with low wages, and lack social protection. Women in Africa continue to face significant disparities in middle and senior management positions, hindering progress towards gender equality in these roles (World Bank , 2024). Digital economy creates opportunities for women and potential for women inclusion in the African society. The use of digital platforms for virtual work and businesses provides women with greater access to markets, knowledge and more flexible working arrangements that will enable them earn income while taking care of their families.

The objective of this paper is to examine the prospects of digital economy for women inclusion in Africa. The paper contains six sections following this introduction, section two discusses women's work in Africa, section three discuss structural transformation and the growth of digital economy in Africa, section four examine digital inclusion for women in Africa, Women's work and prospects for digital inclusion in Africa while section five discuss Women's work and challenges to digital inclusion in Africa.

Structural Transformation and the Growth of Digital Economy in Africa

Africa is one of the fastest growing continents in the World. A World Bank report on economic transformation and poverty reduction in Africa found that the region's economies are developing in unexpected ways, bypassing industrialization as a major driver of growth and job creation (World Bank 2014; Enache et al 2016). The Structural transformation productivity data (pld2023) suggests that economic structure in Africa is shifting over time, with countries increasing the share of employment and value added in service sectors and reducing it agriculture.

Figure 1 to 12 shows the graphical presentation of the trend of value added and employment by sectors from 1990 to 2018 for six countries in Africa (Burkina Faso, Ethiopia, Malawi, Nigeria, Tanzania and Uganda). In figure 1 Burkina Faso value added is larger in Agriculture compared to other sectors; this is also true of employment shown in Figure 2. Agriculture employed the highest compared to other sectors. In figure 3 and 4, Ethiopia value added and employment is also highest in Agriculture compared to other sectors. In figure 5 and 6, Malawi employment and value added was initially high in Agriculture in the early 1990s, other sectors such as manufacturing, trade and real estate immensely improved in the latter years surpassing agriculture. However, agriculture still constitutes the predominant sector of employment. Figure 7 and 8 for Nigeria shows value added and employment trend for all the sectors. Agriculture has the least of the value added compared to other sectors, the highest being the trade services sector. However, in terms of employment, Agriculture had the dominant share until 2005 when trade services sector became the sector with the highest employment. Figure 9 to 12 shows similar trend for Malawi, Tanzania and Uganda where sectors other than agriculture are contributing more to value added although agriculture still has the highest employment of labour. Given the value added statistics, there is a gradual transition in terms of productivity from agrarian agriculture to other sectors. However many of these countries are transiting more from agriculture to trading sector instead of the manufacturing and services sectors.

Figure 13 provides more insight from LSMS data for the six countries regarding the transition. The figure provides a breakdown of activities in the economy by sector. The figure shows that 60.57% of enterprise activities are concentrated on trading, 14.59% of activities are on public admin and personal/professional services, 12.51%

of activities is concentrated on industries while 6.69%, 4.96% and 0.68% is concentrated on agriculture, transport and public utilities, respectively. This shows that sector activities is predominantly trading constituting over 60%, very little on industry (12.51%) which is one of the sectors that propels growth. Therefore household enterprises are basically engaged in trading rather than productive industrial activities.

