

“Analysis of the technological maturity of SMEs and identification of key players in Ghana”



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1. Context of the report

AFRICANTECH is an international cooperation project co-financed by ERDF (INTERREG MAC Territorial Cooperation Programme), whose main purpose is to improve the competitiveness of both Canarian and African small and medium-sized enterprises by strengthening their capacities in innovation and digitalisation. Through this approach, the initiative seeks to contribute to economic, social and institutional development in both regions, facilitating the transfer of knowledge and encouraging the adoption of emerging technologies.

This initiative gives continuity to the actions carried out in recent years by the ConfiAfri consortium in the field of internationalisation, extending to the countries participating in the INTERREG MAC 2021-2027 programme. In this new phase, particular emphasis is placed on the degree of technological maturity of SMEs in Senegal, addressing the challenges they face in a global context characterised by accelerated digital transformation, process automation and the growing importance of cybersecurity and data management.

In this context, FEMETE, in collaboration with programme partners, has undertaken to produce a detailed report to diagnose the level of digitisation of SMEs in Ghana, analysing their technological capabilities, the barriers they face and the opportunities for their modernisation. The purpose of this study is to provide an updated picture of technological adoption in the Senegalese business fabric and to provide strategic recommendations to strengthen their competitiveness in the digital economy.

Digitalisation is a key factor in the economic and productive transformation of any country, and Ghana is no exception. The Ghanaian business sector, despite being a reference in West Africa in the adoption of new technologies, especially in SMEs, faces significant challenges in the integration of digital technologies, the improvement of its connectivity infrastructure and the training of its human talent in advanced technological skills. Areas such as e-commerce, artificial intelligence, cybersecurity and data management are emerging as strategic sectors that require rapid adaptation by companies.

This report aims to analyse in depth the technological maturity of SMEs in Ghana, identifying their degree of digitisation, the most advanced sectors and those lagging behind, and the barriers limiting their modernisation. Through a methodological approach based on field studies, surveys and interviews with key actors in the business and technology ecosystem, we will seek to provide an accurate diagnosis of current digital capabilities and design concrete recommendations to facilitate their evolution towards more innovative and competitive business models.

In recent years, ICT penetration in Ghana has grown significantly, driven by the expansion of mobile connectivity and increased internet access.

This study will also address the impact of digital transformation in key sectors such as e-commerce, fintech, digital manufacturing and agricultural technologies, areas where SMEs can play a crucial role in modernising the country's productive fabric. While there are both government and private initiatives aimed at improving business digitalisation, their scope is still limited, which requires a coordinated effort to accelerate technological adoption and close the digital divide.

Finally, this report seeks to lay the groundwork for the design of policies and programmes to support the digital transformation of SMEs in Ghana, identifying good practices and strategies that can be replicated in other contexts. With this approach, it is expected to help small and medium-sized enterprises not only to bridge their internal digital divide, but also to position themselves as key players in West Africa's digital economy, harnessing the potential of new technologies to improve their productivity and competitiveness.

1.1. Definition of the sector ICT

The sector known as ICT, or Information and Communication Technologies, encompasses a broad set of manufacturing and service industries whose main activity is related to the development, production, marketing and intensive use of information and communication technologies. This sector includes a variety of activities that can be classified into different categories according to the Spanish National Classification of Economic Activities (CNAE 2009).

Manufacturing industries:

- Manufacture of electronic components (CNAE 2611).
- Manufacture of assembled printed circuits (CNAE 2612).
- Manufacture of computers and peripheral equipment (CNAE 2620).
- Manufacture of telecommunications equipment (NACE 2630).
- Manufacture of consumer electronic products (CNAE 2640).
- Manufacture of magnetic and optical media (CNAE 2680). Services:
- Wholesale trade of computers, peripheral equipment and computer software (CNAE 4651), as well as electronic and telecommunications equipment (CNAE 4652).
- Publishing of video games (CNAE 5821) and other computer software (CNAE 5829).

- Telecommunications by cable (CNAE 6110), wireless (CNAE 6120), satellite (CNAE 6130) and other related activities (CNAE 6190).
- Computer programming activities (CNAE 6201), computer consultancy (CNAE 6202), computer resource management (CNAE 6203) and other services related to information technology (CNAE 6209).
- Data processing, web hosting and related activities (CNAE 6311) and web portals (CNAE 6312).
- Repair of computers and peripheral equipment (CNAE 9511) and communication equipment (CNAE 9512).

1.2. Executive summary

The digital transformation of SMEs in Ghana is at a turning point, marked by significant advances in connectivity and digitisation, but also by deep structural gaps that limit their competitiveness. This report, part of the AFRICANTECH project and co-funded by the INTERREG MAC programme, provides a detailed diagnosis of the technological maturity of Ghana's business fabric and the opportunities to accelerate its evolution.

Ghana has experienced remarkable growth in access to digital technologies. Mobile network penetration exceeds 120% and mobile internet access stands at 74.99%, reflecting a growing digital ecosystem. However, this apparent strength contrasts with serious inequalities between urban and rural areas, where lack of infrastructure and the high cost of internet access remain barriers to the digital transformation of businesses.

The country has implemented key strategies to boost digitisation, such as the Ghana Digital Economy Policy and Strategy and the adoption of the Ghana Card, a biometric identification system that facilitates access to financial and government services. Still, the disconnect between public policy and private sector realities remains a challenge. Many SMEs face difficulties in accessing finance, low digital literacy and a shortage of specialised talent, which slows down their technological modernisation.

Interviews with industry players reveal a clear gap: while fintechs and tech startups are advancing in digitisation, many SMEs are still not adopting basic digital management tools. The lack of access to affordable credit, combined with high inflation (38.1% in 2023) and prohibitive interest rates (30%), has forced many companies to prioritise survival over investing in technology.

However, the opportunities are undeniable. The rise of digital commerce, the expansion of the fintech ecosystem and the growing demand for technological solutions in key sectors such as agriculture and manufacturing represent a favourable scenario for the digital transformation of SMEs. To this end, it is essential to improve the connectivity infrastructure, promote training programmes in digital programmes, and facilitating access to finance for the adoption of advanced technologies.

Ghana is at a turning point. If it can bridge the digital divide and foster a more inclusive and competitive ecosystem, it can establish itself as a benchmark in the West African digital economy. In this process, cooperation with initiatives such as AFRICANTECH and collaboration with the Canary Islands can play a key role in the transfer of knowledge and the identification of solutions that accelerate the digitisation of its business fabric.

2. Context: economic and technological situation Africa

Africa is undergoing an unprecedented economic and digital transformation, driven by population growth, accelerated urbanisation and the adoption of emerging technologies. With a population of over 1.4 billion people in 2023 and a projected 2.5 billion by 2050 (World Bank, *World Development Indicators*, 2023), the continent represents a growing market with increasing demand for technology solutions.

In economic terms, Africa has shown remarkable resilience in the face of recent global crises. According to the African Development Bank (ADB, *Africa's Macroeconomic Performance and Outlook*, 2025), the continent's GDP growth was 3.2 % in 2024, with expectations of reaching 4.1 % in 2025, despite challenges such as inflation, political instability and volatile commodity prices. In the case of Ghana, its economy is expected to grow by 4.5 % in 2025 and 4.9 % in 2026, driven by investment and private consumption and growth in industry and the services sector.

However, the continent still faces major structural challenges:

- Limited infrastructure: despite progress in digital connectivity, 60% of the African population still lacks stable internet access (International Telecommunication Union, *Measuring Digital Development*, 2023).
- High economic informality: 85% of employment in Africa is still in the informal sector (International Labour Organisation, *World Employment and Social Outlook*, 2023).
- Education and digital skills gap: only 40% of young Africans are trained in basic digital skills (UNESCO, *Education for the Digital Age in Africa*, 2023).

Technologically, the continent has experienced rapid growth in internet penetration and the use of mobile devices. According to the International Telecommunication Union (ITU, *Measuring Digital Development*, 2023):

- Internet penetration in Africa reached 43 % in 2023, with more than 600 million connected users, representing a 26 % increase in the last five years.
- Ninety-nine per cent of internet connections on the continent are via mobile networks, with 15 per cent annual growth in 4G and 5G subscribers.
- In countries such as Ghana, the internet penetration rate is 69.9% of the population, while in more advanced economies such as South Africa and Egypt it exceeds 75%.

Emerging technologies such as artificial intelligence, automation and the digitisation of financial services have taken a central role in the region's economic development. The fintech sector has grown exponentially in Africa, with over \$3 billion invested in tech startups by 2022, with Nigeria, Egypt, Kenya and South Africa being the top recipients of capital (Disrupt Africa, *African Tech Startups Funding Report*, 2023).

Technological advancement has also been driven by government and regional initiatives. The African Union-led African Digital Transformation Strategy 2020-2030 seeks to accelerate digitisation in key sectors such as education, health, public administration and financial inclusion, with the aim of consolidating an African digital economy contributing at least 10 % of continental GDP by 2030 (African Union, *Digital Transformation Strategy for Africa 2020-2030*, 2023).

At the national level, Ghana has adopted ambitious policies to modernise its economy through digitisation. Since the adoption of the ICT for Accelerated Development (ICT4AD) policy in 2003, a Digital Ghana Agenda and a Digital Economy Policy and Strategy have been developed and adopted to use ICT to streamline public services, reduce bureaucracy, improve access to education, enhance digital health and attract investment in fintech, artificial intelligence and cybersecurity.

However, significant challenges remain. Africa still has the world's most pronounced digital divide, with more than 800 million people without internet access, especially in rural areas. In addition, the lack of digital infrastructure, high connection costs and digital skills shortages limit the ability of many African economies to fully integrate into the global knowledge-based economy (ITU, *Measuring Digital Development*, 2023).

In this context, technological development in developing countries, and in particular on the African continent, represents a strategic opportunity for the structural transformation of their economies. In the following section, the trends and challenges of digital advancement in developing countries will be analysed, with special emphasis on Africa and its role in the global economy.

2.1. Technological Development in Developing Countries

Technological development in developing countries has been a key factor in the economic and social transformation of these nations. As information and communication technologies (ICTs) expand, they have become an essential driver of productivity, innovation and economic inclusion. However, technological progress in these economies is not homogeneous, as they face structural challenges such as lack of digital infrastructure, limited investment capacity and the digital skills gap.

Over the last two decades, digitalisation has advanced significantly in developing countries, albeit with regional disparities. According to the World Bank (*World Development Report: Digital Dividends, 2023*):

- 67 % of the population in developing countries has access to mobile phones, which has facilitated the growth of digital services and mobile commerce.
- Internet penetration has grown from 8% in 2000 to 45% in 2023, driven by the expansion of mobile networks and government connectivity programmes.
- The fintech sector has experienced 130% growth in the last decade, enabling financial inclusion for millions of people without access to traditional banking services.

In the field of education and digital skills, the impact of ICT has been significant, albeit uneven. According to UNESCO (*Education for the Digital Age in Developing Countries, 2023*), 58% of educational institutions in developing countries have integrated e-learning platforms, but only 23% have access to adequate digital infrastructure, which limits the real impact of these initiatives.

The advancement of technologies in developing countries has been influenced by several key factors:

1. Internet access and mobile connectivity: the proliferation of smartphones has been a catalyst for digital development. According to the International Telecommunications Union (*Measuring Digital Development, 2023*), 94% of the world's population lives in areas with mobile network coverage, although the quality of connection varies considerably.
2. Foreign investment and financing of the technology sector: Foreign direct investment in technology has been a growth driver for digitisation in developing countries. According to the United Nations Conference on Trade and Development (UNCTAD, *World Investment Report, 2023*), investments in technology start-ups in emerging markets reached 45.000 billion euros in 2022, with a focus on fintech, artificial intelligence and e-commerce.

- Government digitisation policies: Governments have played a crucial role in the adoption of technology by implementing national digitisation strategies. One example is the African Union's National Digital Transformation Strategy 2020-2030, which aims to increase the contribution of the digital economy to the continent's GDP to 10 % by 2030 (African Union, *Digital Transformation Strategy for Africa 2020-2030*, 2023).

Despite progress, technological development in developing countries faces several structural barriers:

- Digital divide and unequal access: although connectivity has improved, around 2.9 billion people in the world still lack access to the internet, most of them in developing countries (ITU, *Global Connectivity Report*, 2023).
- High cost of access to technology: In some regions, internet access remains prohibitively expensive. In sub-Saharan Africa, the cost of a 5GB monthly mobile data package is equivalent to 8% of average monthly income, while in Europe and North America it is less than 1% (World Bank, *The Digital Economy for Africa*, 2023).
- Digital skills deficit: Lack of training in technology skills is a critical barrier. According to the International Labour Organisation (*World Employment and Social Outlook*, 2023), 65% of workers in developing countries lack training in basic digital skills.

Despite these challenges, the future of technological development in developing countries offers significant opportunities:

- Expansion of 5G networks: deployment of 5G networks in emerging markets is increasing, with projections of 40 % coverage in developing countries by 2030 (GSMA, *The Mobile Economy Report*, 2023).
- Rise of artificial intelligence and automation: AI applications are gaining prominence in education, health and agriculture, facilitating access to critical services in regions with a shortage of professionals (UNESCO, *AI in Education: Global Perspectives*, 2023).
- E-commerce growth: The e-commerce sector is booming, with 20 % growth per year in Latin America and Africa. In countries such as Nigeria and Kenya, online commerce accounts for more than 5% of GDP (UNCTAD, *E-Commerce and Development Report*, 2023).

2.2. Technological development at Africa

Africa is undergoing an unprecedented technological transformation, driven by the expansion of digital connectivity, the proliferation of tech startups and the growth of the fintech sector. Despite progress, the continent still faces significant challenges in terms of infrastructure, accessibility and digital skills. Digitisation has become a key pillar of Africa's economic development, with governments and businesses investing in emerging technologies such as artificial intelligence, cloud computing and e-commerce.

Internet access has grown exponentially in Africa over the past two decades. According to the International Telecommunication Union (ITU, *Measuring Digital Development*, 2023):

- Internet penetration in Africa rose from 11 % in 2010 to 43 % in 2023, with more than 600 million users connected.
- Ninety-nine per cent of connections on the continent are through mobile networks, with 15 per cent annual growth in 4G and 5G adoption.
- In countries such as South Africa and Egypt, the connectivity rate exceeds 75%, while in other regions, such as Central Africa, it remains below 30%.

The cost of internet access remains a barrier. In sub-Saharan Africa, the average price of a 5 GB data package is equivalent to 8% of the average monthly income, while in North America and Europe it is less than 1% (World Bank, *The Digital Economy for Africa*, 2023).

The growth of the digital ecosystem in Africa has been driven by investment in tech startups and mass adoption of digital financial services. According to Disrupt Africa (*African Tech Startups Funding Report*, 2023), African startups received more than \$3 billion in investment in 2022, with fintech, e-commerce and digital education sectors standing out.

The fintech sector has been key to Africa's digital transformation:

- More than 60% of the adult population in Africa uses mobile money services, outpacing any other region in the world (World Bank, *The Global Findex Database*, 2023).
- Nigeria, South Africa and Kenya account for more than 75% of fintech investment, with companies such as Flutterwave and M-Pesa leading innovation in digital payments.
- Financial inclusion has increased significantly, allowing millions of people to access banking services through mobile platforms.

Investment in digital infrastructure has been a key pillar in Africa's technological modernisation. According to the African Union (*Digital Transformation Strategy for Africa 2020-2030, 2023*), the continent's digitisation strategy seeks to increase connectivity, improve telecommunications infrastructure and encourage investment in data centres and cloud computing.

Among the most prominent initiatives are:

- Deployment of fibre optic networks continent-wide, with projects such as the East African Cable System (EASSy), which has improved connectivity in more than 20 countries.
- Expansion of 5G networks, with countries such as South Africa, Kenya and Nigeria leading the way. 40% of the continent is expected to have access to 5G by 2030 (GSMA, *The Mobile Economy Report, 2023*).
- Construction of data centres and adoption of cloud computing, with investments from companies such as Google, Microsoft and Huawei, looking to boost data storage and processing in Africa.

Despite progress, Africa still faces significant technological challenges:

- Digital divide and unequal access: more than 800 million people remain without internet access, especially in rural areas (ITU, *Global Connectivity Report, 2023*).
- Digital talent shortage: Only 30% of the workforce in Africa has basic digital skills, limiting technology adoption in enterprises (UNESCO, *Education for the Digital Age in Africa, 2023*).
- High costs of accessing technology: The high cost of internet devices and services remains a barrier to mass digitisation.

2.3. African Digital Transformation Strategy 2020- 2030

Digital transformation has become a key pillar for Africa's socio-economic development. To coordinate this process, the African Union (AU) launched in 2020 the African Digital Transformation Strategy 2020- 2030, a framework that seeks to accelerate the digitisation of the continent and promote the use of emerging technologies in key sectors. This strategy aligns with the African Union's Agenda 2063, which establishes digitalisation as a central pillar for sustainable growth in Africa (African Union, *Digital Transformation Strategy for Africa 2020-2030, 2023*).

The strategy sets out four key pillars to drive digital transformation in Africa:

1. Digital infrastructure and internet access: ensuring that at least 70 % of the population has access to high-speed internet by 2030.
2. Digital governance and cybersecurity: establish regulatory frameworks for data protection and security in the digital space.
3. Digital skills and employment: train 300 million Africans in digital skills to improve employability and innovation.
4. Innovation and digital entrepreneurship: strengthening the technological ecosystem, facilitating access to financing and promoting investment in digital start-ups.

According to the International Telecommunication Union (ITU, *Global Connectivity Report, 2023*), more than 40% of Africans still lack access to the internet, which represents one of the biggest challenges for the implementation of this strategy.

Since its launch, the strategy has driven several key programmes on the continent:

- Smart Africa Initiative, which brings together more than 30 African countries to improve connectivity and reduce internet access costs.
- 5G network deployment projects, with South Africa, Kenya and Nigeria leading the way.
- Creation of innovation and technology hubs, such as the *African Digital Innovation Hub*, which promotes the incubation of technology start-ups.

However, significant challenges remain:

- Persistent digital divide: more than 800 million people in Africa do not have access to the internet, limiting the adoption of digital technologies (ITU, *Measuring Digital Development, 2023*).
- Lack of investment in infrastructure: digitisation requires large investments in fibre optics, data centres and mobile networks, which remains a challenge in many African economies (African Development Bank, *African Economic Outlook, 2023*).
- Digital skills deficit: only 30 % of the population has basic digital skills, slowing the expansion of the digital economy (UNESCO, *Education for the Digital Age in Africa, 2023*).

2.3.1. Ghana in the African Digital Transformation Strategy

Ghana as one of the key countries in West Africa, has shown strong political and strategic will to align with the continental digital vision, implementing initiatives that reflect the AU's objectives in key sectors such as digital infrastructure, education and business innovation.

Evidence of this commitment is the launch of the 2024 Ghana Digital Economy Policy and Strategy, which focuses on strengthening digital skills in school education and vocational training for both students and teachers, promoting online training, digitising key economic sectors such as agriculture, manufacturing and finance, and fostering innovation hubs and accelerators for tech startups with the support of the Ghana Entrepreneurship Agency (GEA) and the National Entrepreneurship and Innovation Programme (NEIP).

According to the strategy, mobile network penetration is over 120% while mobile internet penetration was at 74.99% in 2022, with investment in the expansion of fibre optic and 4G infrastructure, although connectivity in rural areas is limited, demonstrating that there is a rural-urban divide in internet access and digitisation. The Ghanaian government has undertaken efforts to reduce the costs of broadband access by adopting regulations that encourage internet service providers to share infrastructure to prevent duplication of costs and improve network efficiency, regulating tariffs and access costs to avoid monopolies and ensure competitiveness, promoting low-cost internet schemes for vulnerable populations and free access to essential digital services in sectors such as education and health.

In terms of regulatory policies, Ghana has adopted a National Data Governance Strategy in line with the African Union Data Policy to ensure security, privacy and the secure and efficient exchange of data between businesses and institutions. A digital identification system centred on the Ghana Card - equivalent to the Spanish DNI, but also allowing access to health, education, banking and telecommunications services - was also adopted to facilitate access to financial and government services through digital platforms.

Among the main advances of both are the development of a National Data Governance Framework and a data classification system with three indicators (open, compliant and restricted) to ensure secure and efficient access to sources, the reinforcement of cybersecurity mechanisms, especially in digital transactions and online government services and the adoption in 2008 of the Ghana Card as the main national biometric identification, being mandatory its use for access to government (Health, social security and taxation), financial and telecommunications services.

Despite these developments, low awareness of data protection, lack of integration of data systems between different government ministries and agencies and the difficulty of accessing the Ghana Card in rural areas are the main obstacles to regulating digitisation in Ghana. In the area of digital skills acquisition, the lack of training in digital literacy, technological literacy and expertise in data management and cybersecurity complicate digitisation in the country, especially the use of the Ghana Card in rural areas.

In terms of technology adoption by small and medium-sized enterprises (SMEs), Ghana has increased the use of e-commerce platforms and digital payment systems such as MTN MoMo and Vodafone Cash, and has developed technology innovation hubs. However, lack of funding for technology investments, low digital literacy of entrepreneurs and workers, high prices of digital tools and lack of digital infrastructure in rural areas pose a challenge to the digitisation of SMEs.

In terms of digital economic integration, Ghana has benefited from its participation in the African Continental Free Trade Area (AfCFTA), which seeks to facilitate digital trade between African countries by removing regulatory barriers and promoting common e-commerce standards. The country is working on the development of the African Digital Single Market to facilitate cross-border e-commerce, the expansion of fibre optic, 4G and 5G networks and the interconnection of the Ghana Card with regional digital identification systems under the AfCFTA.

In conclusion, although Ghana has demonstrated strong commitment to the objectives of the African Union Digital Transformation Strategy, adopted a regulatory framework for classifying information, and adopted the Ghana Card as the primary tool for accessing government services biometrically the country faces several challenges in its digitisation such as unequal access between rural and urban areas and lack of digital skills training at all levels, both in education and in the world of work. Among the main recommendations are the need to increase investment in fibre optic infrastructure and 4G and 5G networks especially in rural areas, incorporating digital training in the school curriculum with an emphasis on programming, artificial intelligence (AI) and data analytics and promoting the use of e-commerce and fintech platforms among SMEs as well as creating subsidies for the adoption of technology in key economic sectors such as agriculture, manufacturing and trade. Cooperation with the AU and other regional organisations will be critical in overcoming these challenges and ensuring that Ghana takes full advantage of the opportunities offered by digitalisation for its economic and social development in the coming years.

3. Context: Economic situation of Ghana

Ghana, the country of study for this report, is located in West Africa, on the coast of the Atlantic Ocean, bordered by Burkina Faso to the north, Togo to the east, and Côte d'Ivoire to the west.

Illustration 1 Location of Ghana on the African continent: Source: CIA World Factbook.



Below are the basic facts about the country:

Table 1: General information on Ghana. Sources: CIA World Factbook,

Capital	Accra
Population (2024)	34.589.092 inhabitants
Total area	258.533 km ²
Name and position of head of Government	John Dramani Mahama, President of the Republic of Ghana (from 7 January 2025)
Currency and denomination	Ghanaian Cedi (GHS)
Equivalent in euros	1 EUR= 15.32 GHS (as of January 2025)
Religion	Christianity, Islam and Traditional Religions
Languages official	English
Growth of of the population (2024)	+2,15%
Expectation of life	70,1 years
Expectancy Degree literacy	79%
Rate gross of birth rate (per thousand)	27,6 births/1.000 population
Rate gross of mortality (per thousand)	5,9 deaths/1.000 population

The Ghanaian economy is well diversified, with the services sector being the largest contributor to GDP. Onshore hydrocarbon exploitation is expected to contribute to the growth of the economy, as well as progress in the diversification of the agricultural sector, especially cocoa production, moving towards the manufacture of cocoa derivatives.

Although the economy is diversified, high inflation and debt owed to international creditors are the two main obstacles to the Ghanaian economy, especially when it comes to investment. The country is also vulnerable to geopolitical events such as the continuation of the war in Ukraine and the lack of access to international sources of finance.

Below are the basic data for Ghana based on information from the World Bank and the CIA World Fact Book:

Table 2 Main economic indicators for (2022-2025): Sources: World Bank, CIA World Fact Book.

Ghana's main economic indicators (2022-2025)	
Currency	Ghanaian Cedi (GHS)
GDP 2023 (at current prices)	76,37 billion from USD
Annual real GDP growth (Estimated for 2025)	4,5%
Inflation (2025)	10,2%
Unemployment rate (2023)	3,1%
GDP by sector (2023)	Agriculture: 21,1% Industry: 29,5% Services: 42,5%
GDP per capita (2025)	2.190 USD
External debt (% of GDP)	57,1%
Foreign direct investment, % of GDP (2023)	1,7%
Value of exports of goods (2022)	25,99 million from USD
Value of imports of goods (2022)	26,73 million USD
Current account balance in relation to GDP (2025)	1,3%

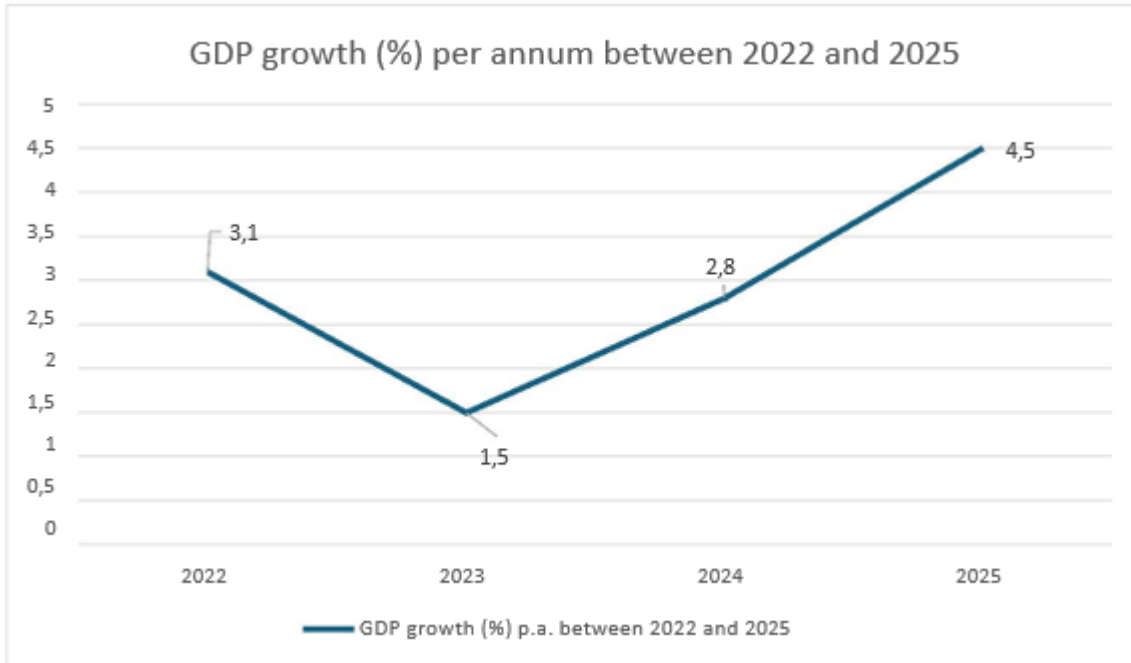
3.1.1. GDP growth

According to the African Development Bank, Ghana's economy contracted by 2.9 % in 2023, after recording a growth of 3.8 % in 2022. This decline is attributed to the spill-over effects of the war in Ukraine, global macroeconomic changes and international financial adjustments, which resulted in an economic crisis driven by the country's debt restructuring.

However, in 2024 the economy showed signs of recovery, reaching 4.4% growth, driven by buoyant industry, the services sector, private consumption and increased investment.

Projections for the coming years point to GDP growth of 4.5% in 2025 and 4.5% in 2025. % in 2025 and 4.9% in 2026. This rebound would be largely supported by the expansion of hydrocarbon production, with the start of exploitation of the Pecan field and the possible discovery of new reserves in Ntomme Far West, key factors in the country's economic growth prospects.