Figure 1: Value added: Burkina Faso

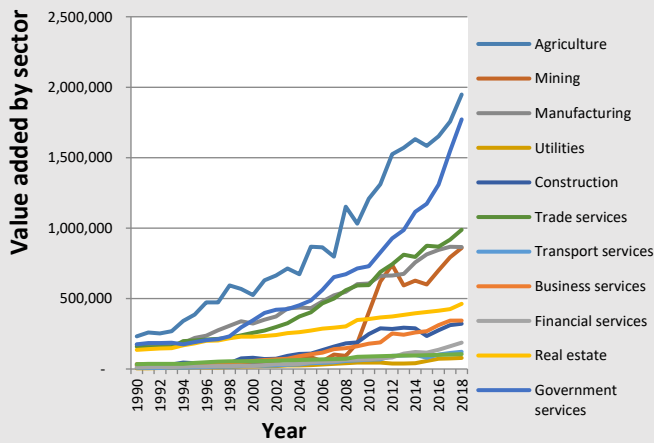


Figure 2: Employment: Burkina Faso

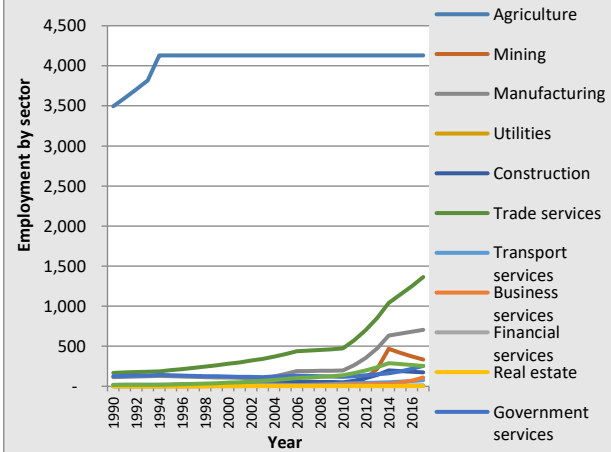


Figure 3: Value added: Ethiopia

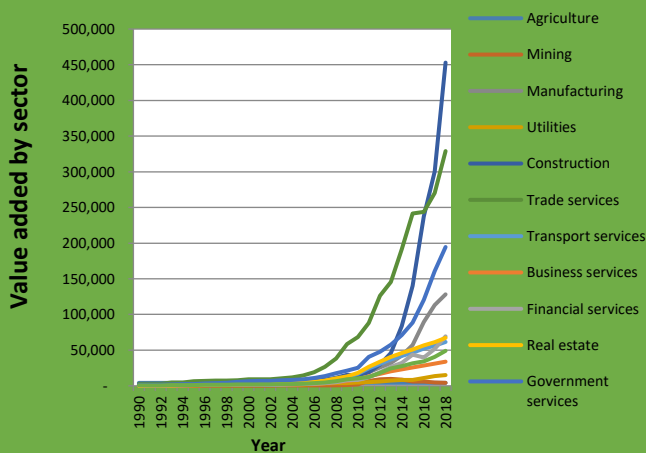


Figure 4: Employment: Ethiopia

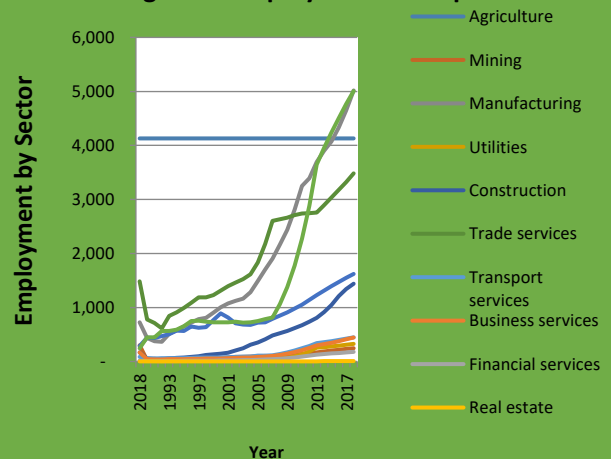


Figure 5: Value added: Malawi

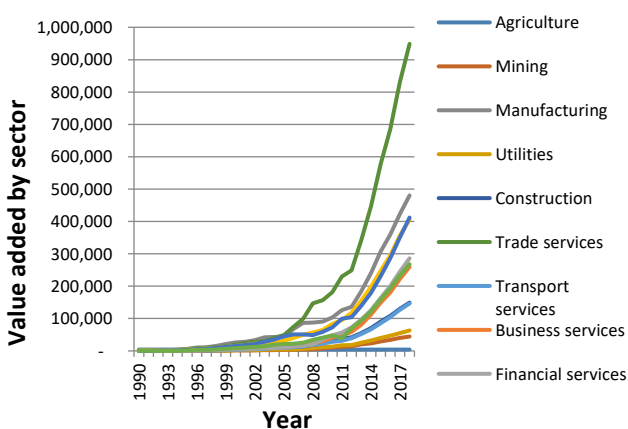


Figure 6: Employment: Malawi

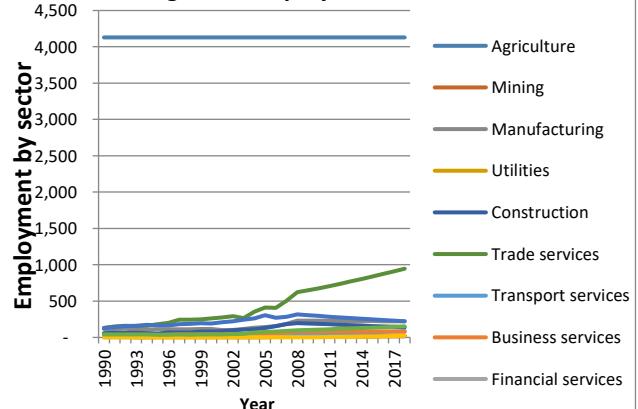


Figure 7: Value added: Nigeria

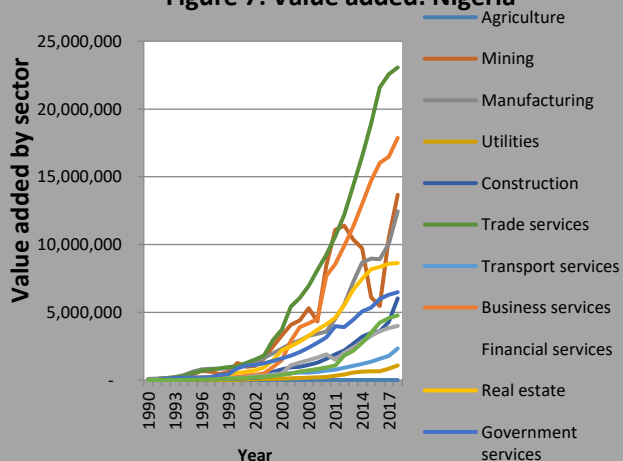


Figure 8: Employment: Nigeria

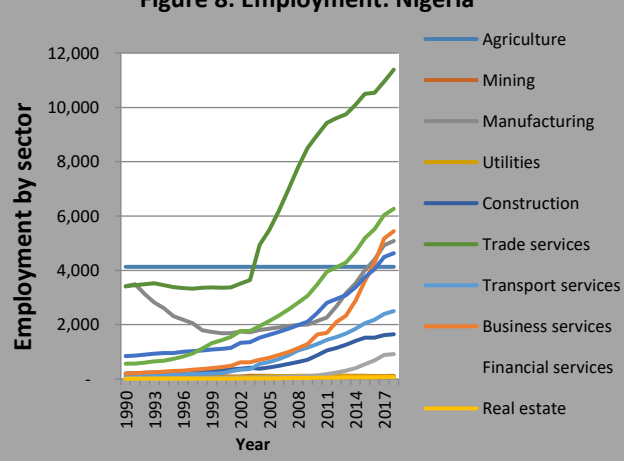


Figure 9: Value added: Tanzania