Figure 2: Annual GDP growth between 2022 and 2025(%) Source: African Development Bank.

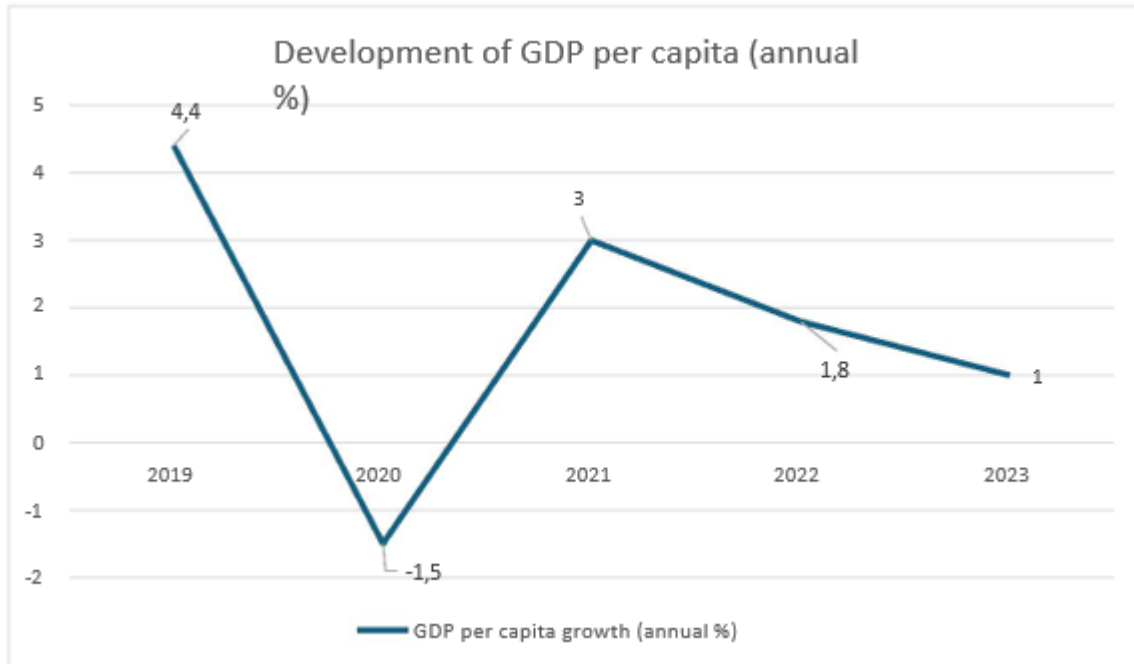


Since 2020, when GDP per capita fell to -1.5%, the economy has managed to remain in positive territory. However, after peaking at 3 % in 2021, it experienced a gradual slowdown to 1 % in 2023.

According to the African Development Bank's *Africa Economic Outlook*, this slowdown was due to macroeconomic instability, global spending adjustments and the spillover effects of the outbreak of war in Ukraine, which led the Ghanaian government to adopt a tight monetary policy.

Despite this slowdown, the African Development Bank's projections indicate that GDP per capita could grow by 4.5% in 2025, reflecting a recovery driven by macroeconomic stabilisation and dynamism in key sectors of the economy.

Figure 3: GDP per capita growth between 2019 and 2022 (% p.a.) Source: World Bank

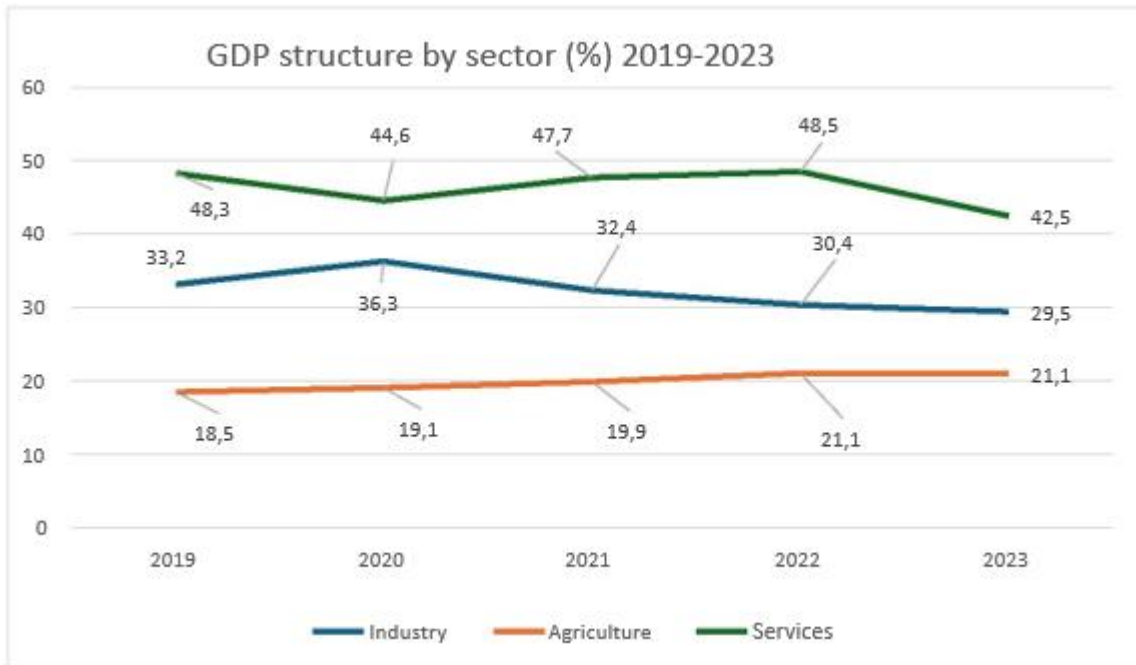


The contribution of the agricultural sector to Ghana's GDP increased between 2019 and 2023, from 18.5% to 21.1%, reflecting a steady growth in its share of the economy.

Industry, on the other hand, showed a declining trend. It reached a peak of 36% in 2020, but has since experienced a progressive decline, standing at 29.5% in 2023, below the 30% threshold it maintained in 2019.

The services sector remains the mainstay of the Ghanaian economy, accounting for close to 50% of GDP between 2019 and 2022. However, it fell significantly to 42.5% in 2023, a decline attributed to the economic crisis resulting from the restructuring of the country's high external debt and its impact on the dynamism of consumption and investment.

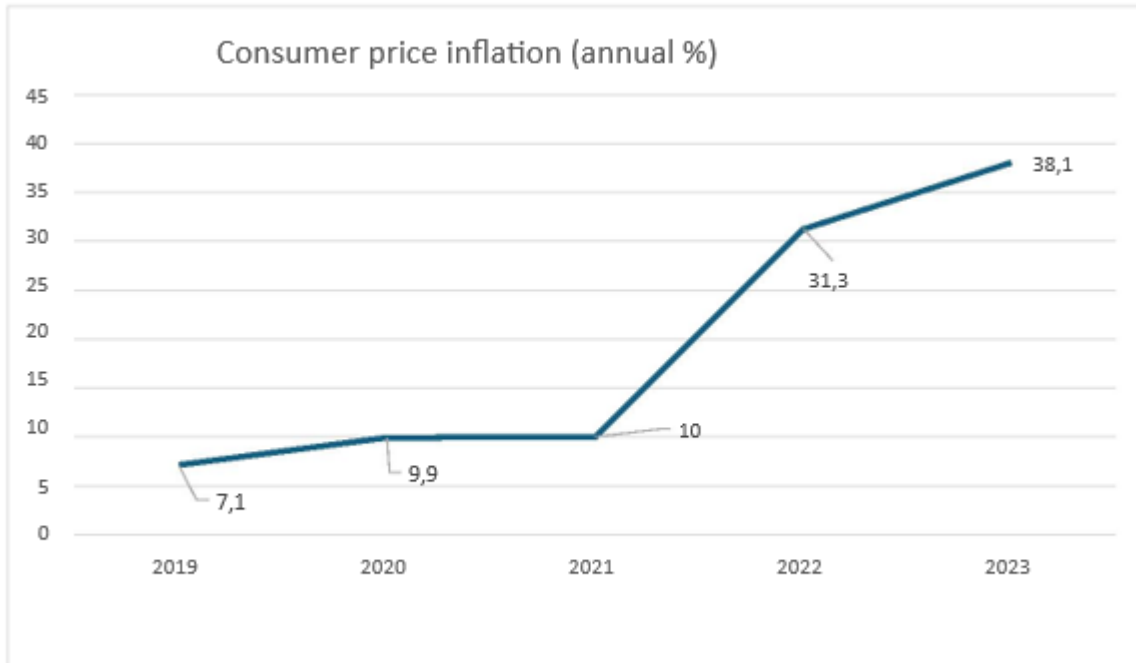
Figure 4: GDP structure by sector 2019-2023. Source: World Bank: World Bank.



3.1.2. Inflation

Inflation, which experienced a slight rise of 2.8 points between 2019 and 2020 as a result of the impact of the COVID-19 pandemic on the economy, boomed between 2021 and 2022 from 10% to 31.3%. This increase was due to the Ghanaian economy's high dependence on agricultural and mining exports, both of which are vulnerable to global disruptions caused by the Ukraine war. In 2023, inflation rose again to 38.1% as a result of the economic crisis resulting from the high debt restructuring and the downgrading of the credit agencies' assessment.

Figure 5: Consumer price inflation. Source: World Bank: World Bank.



3.1.3. Labour market and unemployment

According to the most recent data from the United Nations Population Fund (UNFPA), in 2024 the country had a working age population of 60%, although the lack of data on the percentage of men and women makes it difficult to make an initial assessment of the presence of women in the Ghanaian labour market.

In terms of economic sectors, in 2023, the services sector is the main driver of employment, accounting for 46.9% of available employment, according to World Bank data, followed by the agricultural sector with 35.4%, while industry accounted for 17.7% of available jobs.

The informal sector is pervasive in the Ghanaian economy employing 80% of the labour force, contributing 27% of GDP, according to the National Productivity, Employment and Growth Report of the state data collector, the Ghana Statistical Service (GSS), 2025. The report indicates that low productivity, underemployment and stagnant wages are characteristics of the informal economy in the country, which are obstacles to the growth of the Ghanaian economy and productivity growth.

One of the main labour market challenges in Ghana is the provision of both basic and advanced skills training to both the employed and unemployed population.

Although up-to-date data on unemployment by educational attainment are not yet available from both international and national agencies, the World Bank indicates that the youth unemployment rate in 2023 stood at 5.50%, while unemployment among the educated, including university graduates and those with professional and vocational training, is reported to be increasing.

To address these challenges, the government has implemented a number of employment support programmes especially in technical and vocational education and training (TVET) and apprenticeship and vocational training programmes.

In the area of TVET programmes, the Ghana Skills and Technology Development Project (GSTDP) funded by the World Bank and the Danish International Development Agency (DANIDA) aims to provide improved vocational guidance, financing and infrastructure for TVET jobs. There is also the Ghana Skills and Development Initiative (GSDI) funded by GIZ and COTVET to gear apprenticeships towards skills acquisition and the Ghana TVET Voucher Project geared towards handicrafts.

There are two apprenticeship programmes: the National Apprenticeship Programme (NAP) to standardise apprenticeship training and the Industrial Apprenticeship Opportunities in Ghana (OICG) offering training in 18 trades for youth without tertiary education.

Impact analysis of these programmes shows that young people who participated in apprenticeship programmes are significantly more likely to obtain formal employment and promote self-employment, thereby reducing the likelihood of entering the informal employment market.

Despite these advances, structural obstacles persist that limit the generation of quality jobs. There is weak productive diversification, with a strong dependence on extractive economic activities such as oil and mining. According to the World Bank report. This sector is weakly digitised and this dependence restricts job creation in sectors with greater growth potential, such as information and communication technologies (ICTs), which could contribute to increased productivity both in the extractive economy and in other sectors.

The country's weak industrialisation results in a lack of effective policies to integrate agricultural labour into the manufacturing sector. This impedes economic diversification and limits job opportunities in industry. There is also a misalignment between TVET training provision and market demands. According to the Technical and Vocational Education and Training Sector Report of the Ministry of Education and the Commission for Technical Education and Training, technical education remains theoretical, with outdated equipment and little involvement of industry in defining skills.

As a result, graduates of these programmes face difficulties in accessing the labour market, leading to unemployment or entering the informal sector.

Another challenge is the lack of coordination of employment policies due to institutional fragmentation. The absence of a unified framework has led to a proliferation of programmes that, in many cases, lack coherence among themselves. This dispersion hinders the implementation of effective strategies and the optimisation of resources to maximise the impact of government initiatives.

The precariousness of the informal sector and limited access to finance are other factors hindering the generation of formal employment in Ghana. The lack of access to private credit, which according to Ghana Rising represents 12% of GDP, hinders the consolidation of SMEs and MSMEs, the core of the country's business fabric. This situation forces many young workers to resort to the informal sector as the only alternative to generate income.

There is also a lack of key digital skills and a weak link to digital transformation. According to the World Bank's Youth Employment 2020 report, education programmes in Ghana do not include training in advanced digital skills such as data analysis, computer science and digital tools. In rural areas, this is exacerbated by limited digital infrastructure and low internet coverage, which restricts young people's access to technology training opportunities.

The above-mentioned reports identify opportunities for quality job creation in the country. The promotion of high-productivity service sectors such as education, health, telecommunications, finance and engineering is recommended. The digitisation of these sectors would generate high value-added jobs and strengthen the country's competitiveness.

The reports call for reform of TVET education, promoting collaboration between industry and the education sector to adapt technical training programmes to the needs of the labour market with the integration of technology and digitisation as key elements to foster economic growth. Improving connectivity infrastructure and fostering the adoption of digital solutions in SMEs would enable the creation of remote jobs in the ICT sector and favour the development of entrepreneurial ecosystems.