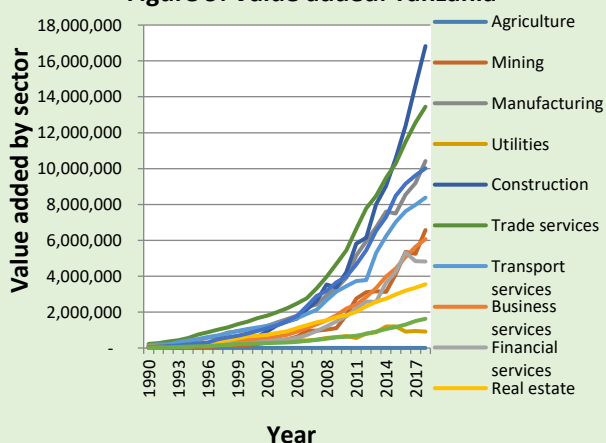


Figure 10: Employment: Tanzania

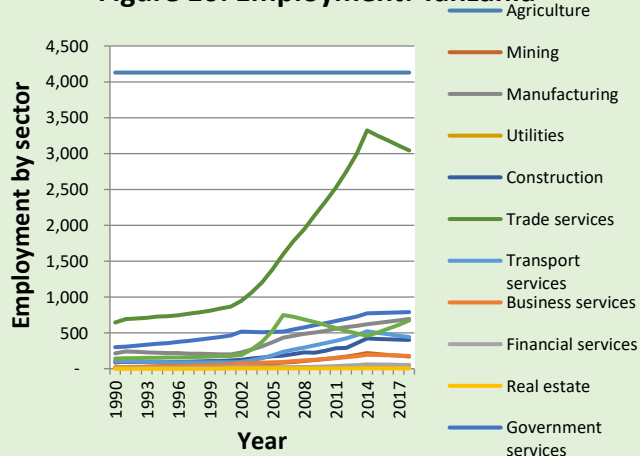


Figure 11: Value added: Uganda

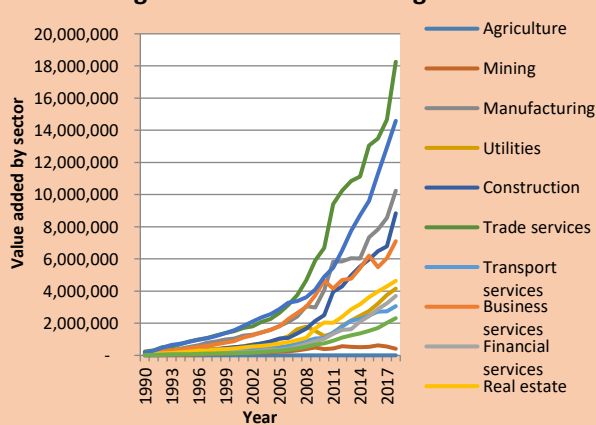


figure 12: Employment: Uganda

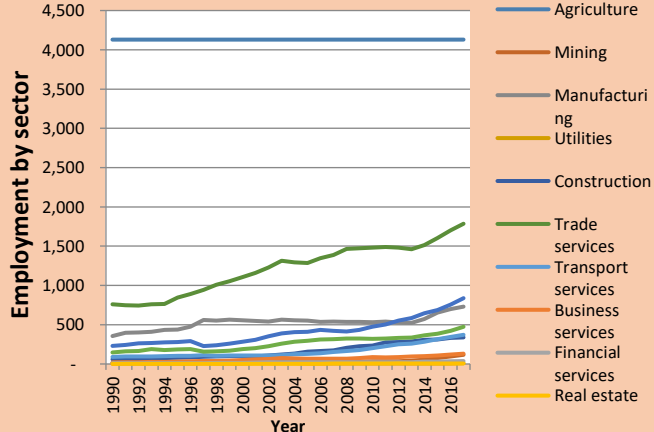
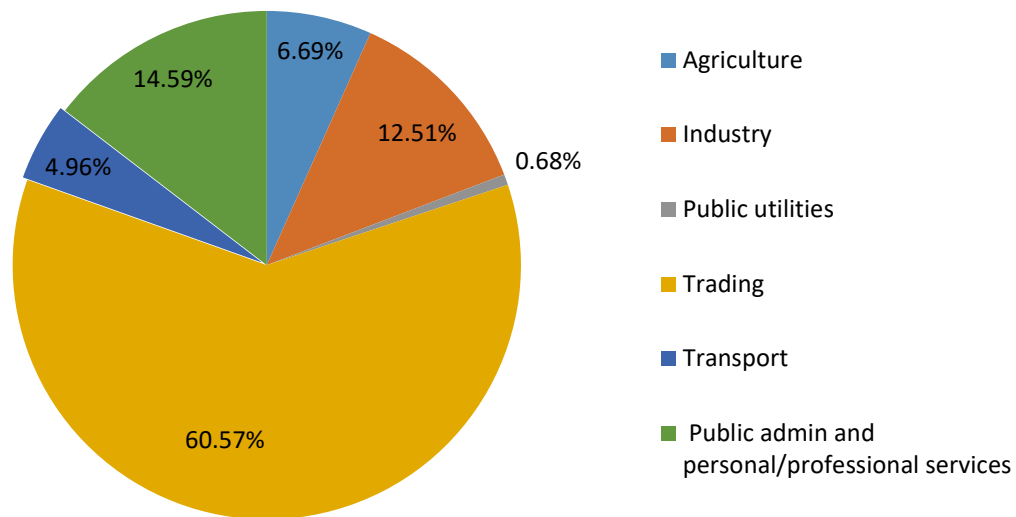


Figure 13: Enterprise activities in the economy by sector

The advent of digitization is a game changer in Africa. Given that African economies are advancing in the services and trading, digitization has further propelled the growth of such sectors. Africa's digital economy is on a growing trend, this is due to improved internet access and the growth of smart phone ownership. As at 2012, Africa's digital economy was about 1.1%, of its GDP this increased to 4.5% in 2020 and could reach 8.5% by 2050 (DiPLO, 2025).

This growth is engineered by E-commerce, fintech, growth in health technology, media and entertainment (DiPLO, 2025; Powanga, 2019). African's largest E-commerce destinations include South Africa, Morocco, Tunisia, Egypt, Algeria, Kenya, Senegal, Nigeria, Ghana, and Côte d'Ivoire. Table 1 shows the contribution of the digital economy to African GDP in 16 African countries by USD and percentage of GDP.

Table 1: Contribution of the digital economy to African GDP (iGDP) in some selected countries

Country	2020 (US\$B)	2020 (%)	2025 (US\$B)	2025 (%)	2050 (US\$B)	2050 (%)
Kenya	7.42	7.70%	12.84	9.24%	51.07	15.17%
Morocco	7.80	6.82%	12.09	7.84%	48.06	12.88%
South Africa	21.55	6.51%	31.45	7.86%	125.08	12.92%
Senegal	1.51	6.22%	2.92	7.11%	11.61	11.68%
Nigeria	24.59	5.68%	36.53	6.86%	145.28	11.27%
Algeria	9.02	5.60%	11.92	6.16%	47.39	10.12%
Cameroon	2.06	5.39%	3.27	6.19%	13.00	10.16%
Côte d'Ivoire	3.18	5.27%	5.53	6.04%	21.98	9.92%
Egypt	15.41	4.98%	25.97	5.99%	103.29	9.83%

Source: (DiPLO, 2025)

Rwanda	0.52	4.98%	0.97	5.96%	3.85	9.79%
Ghana	3.01	4.42%	5.01	5.31%	19.94	8.73%
Tanzania	2.57	3.98%	4.28	4.57%	17.03	7.50%
Uganda	1.36	3.82%	2.26	4.18%	8.97	6.87%
Mozambique	0.37	2.45%	0.67	2.81%	2.65	4.62%
Angola	2.02	2.17%	2.88	2.38%	11.44	3.91%
Ethiopia	1.26	1.27%	2.02	1.39%	8.03	2.28%
Rest of Africa	11.62	1.96%	18.55	2.16%	73.76	3.54%
Total	115	4.5%	180	5.2%	172	8.5%

The table shows that the contribution of digital economy to African GDP is steadily growing. Most countries will have digital economy contributing between 2 to 15% of their annual GDP as from 2050 with Kenya, South Africa, Morocco, Senegal and Nigeria having between 11 to 15%. African governments have adopted laws, policies, and regulations to foster e-commerce and the advancement of the digital economy which centers on infrastructure development, digital literacy, and innovation in the digital sector (DiPLO, 2025).