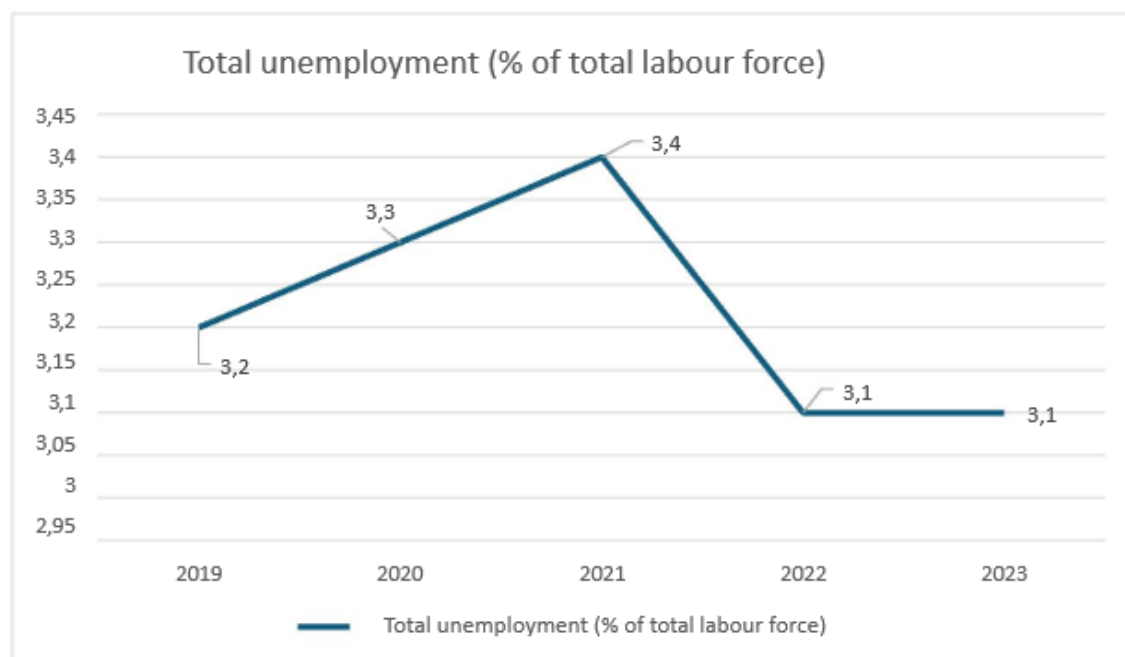
Supporting entrepreneurship is another key to formal employment growth. Facilitating access to credit for MSMEs and SMEs, especially in strategic sectors such as agribusiness, light manufacturing and digital services, would boost the generation of stable and sustainable jobs. In this regard, industrialisation policies such as One District, One Factory, to establish at least one factory in each region of the country, can play a key role in expanding employment and inclusive economic development.

According to the latest available data from the World Bank, unemployment in Ghana was 3.1% in 2023, the same figure as in 2022. However, these statistics do not take into account the unemployed who are not in the system, so the figures shown may not be the real figures, the World Bank and the World Organization of Workers warn.

The under-reporting of the unemployed in the case of Ghana could indicate that a considerable part of the labour force is not being accounted for in the official metrics. This could be due to various factors, such as informality in the labour market, lack of access to labour registration or demotivation towards the formal job search system.

In addition, the evolution of unemployment in Ghana in 2022 and 2023 may reflect structural changes in the Ghanaian economy that merit further analysis. For example, it is possible that there is an increase in the labour force or that specific sectors of the economy are facing difficulties, which could be pushing more people into unemployment or informality. It is also possible that the unemployment rate may have been higher between 2022 and 2023 given that the Ghanaian economy experienced a recession in that period, and that it is possible that many of the unemployed ended up in the informal economy.

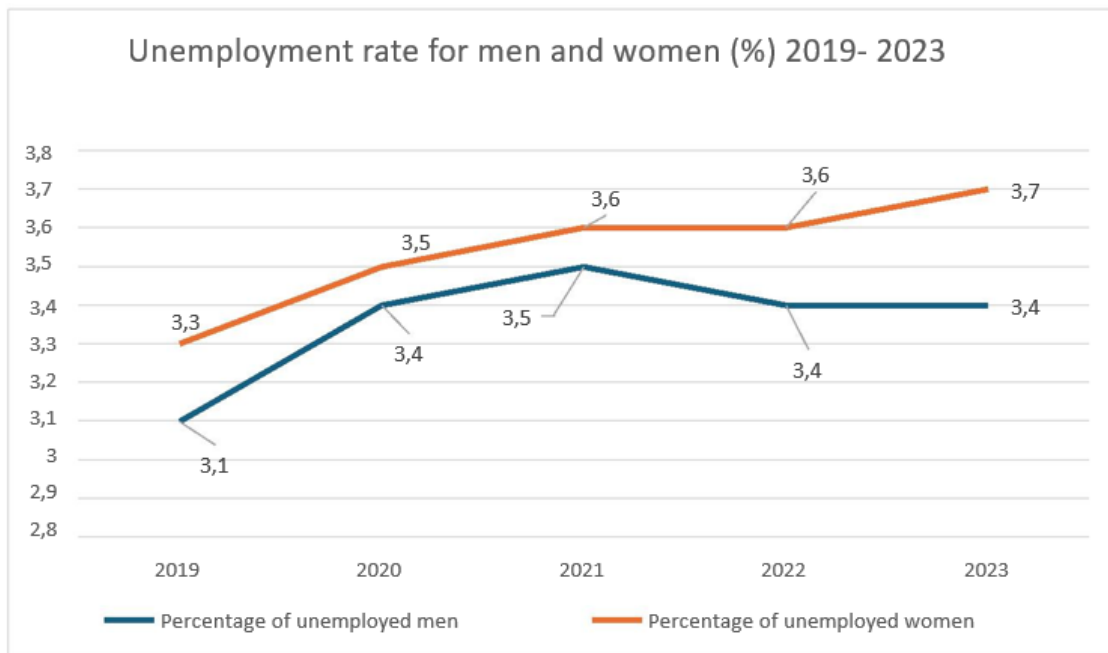
Figure 6: Total unemployment rate (% of total labour force) 2019-2022 Source: World Bank.



The data indicate that unemployment increased between 2019 and 2021, due to the impact on the Ghanaian economy of the COVID-19 pandemic on trade flows. We note how in 2022 unemployment declined by 0.3 points to 3.1%, indicating that the economy experienced an improvement in 2022.

As for male and female unemployment, we observe a steady increase in female unemployment between 2019 and 2023 from 3.3% to 3.7%. In the case of male unemployment, we observe an increase between 2019 and 2021 as a consequence of the impact of the COVID-19 pandemic, reaching a maximum of 3.5%, although in 2022 it fell to 3.4%, remaining at that figure in 2023. Although at first glance the difference in unemployment between men and women is not that high (with a difference of 0.3% between the unemployment rate of men and women in 2023), the slight increase in female unemployment indicates that women's entry into the labour market has not recovered after the COVID-19 pandemic, indicating that there are still challenges in finding employment.

Illustration 7 Evolution of male and female unemployment rate in Ghana 2019-2022. Source: World Bank.



3.2. Ease of doing business on Ghana

The business environment in Ghana has undergone significant transformations in recent years, characterised by progress in certain regulatory areas, but also by persistent challenges in terms of macroeconomic stability, access to credit and administrative efficiency. Ghana's economy, traditionally one of the most dynamic in West Africa, has experienced fluctuations that have impacted investor confidence and the ease of doing business in the country.

According to the US State Department's *Investment Climate Statements - Ghana (2024)*, the Ghanaian government maintains a generally open stance towards foreign investment, with incentives in strategic sectors such as mining, agribusiness and renewable energy. However, the business environment is still plagued by a high bureaucratic burden and high operating costs. Ghana has fallen in the global competitiveness rankings in recent years due to the depreciation of its currency, cedi, rising inflation and the public debt crisis, factors that have increased uncertainty in the private sector (*Department of State, 2024*).

The African Development Bank (ADB) notes that, after real GDP growth of 3.8% in 2022, Ghana experienced a slowdown to 2.9% in 2023, reflecting the effects of a macroeconomic crisis exacerbated by fiscal deficits and financial market liquidity constraints (*African Economic Outlook, 2024*). Public debt, which reached 83.4 % of GDP in 2023, forced the government to restructure internal and external bonds for more than USD 13 billion. While these measures aim to restore investor confidence, uncertainty about their long-term effectiveness continues to weigh on the private sector (*Financial Times, 2024*).

According to the latest African Development Bank (ADB) report, Ghana's real Gross Domestic Product (GDP) growth is projected to have reached 3.4% in 2024 and forecasts growth of 4.3% in 2025, driven mainly by the industry and services sectors on the supply side, and by private consumption and investment on the demand side.

Focusing on the area of ease of starting a business, Ghana has implemented reforms to reduce bureaucracy and speed up business registration times. Currently, the Ghana Investment Promotion Centre (GIPC) operates a one-stop-shop system for investors, allowing companies to register within 7-14 days. However, companies still face barriers related to obtaining business licences, construction permits and tax regulations.

According to the ADB, one of the main regulatory challenges in Ghana is the lack of transparency in the application of regulations, which creates uncertainty in the private sector. In addition, despite improvements in digitisation, certain administrative processes still rely on physical processing, which increases costs and waiting times (*African Economic Outlook, 2024*).

One of the main obstacles, which is common in many West African countries, is access to credit remains one of the main obstacles for SMEs in Ghana. According to the *Investment Climate Statements - Ghana (2024)*, interest rates in the country are among the highest in West Africa, averaging 30% per annum, which limits the ability of small and medium-sized enterprises to finance their expansion. In addition, financial institutions require high collateral, which further restricts access to loans for local start-ups and entrepreneurs.

In an attempt to address this challenge, the Bank of Ghana has implemented policies to reduce the banking sector's reliance on government bonds and increase credit to the private sector. However, the public debt crisis has reduced liquidity in the financial market, affecting the availability of capital for productive investments (*ADB, 2024*).

Another obstacle is the high cost and inefficiency of energy distribution, which continues to affect the competitiveness of businesses in Ghana. According to the *African Economic Outlook (2024)*, the cost of industrial electricity in Ghana is one of the highest in the region, which particularly impacts manufacturing and technology sectors, despite government efforts to improve infrastructure.

In terms of connectivity, the country has made investments in telecommunications infrastructure, which has enabled significant growth in the adoption of digital services. However, broadband coverage is still limited outside the major cities such as Accra and Kumasi, making it difficult for SMEs in rural areas to access digital tools (*ADB, 2024*).

Ghana has historically been considered a stable destination for foreign investment, but the recent macroeconomic crisis and the devaluation of the cedi have created uncertainty. In particular, sectors such as mining and energy have been subject to contractual revisions that have raised concerns among international investors. According to the *Financial Times (2024)*, the government has renegotiated terms in mining contracts to increase tax revenues, a move that, while legitimate, has raised doubts about the predictability of the regulatory environment in the country.

All in all, Ghana remains one of the most dynamic economies in West Africa, but faces structural challenges that affect the ease of doing business. Although progress has been made in streamlining administrative processes and promoting investment, challenges related to macroeconomic stability, access to credit and operating costs remain. The implementation of coherent policies, together with greater regulatory and financial stability, will be key to restoring business confidence and fostering inclusive and sustainable economic growth.

3.3. Impact of the macroeconomic conditions at the digitisation of Ghana

Ghana's macroeconomic environment influences the adoption and expansion of digital technologies in the country.

Starting with inflation, which as mentioned above is high in Ghana and therefore increases the costs of technology equipment and services, hindering investment in digital infrastructure. According to World Bank data, consumer price inflation in Ghana was 38.1% in 2023, one of the highest in the region. This price increase directly affects the ability of businesses, especially SMEs, to acquire the hardware, software and digital services necessary for their digital transformation.

In addition, the aforementioned depreciation of the Ghanaian cedi against the US dollar and the euro makes technology imports more expensive. Ghana relies heavily on imported technology for its digital infrastructure. The depreciation of the local currency inevitably increases the costs of acquiring and maintaining technology equipment and services, which can delay the implementation of digital solutions in businesses.

High bank interest rates in Ghana limit access to credit for SMEs, as discussed above, affecting their ability to invest in digitisation. According to the World Bank, lending rates in Ghana remain high, making it difficult for small and medium-sized enterprises to access affordable financing for digital transformation projects. Moreover, in an environment of high inflation and rising costs, SMEs tend to prioritise immediate operational expenses over technology investments, perceiving digitisation as a long-term strategy rather than an immediate necessity.

In addition, the regulatory and fiscal framework in Ghana presents challenges for the adoption of digital technologies. The application of Value Added Tax (VAT) on the purchase of software and cloud services increases costs for businesses seeking to digitise. In addition, bureaucracy in obtaining licences or certifications can delay the adoption of digital solutions, especially in highly regulated sectors. Although Ghana has enacted cybercrime and data protection laws, regulatory gaps persist, creating uncertainty and inhibiting investment in information technology.

Ghana has hardly any tax incentives for SMEs to reinvest their business profits in the adoption of new technologies or digitisation.

As a result of all these factors, the adoption of digital tools in Ghana is uneven. Companies with greater financial capacity and access to resources are better able to navigate economic and regulatory barriers, taking full advantage of digital transformation. In contrast, SMEs and businesses with limited resources face greater obstacles to going digital, which can widen the technological and competitive gap in the country.

4. Description of the business fabric of Ghana

Ghana's business fabric has undergone a significant transformation in recent decades, driven by factors such as population growth, private sector expansion and government policies focused on industrialisation and digitisation. The country has established itself as one of the most diversified economies in West Africa, with an ever-evolving entrepreneurial ecosystem, fostered by the rise of fintech, digital commerce and the development of strategic sectors such as mining and agribusiness. However, structural challenges remain, such as high informality, restricted access to finance and the uneven distribution of economic activity, mainly concentrated in urban hubs such as Accra and Kumasi.