Women's Work in Africa

Sub-Saharan Africa is known for its high rate of female labour force participation (around 60%) especially in the informal economy which consists of agriculture and trading with a large portion working in self-employment (Chen, 2008). In Agriculture, Women usually engaged in the production, processing, and sale of domestic foodstuffs in domestic markets and men typically engaged in the production of cash crops, often for export (Chen, 2008). In many African countries, such as Ghana and Kenya and Nigeria, relatively few self-employed women are micro-entrepreneurs who could hire workers. Women bear a significant burden of domestic work and childcare, which limits their ability to engage in wage employment. For women with wage employment, integration multiple roles of being a mother, housewife, wife and profession continues to be a huge challenge (Yange, 2024). In African culture, motherhood is considered obligatory due to the notion that family lineage needs to be preserved. Women are caught in-between career pursuit and raising a family. This is more difficult due to lack of a strong support structure in the African institutions such as “day care” for babies and children in work places.

Digital economy however offers significant opportunities to break through these barriers. Remote work enables women to work from home thereby allowing women to be closer to their children and also manage household responsibilities without any difficulty. Digital economy also offers flexible working time as platforms and variety of businesses on the internet allows flexible timing adjustments to suit family demands and needs. The digital economy also provides women with opportunities to engage with various freelance and project-based work opportunities that suits their family responsibilities. Digital economy provides varieties of online businesses with wider customers networks and online communities where women can connect with peers to share experiences and build entrepreneurial skills. Payment platforms and mobile banking solutions provides financial opportunities for women.

Digital Inclusion for Women in Africa

Digital inclusion for women in Africa is crucial for empowering women economically. It is also a key factor in achieving gender equality and sustainable development. With the advent of mobile smart phones and internet connectivity, there are many women connecting to the digital world. This provides them opportunities to access financial resources, expertise, markets, and services to build up businesses in the digital economy sector. According to the UN, over 90% of jobs worldwide now have a digital component, this provides opportunity for employment, businesses with potential for earning more income (Sinha S. M. (2023)

However, gender gaps still exists in terms of internet usage and mobile smart phone ownership. GSMA's Mobile Gender Gap Report 2022 shows that over 1.7 billion women do not own a mobile phone, this disparity is largest in sub-Saharan Africa. A recent “ImpactHER survey” of “over 4,000 women across 52 African countries reveals that only 49.8% have some form of Internet access, 60% have never received any digital skills training, 86% lack even basic artificial intelligence (AI) proficiency and 34.7% do not own any digital device”, women are also underrepresented in tech entrepreneurship (Ukala, 2024), women are also underrepresented in tech entrepreneurship. The disparity can limit women's engagement in digital economy and can affect their economic independence, financial prospects, and decision-making power (Sinha S. M. (2023). Bridging the digital gender gap requires a multidimensional approach, such as ensuring affordability of digital technology and mobile phones, promoting digital literacy, and addressing social and cultural barriers that hinder women's participation in the digital in the digital economy. This will be further discussed in section 6 and 7. In response to the challenges of ensuring digital transformation in Africa, the African Union (AU) introduced a digital transformation Strategy to be achieved by 2030 with priority on digital inclusion to remove barriers for African women and girls to participate in the digital economy.

Women's Work and Prospects for Digital Inclusion in Africa

There are several prospects for women in the digital economy. Women's participation in the digital economy will enhance digital product creation, ensure financial returns and financial independence for women, and access to new markets and sectors (Ukala, 2024). Opportunities in the digital economy can be referred to as digital entrepreneurship opportunities. These opportunities lie in the ability to understand and address pressing social and economic challenges with digital solutions that are locally relevant and scalable (World Economic Forum, 2016). Digital entrepreneurship opportunities exist across various sectors of the economy, including agriculture, health, education, finance, and the environment. These are also known as EdTech (education technology), FinTech

(financial technology), HealthTech (digital health/ health technology), and AgriTech (digital agriculture/agriculture technology). Table 2 provides digital entrepreneurship opportunities in different sectors.