4.1. Geographical distribution of enterprises

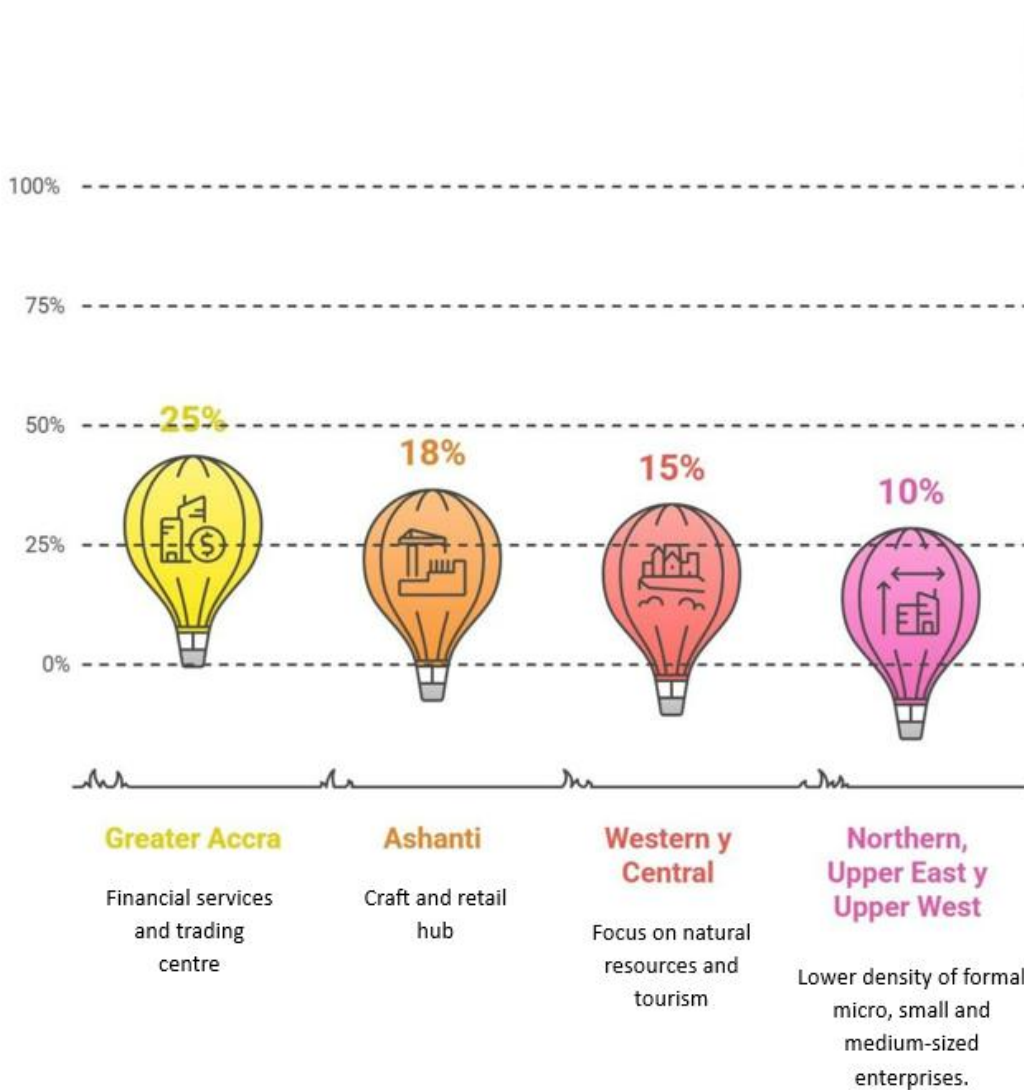
The distribution of MSMEs across the 16 administrative regions of Ghana shows a pattern of concentration in urban centres, particularly in the Greater Accra and Ashanti region, which together account for approximately 43% of the total number of MSMEs in the country. This concentration reflects the advantages that these regions offer in terms of infrastructure, access to markets and availability of skilled labour.

The Greater Accra region, where the country's capital is located, concentrates approximately 25% of MSMEs, with a predominance of those engaged in commerce, financial services and light manufacturing. The Ashanti Region, with Kumasi as the economic centre, is home to about 18% of MSMEs, with a notable presence in handicrafts, retail trade and agro-processing.

Coastal regions such as Western and Central have a moderate concentration (about 15% combined), with enterprises mainly oriented towards natural resource processing, fisheries and tourism. In contrast, northern regions such as Northern, Upper East and Upper West show the lowest density of formal MSMEs (about 15% combined), although there is significant informal business activity that is difficult to capture in official statistics.

In contrast, northern regions such as Northern, Upper East and Upper West show the lowest density of formal MSMEs (about 10% combined), although there is significant informal business activity that is difficult to capture in official statistics.

Geographical distribution of MSMEs in Ghana.



Factors influencing the geographical distribution of MSMEs are as follows:

1. Infrastructure: southern regions have better road, energy and telecommunications infrastructure, facilitating business operations.
2. Proximity to markets: proximity to ports, airports and urban centres offers competitive advantages for MSMEs in regions such as Greater Accra and Western.

3. Educational disparities: Southern regions have higher levels of education, creating a more conducive environment for formal entrepreneurship.
4. Historical patterns of development: Colonial heritage concentrated development in certain regions, a pattern that persists today.



Illustration 8. Regional organisation of Ghana. Source: Government of Ghana

Government policies have attempted to encourage decentralisation of the productive fabric through fiscal incentives and investment support programmes in rural areas. However, the impact of these measures is still limited and most economic activity remains concentrated in urban areas.

4.2. Distribution by sector of activity

The services sector is the mainstay of the Ghanaian economy, accounting for about 52% of GDP, with a strong presence in trade, telecommunications, transport and financial activities. According to the African Development Bank (African Economic Outlook, 2024), the growth of digital commerce and the consolidation of fintech have been key to the modernisation of the sector, boosting access to financial services in rural and urban areas. Subsectors such as transport and storage (10 % of GDP), information and communication (9.8 % of GDP) and trade and repair of goods (7 % of GDP) lead the economic contribution of the tertiary sector.

Industry accounts for about 26 % of GDP, with significant weight in mining, manufacturing and construction. Mining and quarrying, led by gold, bauxite and oil extraction, contributes 10 % of GDP, consolidating its position as one of the main sources of export earnings. Construction, driven by investments in infrastructure and residential projects, accounts for 8% of GDP, while manufacturing, with 7% of GDP, focuses on agro-industrial processing, textile production and cement and chemical manufacturing.

The primary sector, which includes agriculture, livestock and fisheries, maintains an essential role in the economy, although its contribution has declined in relative terms. It currently accounts for 22% of GDP, with crops accounting for 17% of GDP, of GDP, with cocoa, cashew nuts and horticultural products for export being the most important. However, low productivity and lack of mechanisation limit the sector's growth and its ability to compete with more industrialised economies.

Contribution of Sectors to Ghana's Economy

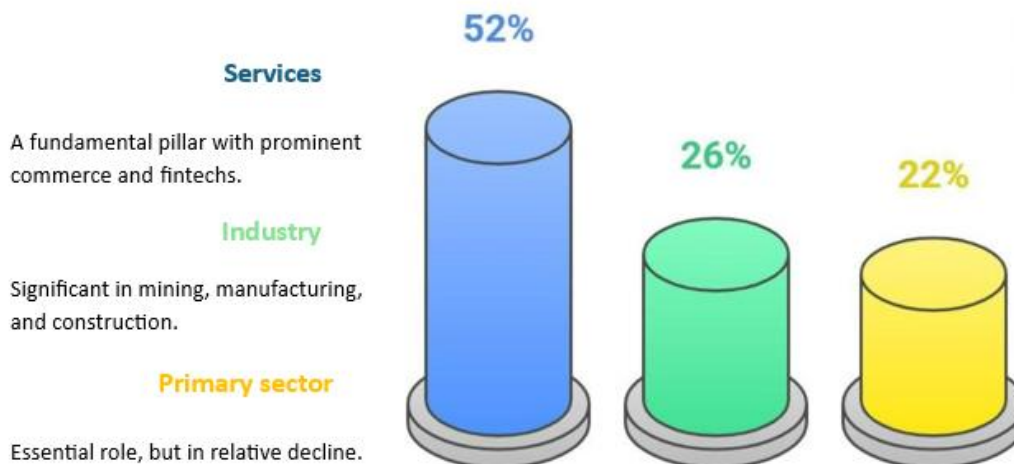


Illustration 9. Sectoral contribution to Ghana's GDP. Source: African Development Bank. Own elaboration.

The technology sector, although not yet disaggregated in official statistics, has registered accelerated growth in recent years. According to the African Economic Outlook (2024), Ghana's digital ecosystem has evolved rapidly thanks to initiatives such as the National Digital Strategy and the boosting of startups in fintech, mobility and e-commerce. However, lack of access to finance and reliance on imported infrastructure remain barriers to sector consolidation.

In conclusion, Ghana's economy is on a trend towards tertiarisation, with the services sector as the main driver of growth, followed by industry and agriculture. However, structural challenges such as business informality, high cost of credit and macroeconomic volatility may affect the stability of these sectors in the short to medium term.

4.3. Firm size at Ghana

In Ghana, micro, small and medium-sized enterprises (MSMEs) form the backbone of the business fabric and play a key role in the country's economy. According to the Central Bank of Ghana's *SME Sector in Ghana: Current Trends and Future Projections* (2023) and the latest data from the *Ghana Statistical Service* (GSS), there are approximately 2.1 million MSMEs in the country. Of these, 85.000 are medium-sized enterprises (less than 50 employees), 320.000 are small enterprises (less than 30 employees), and about 1.7 million are micro enterprises (less than 10 employees).

Overall, according to the sources cited, these enterprises account for 88% of the total business fabric in Ghana.



Illustration 10. Distribution of MSMEs in Ghana according to their size. Source: Central Bank of Ghana: Central Bank of Ghana. Own elaboration

The contribution of MSMEs to GDP is significant, as according to the most recent data from the *Ghana Employers Association* (GEA), the country's main employers' association, MSMEs, both formal and informal, contribute between 25-30% of nominal GDP, in line with their weight within the Ghanaian business ecosystem.

In addition to their economic impact, MSMEs are one of the main drivers of employment in Ghana. According to the *Ghana Living Standards Survey* (2019) and the Central Bank of Ghana report, this sector employs between 60% and 70% of the country's total workforce. Within this context, the *Ghana Living Standards Survey* (2019) notes that only 16 % of the labour force is employed in the formal private sector, while informal employment remains predominant, especially among the youth, who mostly join micro and small family businesses, mainly in the service sector and agriculture.

4.4. Legal structure of Ghanaian MSMEs

MSMEs in Ghana operate under various legal structures, although there is a marked tendency towards informality. According to the current regulations we can distinguish the following legal forms:

- Sole Proprietorship (Sole Proprietorship): this legal form is common for small businesses and sole proprietorships. The owner has full control over business decisions, but also assumes full responsibility for the obligations of the company.
- Limited Liability Company (LLC): this is one of the most common forms of business organisation in Ghana. Although no minimum capital is specified, companies are expected to provide adequate capital for their operations. The partners (also called members) have their liability limited to the amount of their investment in the company.
- Public Limited Company (PLC): This type of company is geared towards large businesses seeking to go public or attract a large number of investors. Similar to the LLC, the liability of the shareholders is limited to the capital they have invested.
- Limited Partnership: combines partners with unlimited liability (general partners) who manage the company and partners with limited liability (limited partners) who contribute capital but do not participate in the day-to-day management.
- General Partnership: all partners participate in the management of the company and share unlimited liability for the debts and obligations of the company.

Table 3. Main legal forms in Ghana. Source: GPIC. Own elaboration

Type of company	Minimum number of partners	Responsibility of the Partners
Sole Proprietorship (Sole Proprietor)	1	Unlimited: the owner is liable with all his personal assets for the debts of the company.
Limited Liability Company (LLC)	2	Limited to the capital contributed: the partners are not liable with their personal assets for the debts of the company.
Company Public Limited Company (PLC)	2	Limited to the capital contributed: the shareholders are not liable with their personal assets for the debts of the company.
Limited Partnership	2 (at least one general partner and one limited partner).	Mixed: general partners have unlimited liability, while limited partners have limited liability to the capital
General Partnership	2	Unlimited: all partners are liable with their personal assets for the company's debts.

On minimum capital in partnership formation, according to available information, the minimum capital requirements for foreign participation in companies in Ghana vary according to the type of company and ownership structure, as set out in the Ghana Investment Promotion Centre Act 2013 (Act 865). These requirements are detailed below:

1. Wholly foreign-owned companies:

- Minimum capital requirement: US\$500.000.
- Permitted activities: these companies may engage in any economic activity, except those reserved exclusively for Ghanaian nationals.

2. Joint ventures between foreigners and Ghanaians:

- Minimum capital requirement: \$200.000
- Ghanaian shareholding: Ghanaian partner must own at least 10% of the shares of the company.

3. Retail trading enterprises:

- Minimum capital requirement: \$1.000.000.
- Ownership and operation: these enterprises can be wholly foreign-owned or in partnership with Ghanaians.
- Staff: Must employ at least 20 Ghanaian nationals.

The law reserves certain activities for Ghanaian nationals and Ghanaian-owned companies. These activities include:

- Sale of goods in markets or designated places gipc.gov.gh
- Operation of taxis and small buses (up to 25 seats).
- Barber shops, hairdressers, beauty parlours and tailoring or sewing services.
- Sale of low-value hardware products.
- Production and sale of local food.

The regulatory framework for MSMEs includes the Companies Act (Act 992) of 2019, which simplified business registration procedures, and the Ghana Investment Promotion Centre Act (Act 865) of 2013, which provides incentives for investments in certain priority sectors.

According to data from the Ghana Registration Department collected by STATISTA, 2019 was marked by the predominance of sole proprietorships, which made up the majority of new businesses registered in the country. With approximately 66.200 registrations, the *Sole Proprietor* established itself as the preferred option for Ghanaian entrepreneurs, suggesting that ease of registration and operational flexibility are key factors in establishing a business. This trend reflects an ecosystem where informality continues to play an important role and where many workers opt for self-employment rather than integrating into more complex business structures.

On a second level, *Company Limited by Shares* (LLCs) emerged as the most common alternative among those seeking a more formal corporate structure. With 18.100 registrations, this type of entity represents an attractive option for those who wish to limit their liability to the capital invested and access better financing opportunities. Its

presence in the total number of registrations indicates that, although individual entrepreneurship is still the norm, there is a growing interest in business models with greater legal and financial strength.