Table 2: Opportunities in digital entrepreneurship across sectors

S/N	Sector	Solutions	Tech. name	Opportunities
1	Agriculture	Platforms that help farmers manage their crops, access markets, and improve efficiency in farming	AgriTech	1. The use of drones to capture images and data for monitoring crop conditions 2. The use of Artificial intelligence (AI) for automated weed management 3. Farm Crowdly helps to connect farmers with investors and other actors in the agricultural value chain 4. Agri Map, Agribook, AgriLeap, AgriYara, Fupro, Afrique Learning, Zoom Agro: Provide digital solutions and training for the agribusiness industry 5. Market information: Helps smallholder farmers access transparent information about crop prices
2	Education	Virtual learning platforms, apps, and other online tools which help to improve access to learning and address teacher shortages	EdTech	1. Tuteria: Peer-to-peer platform offering personalized tutoring and digital skills training. 2. AltSchool Africa: Virtual learning with flexible courses in software engineering and cybersecurity. 3. Codepym: Tools for interactive teaching and project-based learning. 4. Edukoya: AI-driven platform combining academic and vocational training. 5. Teesas: Dual-language education app with local African language support. 6. uLesson: Affordable video lessons and quizzes aligned with West African standards. 7. eCampus: Academic and vocational training hub for secondary and university students
3	Finance	Mobile money technology that improves access to finance in Africa such as MPesa, MoMo, Orange Money and Airtel Money	FinTech	1. Mobile Banking and Wallets: allowing for convenient 24/7 access to account balances, money transfers, bill payments, and airtime recharge – all from a smartphone 2. Payment Processing and Digital Wallets: [Payment processors like Paystack and Flutterwave integrate e-commerce websites and allow customers to pay securely using debit cards, credit cards, and mobile wallets] Digital wallets like PalmPay, Opay and fairmoney. 3. Alternative Lending and Financing: offering faster loan approvals and more flexible options. Microfinance provide small, short-term loans to individuals and entrepreneurs 4. Investment and Wealth Management platforms 5. InsurTech and Insurance Innovation 6. Blockchain and Cryptocurrency: 7. RegTech: help Fintech companies comply with complex regulations related to anti-money laundering (AML) and know-your-customer (KYC) procedures
4	Health	Digital health can be used in treating patients, conducting health research, educating the health workforce, tracking diseases and monitoring public health	HealthTech	1. Wearable devices: Track activity like heart rate and steps, and can transmit data to healthcare providers 2. Telehealth: Allows medical professionals to provide care remotely 3. Mobile apps: Provide fitness tracking, nutritional guidance, and mental health support 4. Artificial intelligence: Helps diagnose diseases, predict recovery times, and assist with surgery 5. Remote patient monitoring: Allows patients to track health metrics and share data with healthcare providers in real time 6. Robotics: Used in surgery to increase accuracy, reduce trauma, and shorten recovery time

African women can take advantage of these entrepreneurship opportunities to bridge income gaps. In recent times, African women digital entrepreneurs have made strides in innovating digital solutions to address development challenges that affect women and girls. For instance Judith Owigar own an organization named AkiraChix in Kenya a women-led tech organization which aims to foster the development of more women in the tech sector (Porfido and Marks , 2020). In south Africa, Zandile Keebine esterblished “GirlCode” to impact the lives of young girls through various programs such as free coding sessions, basic programming skills and digital literacy (Heelsandtech, 2022)

In Nigeria Ifedayo Durosinmi-Etti esterblished “Herconomy” a Herconomy, a female-focused fintech startup dedicated to creating financial resources for women. Herconomy, founded in 2018, is Nigeria’s first digital platform

for female entrepreneurs and professionals focusing on empowering women and connecting women and opportunities, such as grants, fellowships, scholarships and jobs (Daniel, 2025)

Women's Work and Challenges to Digital Inclusion

Although there are several advantages and opportunities for women in the digital economy, the low participation rate of African women as creators and consumers of tech is a limitation to harnessing these opportunities. There are several challenges that serve as barriers to women harnessing opportunities in the digital sector;

- 1. *Limited Mobile Internet Access and Owning of Smartphone***

Women consistently have less access to internet and mobile phones than men due to lower levels of education and affordability. Report from a research (Porfido and Marks, 2020) shows that 36% of women surveyed in Senegal cited reading and writing as a barrier to mobile access compared to 12% of men who cited this problem.