Despite the dynamism of the Ghanaian private sector, other legal forms were significantly under-represented. *Company Limited by Guarantee (LLC)*, used mainly for non-profit organisations, recorded low numbers compared to commercial companies. *Subsidiary Business Name and Partnership* also remained at low levels, suggesting that most businesses prefer to operate independently rather than under partnership or subsidiary structures.

In contrast to the strong local business activity, the presence of foreign companies (*External Company*) was minimal, with only 96 registrations. This suggests that, while Ghana is an attractive investment destination, international companies may find it more convenient to operate through strategic partnerships with local players rather than establishing new entities in the country.

Number of new companies registered in Ghana as of 2019, by type of entity

Number of companies registered in Ghana 2019, by type of entity

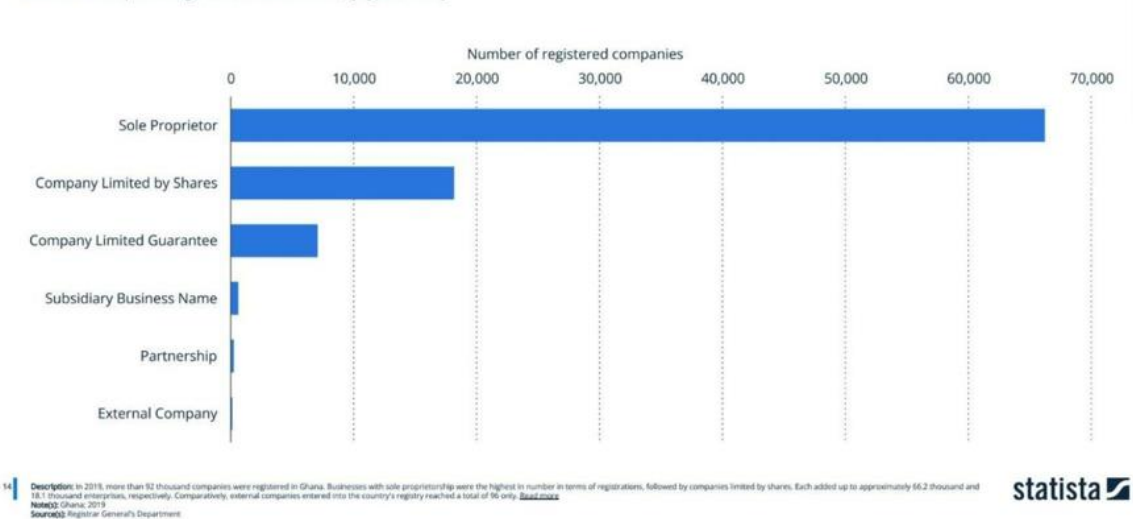


Figure 11. Number of new companies by legal form in Ghana, 2019. Source: STATISTA

4.5. Employment generated by the private sector

The private sector emerges as the main driver of employment in Ghana, absorbing approximately 92% of the country's total labour force. Within this structure, the informal sector accounts for 80,5 per cent of employment, while the formal private sector employs 11,8 per cent of workers, according to the *Private Sector Youth Employment* report published by the International Labour Organisation (ILO) in 2021, reflecting the weight of the private sector in generating employment opportunities in the country.

The economic sectors with the greatest capacity to generate formal employment include manufacturing, agriculture and tourism, although their growth has been limited by various structural factors. In contrast, sectors such as mining and finance have experienced strong economic growth, but their impact on employment generation has been more moderate, due to their highly specialised nature and the automation of certain processes, according to the ILO report mentioned above, underlining that private sector growth has not been accompanied by an equivalent expansion in terms of formal employment.

One of the most profound challenges facing the private sector in Ghana is the gap between economic growth and job creation. Despite the boom in strategic sectors such as mining and petroleum, formal employment generation has not kept pace. This phenomenon has led to an increase in the unemployment rate, especially affecting young people, who face barriers to accessing the labour market due to lack of experience and a disconnect between academic training and the real needs of the economy. The International Labour Organisation warns in its study on youth employment in the private sector that this trend could perpetuate an economic model in which growth does not translate into improvements in the living conditions of the population.

Despite the informality of the economy and other challenges such as access to finance, cost of factors of production (effects of inflation), the private sector remains a key pillar of the Ghanaian economy, with significant growth potential in emerging sectors.

Digitalisation and technological innovation have given rise to new opportunities in areas such as fintech, e-commerce and service automation, enabling a transformation of the labour market. According to the *Digitalisation of Basic Services in Ghana* report published in 2024, the country's digital ecosystem is expanding, opening up new possibilities for formalising jobs and generating business opportunities.

However, for this growth to be inclusive and sustainable, it will be crucial to address the structural challenges that still limit access to quality employment in the country.

4.6. Gender in business leadership

Ghana has made progress in gender parity in business leadership, but challenges remain in achieving full parity and in integrating women. According to a World Bank survey in 2023, 36% of the SME workforce is made up of women, but 20% of women hold leadership positions in SMEs. Historically lower rates of female schooling, the patriarchal culture entrenched in several regions and the difficulties faced by women entrepreneurs in accessing larger loans explain the low presence of women in the workforce and leadership of MSMEs.

To encourage female inclusion, the government has promoted microfinance and training initiatives focused on women, which have led to greater female empowerment, especially in the creation of retail businesses, handicrafts and agro-industry. Among its most relevant programmes is the Women in Business Initiative (WBI), which provides training in leadership, business management and financial planning to women entrepreneurs and managers, benefiting more than 5.000 women in the acquisition of business skills and improved access to business opportunities.

Another programme, the Female Entrepreneurs Growth Programme (FEGP), was designed to strengthen women's capacity in SME management through financial advice and access to investment networks. Through this programme, 3.000 women have received financial support, facilitating business expansion and employment generation in agribusiness and commerce.

Similarly, in the agricultural sector, the government promoted Women in Agriculture and Agribusiness Support (WAAS) to empower women in the agro-industrial sector by providing access to agricultural inputs, technical training and financing to improve the productivity of rural women entrepreneurs. More than 2.500 women have benefited from the programme, increasing their profitability and competitiveness in the market. These initiatives have facilitated greater female empowerment, especially in sectors such as retail trade, handicraft production and agro-industry.

According to ILO and World Bank data collected by STATISTA, the role of women as employers in Ghana has shown a relatively stable trend over the last two decades, at around 4% of total female employment. However, recent years have seen a slight decline in this share, suggesting the persistence of structural barriers to female entrepreneurial leadership in the country.

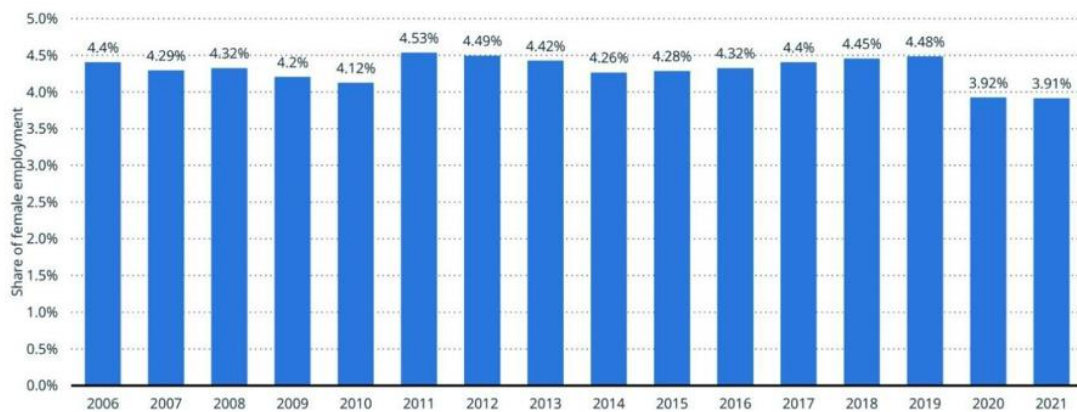
From 2006 to 2019, the share of female employers fluctuated in a narrow range between 4,2% and 4,5%, peaking in 2011 at 4,53%. During this period, female participation in business management consolidated, reflecting some stability in entrepreneurial opportunities for Ghanaian women.

However, from 2020 onwards, there is a noticeable drop in female participation in employment as employers, falling to 3,92% in 2020 and then to 3,91% in 2021. This decline may be linked to the adverse economic effects of the COVID-19 pandemic, which disproportionately impacted women-led businesses, especially in vulnerable sectors such as retail, hospitality and services.

Despite the recent decline, the stability of female participation in formal employment suggests that while there are business leadership opportunities for women in Ghana, challenges cited above persist.

Share of female employers in Ghana from 2006 to 2021

Share of female employers in Ghana 2006-2021



Disclaimer: As of 2021, approximately 3.91 percent of all female employment in Ghana referred to self-employed women, a minor decrease from 3.92 percent in the preceding year. Since 2006, the share of female employers has remained around four percent. [Read more](#)
Method: Ghana, 2006 to 2021
Source: ILO, World Bank

4.7. Youth employment in Ghana

Youth employment plays a key role in Ghana's labour market dynamics. According to the Ghana Living Standards Survey (GLSS VII, 2016/2017), produced by the Ghana Statistical Service (GSS), 13,5 % of youth employment is in the private sector, with an uneven distribution between the formal and informal sector.

While 15,6 per cent of 25-35 year olds work in the formal private sector, 15-24 year olds have a much larger presence in the informal economy, with 10.3 per cent in the formal sector and the majority engaged in unregulated and unprotected work. This pattern reveals the difficulty young people face in accessing formal, well-paid and stable jobs.

For this reason, the government promotes different programmes to incorporate youth into the labour market, such as, for example, the National Entrepreneurship Innovation Programme (NEIP), launched in July 2017, an initiative that seeks to foster entrepreneurship and innovation in the country. Its main objective is to provide comprehensive support to startups and small businesses, offering business development services, startup incubators and funding for young businesses, in order to promote their growth and success. Part of it is the NEIP Skills For Jobs initiative, which aims to create

120.000 jobs after training 100.000 people in various skill areas. By the end of 2023, NEIP has supported 15.000 startups, providing funding, training and mentoring, resulting in the creation of 103.871 jobs.

On the other hand, the World Bank-funded programme to support skills development and job creation in Ghana, the Ghana Jobs and Skills Project was launched in January 2021. It offered entrepreneurship training and business start-up grants to 50.000 young Ghanaians, with the aim of empowering the unemployed to achieve sustainable enterprise development.

In addition, the project aims to provide apprenticeship training for at least 25.000 individuals during the implementation period, promoting economic inclusion and social cohesion in the country. The programme has become a key tool to reduce youth unemployment in the country and strengthen the productivity of the Ghanaian economy.

4.8. Average enterprise profile and growth dynamics

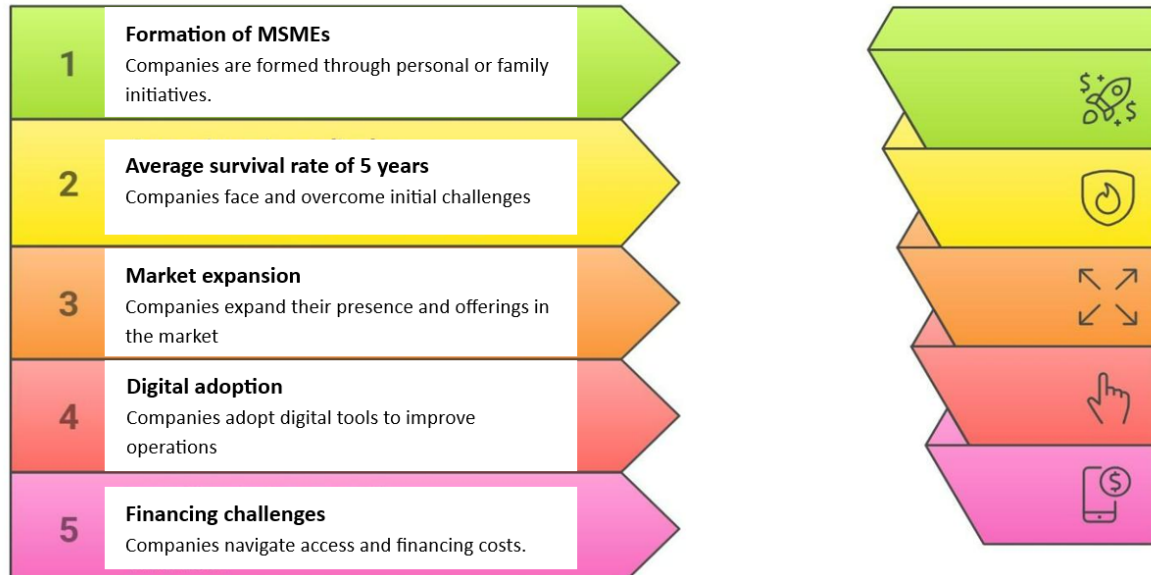
Generally speaking, Ghanaian MSMEs, according to data from the GSS and the Ghana Living Standards Survey 2019, have a workforce of 10 to 15 employees, with a seniority of 8 to 9 years. As for the origin of their formation, this is due to the initiative of an entrepreneur or a small family group, with modest capital from personal savings, informal loans or occasional government aid.

The 5-year survival rate is close to 60-65%, indicating that there is intense competition and difficulties to consolidate. Those that pass the five-year threshold tend to consolidate their presence in the local market and expand their portfolio of products or services. This maturation process is favoured by the growth of domestic demand (linked to the development of cities and the emergence of an incipient middle class) and, to a lesser extent, by the opening of markets at regional level in the ECOWAS environment (ECOWAS) and continental level through the African Continental Free Trade Area (AfCFTA).

In terms of growth dynamics, we observe that more and more SMEs are incorporating digital tools to streamline accounting, customer service or even logistics management. The adoption of mobile money platforms is a common phenomenon driven by telecommunications companies and fintechs. However, there is still a lack of labour with advanced technical skills such as programming, digital marketing or data analytics, limiting the innovation capacity of many SMEs and their survival beyond the five-year threshold discussed above.

Access to finance is also key to the survival of SMEs. SMEs with an intermediate level of formalisation can turn to commercial banks or development banks in the country, but the cost of loans and collateral requirements are high. Microcredit options exist for very small businesses, with state programmes aimed at facilitating financial inclusion. Even so, most businesses are self-financed with the income generated and with the support of family networks or informal investors. This scheme restricts the speed of expansion and often leads to low capital turnover for investments in machinery, technology or storage infrastructure.

Profile of MSMEs in Ghana: challenges and opportunities



4.9. Relevance of the informal sector in the Ghanaian business fabric

The informal sector continues to be a feature of the Ghanaian economy. According to the GSS National Report on Productivity, Employment and Growth, published in February 2025, 80% of the Ghanaian workforce was employed in the informal sector, contributing 27,4% to the country's GDP. The report indicated that the profile of the worker employed in the informal economy was that of self-employed workers with low and irregular incomes.

In terms of business structure and characteristic economic sectors, the GSS report indicated that informality was present in small family businesses or street vendors focused on subsistence vending in sectors such as agriculture, retail and basic services. The persistence of informality is explained by the cultural tradition of family entrepreneurship, in order to avoid high taxation and lack of knowledge about the benefits of business regularisation.

Street trading, small workshops for carpentry, sewing, welding, subsistence farming and local markets are everyday examples of Ghana's informal sector. Although they boost domestic consumption and facilitate people's access to low-cost goods and services, they impede access to formal bank credit, insurance, subsidies or unemployment benefits, and limit the possibilities for growth in the absence of records of turnover and collateral for accessing formal loans.

The persistence of informality is explained by the cultural tradition of family entrepreneurship, in order to avoid high taxes and the lack of knowledge about the benefits of business regularisation.

The Ghanaian authorities, in order to reduce the persistence of the informal sector in the economy and the business ecosystem, have attempted to mitigate informality by introducing the Ghana Card PIN, formerly known as the Tax Identification Number (TIN), as the unique identifier for bureaucratic processes such as tax collection. Although definitive data on its impact on tax collection is not available, the Ghana Card PIN has increased efficiency in tax collection, transparency and the fight against tax fraud by being linked to a centralised system of access to tax information and verification of taxpayers. In addition to the Ghanaian government's mandatory Ghana PIN card, they offer training programmes in areas such as basic accounting, marketing and customer management to encourage micro-entrepreneurs to move out of the informal sector.

International NGOs and foundations are also helping to reduce the informality of the Ghanaian business sector by providing micro-credit and advice in smaller towns and cities. The United Nations Development Programme (UNDP), in collaboration with the Mastercard Foundation, launched the Youth Action for Innovation (YAI) initiative in 2021 with the aim of empowering young entrepreneurs by providing them with training and resources to formalise their businesses and contribute to the country's economic development. The Women's Innovation for Sustainable Enterprise (WISE) project, implemented by Plan International and launched in 2021, seeks to improve the economic security and well-being of women in Ghana through the creation and expansion of women-led small businesses in agriculture with the aim of promoting the formalisation of women's businesses and their integration into the formal economy.

The result of all these actions has been mixed: while some family businesses decide to register and scale up, others continue to fear tax pressure and possible inspections, opting to remain outside the law.

5. ICT Development and SME Support Policies in Ghana

Over the past two decades, Ghana has made significant progress in the adoption of information and communication technologies (ICTs) as part of its economic development and state modernisation strategy. Digitisation has been recognised as a key pillar for improving government efficiency, fostering financial inclusion, enhancing technological innovation and strengthening the competitiveness of the Ghanaian economy in the digital age.

Since the adoption of the *ICT for Accelerated Development (ICT4AD)* policy in 2003, the country has implemented multiple initiatives to transform its digital infrastructure, expand access to connectivity and promote an ecosystem conducive to technological innovation and entrepreneurship. *The Digital Ghana Agenda and the Digital Economy Policy and Strategy* have been the most recent guiding plans, aimed at consolidating Ghana as a digital hub in West Africa. These strategies seek to leverage ICT to improve public services, reduce bureaucracy, facilitate access to education and digital health, and attract investment in emerging sectors such as fintech, artificial intelligence and cybersecurity.

The Ghanaian government's efforts have been supported by a strong institutional framework, with the Ministry of Communications and Digitisation (MoCD) leading digital policy planning and implementation. Various government agencies, such as the National Communications Authority (NCA), the National Information Technology Agency (NITA) and the Government Investment Fund for Electronic Communications (GIFEC), have played a key role in expanding connectivity, regulating the digital sector and implementing digital inclusion initiatives. The creation of the Cybersecurity Authority (CSA) and the Data Protection Commission (DPC) has ensured security and privacy in the digital environment, fostering trust in electronic platforms and government and private digital services.

The impact of these policies has been significant. The digitisation of public services has enabled the implementation of systems such as the GhanaCard, a biometric identity card that facilitates digital authentication of citizens, and the Ghana.gov platform, which centralises government procedures online. In addition, the interoperability of mobile money has revolutionised access to financial services, allowing more than 90 % of the adult population to transact electronically without the need for a traditional bank account.

In the area of technology entrepreneurship, Ghana has positioned itself as one of the most dynamic ecosystems in West Africa. Supported by the

National Entrepreneurship and Innovation Programme (NEIP) and the forthcoming Ghana Innovation and Startups Act, the government has promoted the creation and expansion of technology startups, facilitating their access to funding, mentoring and international markets. Initiatives such as the Venture Capital Trust Fund (VCTF) have channelled investment into early-stage startups, while incubators and accelerators such as MEST Ghana, Impact Hub Accra and Ghana Tech Lab have played a key role in nurturing and growing new digital businesses.

Beyond the ICT sector, digitisation has permeated other strategic areas. In the education sector, the government has connected over 700 secondary schools and universities to broadband internet and distributed laptops to teachers as part of the *One-Teacher One-Laptop* programme. In health, the adoption of the National e-Pharmacy Platform and the use of drones for the delivery of medical supplies have transformed access to healthcare, especially in rural areas. In agriculture, digital technologies are being promoted to improve productivity and access to markets for smallholder farmers.

Despite these advances, Ghana still faces significant challenges. The digital divide remains a problem, with approximately 31,8% of the population without regular access to the internet. Factors such as the cost of devices and mobile data plans, lack of energy infrastructure in rural areas and limited digital literacy among certain segments of the population hinder full digital inclusion. In addition, the financial sustainability of digital initiatives, the retention of tech talent and the need for flexible and up-to-date regulation remain critical areas to ensure the success of the country's digital strategy.

All in all, Ghana has made significant progress in its digitisation process, establishing itself as a benchmark in West Africa for digital transformation, financial inclusion and government modernisation. The implementation of strategies such as the Ghana Digital Agenda and the Digital Economy Policy and Strategy has enabled the expansion of digital infrastructures, improved access to electronic public services and the strengthening of the entrepreneurial ecosystem. However, despite the progress made, the country still faces structural challenges such as the persistence of the digital divide, the affordability of internet access, the need for retention of technology talent and the financial sustainability of its digital initiatives. Long-term success will depend on the government's ability to consolidate a flexible regulatory environment, maintain the momentum of investment in digital infrastructure and encourage greater private sector participation in technological innovation.

This section examines the importance of digital skills in Ghana and the remaining gaps in the technology sector, drawing on official documents such as the Ghana Digital Economy Policy and Strategy 2024 of the Ministry of Communications and Digitisation (MoCD), the Ghana Industrial Skills Gap Survey 2023, and the World Bank's report 2019 Digital Skills in Sub-Saharan Africa: Spotlight on Ghana.

They all indicate that technology companies face difficulties in finding candidates with advanced skills and that, despite the government's target of 70% of the working age population acquiring basic digital skills by 2030, the demand for advanced digital profiles in cybersecurity, data analytics, artificial intelligence continues to increase, with a mismatch between the supply of training and the skills required by the labour market.

5.1 ICT vision for Ghana's economic development

Ghana has considered ICT as a pillar of its development for decades. In 2003 it adopted the "ICT for Accelerated Development (ICT4AD)" policy as a roadmap for building a knowledge-based economy, with an emphasis on digital infrastructure and the digitisation of public administration, health and education.

In recent years, the government launched the Digital Ghana Agenda to drive the digital transformation of the entire economy. This agenda proposes to digitise government services and develop key systems such as a national biometric identity registry, a digital postal address platform and mobile money interoperability, as well as implementing paperless procedures at ports, among other objectives.

The underlying vision is to harness technology to increase competitiveness, formalise the informal economy and provide more efficient and transparent public services.

Ghana's commitment to the digital economy is embodied in its new Digital Economy Policy and Strategy launched in 2024. This plan sets a target of increasing the contribution of the digital economy to GDP from 4.4% in 2020 to 5,3% by 2025, focusing on five critical areas: universal access and connectivity, digital governance, digital skills and R&D, digital entrepreneurship, and data/emerging technologies.

In line with the Ghana Beyond Aid agenda, the country seeks to position itself as a leader in ICT innovation in Africa by expanding its local technology industry, bridging the urban-rural digital divide and applying ICT to improve efficiency in all sectors.

For example, thousands of kilometres of fibre optics have been laid and nearly a thousand public institutions have been connected to a high-speed network, as a basis for bridging the urban-rural access gap.

Digitisation efforts are already showing results. The digital ecosystem is one of the fastest growing in Ghana, with an average annual increase of 19% between 2014 and 2020, placing the country among the digital leaders in sub-Saharan Africa.

Initiatives such as biometric identification (GhanaCard) have registered more than 15 million citizens, providing a unique identity that will serve as the basis for future transactions and services.

In addition, the implementation of a digital address system has assigned unique codes to 7,5 million properties, making Ghana a pioneer in Africa in establishing an integrated digital address platform with street names and numbers.

The introduction of mobile money interoperability between all telephone companies and banks - also a first in Africa - enabled more than 90% of Ghanaian adults to access financial services equivalent to a bank account through their mobile phones.

These achievements reflect the vision of inclusive growth driven by digitisation. However, the government recognises that there remain significant challenges (infrastructure, skills, access costs) that need to be overcome to fully harness ICT for economic development.

5.2 Government structure for digitisation and SME support in Ghana

The implementation of Ghana's digital agenda is led by a well-defined government structure. The Ministry of Communications and Digitisation (MoCD) is the governing body that formulates ICT sector policies and strategies.

The MoCD coordinates the digital modernisation of the government and works closely with various specialised government agencies:

- National Communications Authority (NCA): regulator of the electronic communications sector. It is responsible for licensing and creating an enabling environment for the mass deployment of ICTs, ensuring competition and quality in telecommunications. For example, the NCA oversees the implementation of new generation mobile networks and projects such as number portability, and has established a telecommunications service quality monitoring centre to improve network coverage and performance.
- National Information Technology Agency (NITA): technical agency in charge of ensuring the standardisation and security of government ICT applications. NITA leads e-government projects and ensures interoperability of systems between ministries, promoting the adoption of common platforms (e.g. unified document management systems or integrated public service portals).

- Investment Fund for Electronic Communications (GIFEC): a public fund dedicated to expanding ICT access in rural and disadvantaged communities. Under the MoCD, GIFEC channels resources (including contributions from operators through universal service funds) to install infrastructure in remote areas: community internet access centres, rural telephony projects and satellite connectivity. A flagship project is the Ghana Rural Telephony and Digital Inclusion Project, through which 2.000 solar-powered rural telephony antennas are being deployed in partnership with private operators to bring mobile signal to an additional 3,4 million inhabitants and increase national coverage from 83% to 95% of the territory. These initiatives allow remote populations to be integrated into the country's digital economy.
- Cybersecurity Authority (CSA) and Data Protection Commission (DPC): bodies set up to strengthen trust in the digital environment. The CSA regulates cyber security, issues guidelines to protect critical infrastructure and coordinates incident response, complementing efforts such as the national Computer Emergency Response Team (CERT). The DPC ensures personal data privacy and compliance with the Data Protection Act, positioning Ghana as a regional leader in data governance. These entities work alongside the MoCD to ensure that digital transformation takes place in a manner that is secure and respectful of citizens' rights.

In addition to the Communications portfolio, other government institutions play important roles in the digital agenda. The Bank of Ghana (BoG), for example, has been a key player in financial digitisation: it oversees the national payments infrastructure (such as the interoperable GhIPSS platform), regulates fintech activity (mobile payments, e-wallets) and even explores innovations such as regulatory sandboxes for new payment services and the possible issuance of a central bank digital currency (e-Cedi). This central bank involvement has facilitated milestones such as the full interoperability between mobile money and bank accounts mentioned above.

In terms of modernising public administration, the government has established platforms and reforms to digitise procedures and improve government efficiency. The Ghana.gov unified portal allows citizens and businesses to access numerous services online (passport application, driving licence, commercial registration, national health insurance renewal, tax payment, etc.) and to make electronic payments centrally. This platform, together with the adoption of the GhanaCard as a unique identifier in public databases (e.g. as a tax identification number), has been instrumental in integrating previously isolated systems and reducing corruption and delays in processing. E-government projects have also been implemented in several ministries:

paperless customs at ports, digitised and interconnected birth and death registries, electronic medical records in public hospitals, among others.

To coordinate these initiatives, MoCD works with other sectoral portfolios (Education, Health, Agriculture, etc.), with technical support from NITA and under the strategic supervision of the Office of the Vice President, who has been the champion of the government's digitalisation agenda.

Finally, the government has also created programmes to foster technological entrepreneurship (detailed in the next section) and has involved the private sector in the definition of policies. One example is the participatory drafting of a Startups Act in conjunction with trade associations such as the Ghana Startup Network.

In summary, Ghana has a comprehensive institutional architecture - encompassing regulation, technology implementation, digital security and inclusion - to drive digitalisation across the board, ensuring coordinated implementation of ICT policies and addressing the various components of the digital ecosystem, although it faces a number of challenges that will be addressed in this report.

5.2.1. Public policies for ICT adoption

One of Ghana's key policy thrusts in the expansion and adoption of ICTs in the country is the reduction of digital inequalities in the country, reducing the digital divide in infrastructure between the digital and urban worlds and expanding ICT training opportunities for youth and women, in line with the SDGs. Two agencies of the Ministry of Communications and Digitisation are addressing these challenges: the Ghana Digital Centres Ltd and the Ghana Investment Fund for Electronic Communications (GIFEC).