- 2. *Limited Education for Women and Girls***

Many women in Africa have low literacy and digital skills, including official Language exclusion to enable them use apps and websites as many African languages do not have digital footprint effectively, shutting down all those dialects. Women and girls also have limited education in science, technology, engineering, and mathematics (STEM) and education and training that promote general digital literacy. Also fewer girls than boys have critical digital skills needed to engage in digital entrepreneurship. This also hinders their ability to navigate online platforms and utilize digital technology effectively this prevents women and girls from being part of the fast growing digital economy (RFLD, 2024)

- 3. *Socioeconomic Status and Affordability***

Women in rural areas and from poor families have barriers to be involved in digital economy. Girls in rural areas experience higher levels of poverty with lower education lack access to the internet and phone networks due to poor rural infrastructure. Mobile smart phones and data remain expensive and unaffordable due to exorbitant pricing, impacting many women who often have lower incomes than men (RFLD, 2024). African countries have some of the world's most expensive data due to high tariffs in the telecom industry. For instance, Equatorial Guinea is said to have one of the most expensive data where one gigabyte can cost about \$49.67 (Sinha, 2023)

- 4. *Poor Digital Infrastructure***

Access to digital banking and identification is also a problem for women in many African countries and presents a particular challenge for women entrepreneurs that want to be involved in the digital economy. Over 60% of women who are traders in Africa do not have bank accounts and access to digital banking therefore cannot take advantage of digital payment applications that could significantly scale their businesses to reach new markets (Sinha, 2023). *Electricity is also a major challenge to women involvement in digital economy.* Regular disruptions to energy supplies makes it harder to keep devices charged for use. Rural and remote areas do not have reliable and affordable electricity, with over half of Africa's women living in rural areas, women are affected (Sinha, 2023)

- 5. *Cyber Safety and Security Concerns***

There is a serious cyber security concern that can deter women from participating in the digital economy, online harassment, cyber-bullying, and lack of awareness can prevent women from using the internet, limiting their online commitment. (RFLD, 2024)

- 6. *Social Norms and Cultural Barriers***

Gender stereotypes can limit women's access to technology and limit their participation in public spheres, including online spaces (RFLD, 2024)

CONCLUSIONS AND RECOMMENDATIONS

Women participation in the digital economy as creators and consumers of tech, provides immense potential for accelerated economic growth and development. Promoting women participation in the digital economy will involve deliberate efforts of state institutions, policy-makers, industry, and civil society to tackle and eliminate the root causes hindering women's and girls' digital participation. The following are recommended ways women participation in the digital economy can be promoted;

- a. Prioritizing equitable access to STEM education and digital education for all girls in urban and rural areas.** STEM as a requirements should be integrated in the national curriculum and providing more digital learning opportunities in the classroom. Tech companies and networks can collaborate with telecommunications companies, educational institutions, and NGOs to develop and implement inclusive digital literacy programs tailored to the needs of women (RFLD, 2024)

- b. Build internet infrastructure in both rural and urban communities and in schools. The internet and traditional cellular networks should be built to make internet accessible and affordable for women and girls. Regional collaboration across digital technologies in Africa can enhance availability and effectiveness of digital technology. Digital architecture should be designed with gender inclusion in focus.
- c. The Private Sector should be encouraged to hire, retain, and promote women in tech. Future generation of women in tech leadership should be encouraged by hiring and promoting women in tech leadership and women-owned tech start-ups and women entrepreneurs. This can be achieved through established women's networks and mentoring programs to support women in tech and to inspire young girls to build career on tech (Porfido and Marks, 2020).
- d. Ensuring cyber/online safety. Cyber security laws should be put in place to ensure safety against online sexual exploitation and abuse of women and girls on the internet. National and international laws should be put in place to keep up with advances in technology and cybercrime. Governments need to review and update and implement legislation and policies against cybercrime.
- e. Other ways are improving initiatives that subsidize mobile phone costs and offer affordable data plans, advocacy campaigns and community engagement to challenge gender stereotypes that prevent women participation in the digital economy.

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