The Ghana Digital Centres Ltd, incorporated in 2017 under the Ministry, is an initiative aimed at fostering youth entrepreneurship to position the country as a regional digital hub, creating both a climate and infrastructure for the growth of the ICT sector, accelerating technological innovation and engaging the private sector in the provision of solutions to achieve this end. Partners in this initiative include international organisations such as the ITU, the World Bank, companies such as Terra Ai and Aleph Holdings, the Riga Technical University and the German government's GIZ foundation. It controls and operates the Accra Digital Centre (ADC). It currently offers two courses: Digital Ad Certificate - offered by Aleph - on how to promote yourself on digital platforms and social media such as TikTok, LinkedIn, Snapchat and Meta, and Impact Sourcing for young people in communities to learn about the use of devices, the Windos operating system, the Office Suite, digital marketing and AI so that they can use what they learn to benefit their communities.

GIFEC focuses on bridging the digital divide in rural areas by ensuring universal access to basic telephony services, telecommunications services and digital technologies, as well as digital skills training and the provision of ICT equipment. It has three programmes: Rural Connectivity Programme, Cyberlabs and ICT Capacity Building.

The Rural Connectivity Programme (RCP) facilitates access to telephony and internet through the construction of telecommunications infrastructure in collaboration with mobile operators present in the country such as Huawei, American Towers Corporation (ATC) and Helios Towers Ghana. According to its website, between 2005 and 2016, 120 telephone towers were installed in rural areas, contributing to the increase in the use of internet, 3G and 4G in the country. In 2016, in order to strengthen the RCP, the government decided to implement the GIFEC Satellite Hub programme to strengthen telecommunications and internet access in remote rural areas. To this end, a VSAT Hub terminal was installed to provide voice and data services to 22 RTP sites and 80 primary and secondary schools in the most remote areas of the country. In order to further reduce the digital divide in villages with less than 1,000 inhabitants, a tripartite agreement was reached between 2017 and 2019 with operators Huawei and MTN to implement the Rural Star UMTS 900 programme. This programme aimed to connect the communities described above to 3G data services through the installation of Rural Star UMTS 900 communication towers, which are powered by solar energy. This model brought 3G connectivity to villages with less than 1,000 inhabitants, where previously there was no internet access at all.

In 2019, the Government of Ghana, in collaboration with China National Technical Import Export Corporation and with funding from the Chinese EXIM Bank, approved the Ghana Rural Telephony and Digital Inclusion Project (GRTCDIP), an ambitious programme to install 2,016 RTP towers, with the aim of connecting more than 3.4 million citizens in rural communities. Although the project was due to be completed in 2023, it was delayed due to the COVID-19 pandemic. Despite its positive impact on rural connectivity, one of the programme's challenges remains the financial sustainability and maintenance of infrastructure in low-income communities, which requires greater investment in renewable energy and cost-sharing arrangements with operators.

The Ghana Investment Fund for Electronic Communications (GIFEC) ICT Capacity Building Programme aims to equip various segments of the population with essential digital skills, promoting technological inclusion and improving socio-economic opportunities in underserved communities. This programme encompasses several initiatives designed to address the specific needs of women and girls and artisans. Girls in ICT (GICT) focuses on training girls and young women in digital skills, seeking to reduce the gender gap in the technology sector. Since 2017, approximately 5,000 girls and 500 teachers have been

trained in basic ICT and programming skills. According to the Ministry of Communications and Digitisation in 2022, an additional 5.000 girls and 500 teachers were planned to be trained in the Bono East, Bono, Ahafo, Northern and Savannah regions and in 2024, it was implemented in the Ashanti region, training 1.000 girls in ICT skills. ICT Skills for Entrepreneurial and Women Empowerment Program (ISEWE) also targets vulnerable women and girls by providing them with skills in literacy, numeracy and entrepreneurship. The aim is to empower them to start and manage their own businesses, thus improving their economic conditions and encouraging female participation in the digital ecosystem. Artisanal Training targets artisans such as tailors, carpenters, hairdressers, mechanics and others, offering training in basic digital competencies and entrepreneurship skills. In 2023, 1.720 artisans from eight regions of Ghana participated in this programme, with the aim of improving their businesses and adapting to the demands of the digital age. Finally, the Digital Transformation Centers (DTC) Project, in collaboration with the International Telecommunication Union (ITU), Cisco and the Norwegian Agency for Development (NORAD), aims to train at least 17.000 citizens, including women entrepreneurs, youth and persons with disabilities, in certified ICT courses. Since its inception in 2020, more than 10.000 beneficiaries have been trained in basic and intermediate digital skills.

GIFEC's Cyber Labs Programme is designed to provide access to information and communication technologies in rural and underserved communities, facilitating digital inclusion and improving educational quality. This programme is implemented through two main projects. Through the Community Information ICT Centres (CICs) programme, GIFEC built and manages 281 Community Information ICT Centres in various communities. These centres provide local residents with access to the internet, ICT training and other essential digital resources. The School Connectivity Projects (SCP) aims to equip schools with computer labs to facilitate ICT education. According to MoCD's 2023 data, since its launch in 2017, 97 ICT labs had been opened in participating Girls-In-ICT schools in regions such as Eastern, Savannah and North and 100 laptops distributed to girls and teachers participating in the programme.

In 2022, the Administrator of GIFEC, Mr Prince Ofori Sefah, announced plans to establish 200 additional ICT labs as part of the Cyber Labs Programme, reinforcing the organisation's commitment to the expansion of technology infrastructure across the country.

In the area of SME support, the following is a breakdown of the role played by a number of public agencies.

A. Ghana Enterprises Agency (GEA)

Initially called the National Board for Small Scale Industries (NBSSI) and restructured in 2020 to strengthen its functions, it is responsible for supporting micro, small and medium-sized enterprises (MSMEs) in Ghana. It aims to design and implement financial assistance, training, incubation and business innovation promotion programmes to boost entrepreneurship and digitisation by providing seed capital, grants and technical advice to SMEs.

Key projects include the SME High Growth Programme, Business In a Box (Biz Box, 2023) and the National Entrepreneurship and Innovation Programme (NEIP).

The SME High Growth Programme, launched in 2022, aims to identify and support SMEs with high expansion potential in strategic sectors such as agribusiness, light manufacturing and technology. This programme combines financing, business mentoring and technical advice to help companies scale their operations and improve their access to international markets. Since its implementation, more than 500 SMEs have benefited, increasing their productivity and enabling them to generate direct and indirect employment. It is estimated that participating companies have increased their revenues by an average of 30 %, which has encouraged more businesses to join the initiative. In addition to financial assistance, the programme provides training in business management, digitisation, export strategies and productivity improvement, facilitating the integration of companies into global value chains. Business in a Box (Biz Box) launched in 2023 in collaboration with the Mastercard Foundation to foster labour inclusion and youth entrepreneurship by providing young people and women with the tools and resources they need to start their own businesses. Through entrepreneurship training, start-up capital and ongoing support from a network of mentors, it facilitates the creation of sustainable businesses in vulnerable communities. To date, the programme has benefited more than

5.000 youth and women, with a 70% success rate in creating sustainable businesses. Many of these businesses have been established in sectors such as handicraft production, agro-industry and e-commerce. It is estimated that more than 10.000 indirect jobs have been generated through this initiative, making it one of the most successful strategies for reducing youth unemployment in Ghana.

On the other hand, the CAP BuSS (Covid-19 Alleviation Programme Business Support Scheme) aims to provide financial support to affected businesses, enabling them to stay afloat and adapt to the new market conditions. Through loans and grants, technical assistance and digital transition programmes, support was provided to more than 250.000 SMEs across the country. In total, around 600 million Ghana cedis (approximately USD 50 million) was disbursed in support.

This programme not only prevented the collapse of many businesses, but also promoted resilience and the adoption of digital technologies in business. As a result, more than 60% of the companies that benefited reported that they maintained or even increased their revenues after the pandemic, demonstrating the effectiveness of this economic recovery strategy.

Finally, although not directly part of the agency, the National Entrepreneurship and Innovation Programme (NEIP) focuses on the incubation and acceleration of innovative start-ups, providing funding, training and logistical support to entrepreneurs with viable business ideas. Through the creation of incubators, the allocation of funding for innovative ventures and the organisation of startup events and competitions, NEIP has boosted the entrepreneurial culture in Ghana. Since its launch, it has supported more than 45,000 entrepreneurs and granted more than 100 million Ghana cedis in funding, establishing itself as a key pillar in the development of technology startups and the digitisation of the business sector.

B. Ghana Digital Acceleration Project (GDAP)

The Ghana Digital Acceleration Project (GDAP) is an initiative promoted by the Ghana Ministry of Communications and Digitisation (MoCD), with funding from the World Bank through the International Development Association (IDA). Approved in April 2022 and with a five-year implementation period, its main objective is to expand broadband access in rural areas and areas with limited connectivity, in addition to modernising digital public services and boosting technological innovation. The GDAP strategy is aligned with the Ghanaian government's digitalisation plans and international recommendations on digital transformation and technological inclusion.

For the implementation of the GDAP, a loan of USD 200 million has been earmarked to channel private investment and foster public-private partnerships to improve telecommunications infrastructure. Among its main lines of action, the programme includes updating the regulatory framework and expanding connectivity through the installation of access points in public facilities such as schools, libraries and community centres. It also seeks to improve cybersecurity and ensure that government digitisation is carried out under modern standards. One of its most notable achievements to date has been the provision of 10 Gbps of international bandwidth to 180 government ministries, departments and agencies, strengthening the digital services infrastructure in the public sector.

GDAP is structured into five key components. First, strengthening a secure and inclusive digital ecosystem, including modernising the regulatory framework and expanding broadband. Then

the modernisation of digital public services, with the creation of portals such as Ghana.gov, a unified e-payment and e-processing platform, as well as the digitisation of 45 million state records in areas such as justice, immigration and birth registration. This is followed by support for the digital transformation of strategic productive sectors, with an emphasis on the development of technology start-ups and the adoption of data-driven agritech solutions. This is followed by project management and supervision, ensuring compliance with environmental and social regulations. Finally, the programme foresees an emergency response mechanism (CERC) to redirect funds in case of crisis.

The progress of the GDAP has been significant in reducing barriers to the digitisation of Ghanaian SMEs. The expansion of broadband has improved accessibility to e-commerce platforms, digital marketing solutions and online payment methods, facilitating the integration of small and medium-sized enterprises into the digital economy. Furthermore, the digitisation of administrative procedures has reduced processing times and associated costs, increasing operational efficiency in both the public and private sectors. In addition, the GDAP prioritises training in digital skills, promoting the inclusion of women, rural youth and people with disabilities in the country's digital transformation.

C. Promoting startups and supporting innovation

The promotion of innovation and digital entrepreneurship are key policies in Ghana's ICT strategies, both in their promotion and in the creation of funding mechanisms. The Ghana Enterprise Agency (GEA) is the main body responsible for promoting innovation and entrepreneurship.

The GEA is a government body dedicated to the promotion and development of MSMEs, with a mandate to coordinate, implement and monitor the activities of the sector in Ghana, especially support for productivity and competitiveness to foster economic growth and promote the inclusion of women, youth and persons with disabilities. According to its website it currently has eleven projects for SME promotion, COVID- 19 recovery, employment and skills training and economic transformation. Four of these projects have a focus on promoting startups and innovation: SME Growth Grant Programme, Business In a Box (Biz Box), Ghana Jobs and Skills Project, and SME High Growth Programme.

The following chart provides a breakdown of the programmes by name of funder, number of SMEs benefiting and results:

Table 4 Existing SME support programmes in Ghana. Source: Programmes' websites.

Name of the programme	Budget	Number of SMEs benefited	Programme
SME Growth Grant Programme	Part of the World Bank's Ghana Economic Transformation Project (GETP)	347 enterprises	Financial support for key sectors such as ICT, agriculture, manufacturing, tourism, etc.
Business In a Box (Biz Box)	In partnership with the Mastercard Foundation	At in progress (target: 250.000 jobs)	Training and market access for young entrepreneurs, with an emphasis on women and people with disabilities.
Ghana Jobs and Skills Project	Funded by the World Bank	In progress (target: 50.000 young people trained)	Business skills training and scholarships for startups
SME High Growth Programme	No specific budget	311 SMES	Creation of 3.195 jobs and improvement in business productivity

SME Growth Grant Programme is an initiative that is part of the World Bank's Ghana Economic Transformation Project (GETP), whose main objective is to promote the productivity and competitiveness of SMEs in strategic sectors such as ICT, agriculture, manufacturing, tourism, education, logistics and health. Through this programme, selected companies receive financial support to modernise their operations and strengthen their productive capacity. To qualify, companies must meet specific criteria related to their size (in terms of number of employees), turnover and productivity record. To date, 347 companies have received financing under this scheme, which has strengthened the resilience of the private sector in Ghana and improved the ability of SMEs to compete in a globalised market.

Business In a Box (Biz Box) is a strategy of the Ghana Enterprise Agency (GEA) in collaboration with the Mastercard Foundation, with the objective of generating 250,000 decent jobs for young people in Ghana by 2027. Seventy per cent of the beneficiaries will be women and 10 per cent will be people with disabilities. This programme focuses on training in entrepreneurship skills, access to markets, support in the acquisition of business kits,

strengthening youth networks and promoting favourable policies for youth entrepreneurship. The long-term goal is that by 2030, more than 3 million young Ghanaians will be able to access decent and stable employment.

Although the programme is ongoing and there is no official data on its impact yet, its design positions it as a key tool to address youth unemployment in the country. However, an important challenge will be to ensure the viability and sustainability of the enterprises created. In this sense, it would be essential to implement long-term follow-up strategies, additional financial support and the creation of links with the private sector to ensure real job opportunities for the beneficiaries. Furthermore, the integration of advanced digital skills training could further enhance the impact of the programme and prepare young people for the challenges of the future labour market.

The Ghana Jobs Skills and Project, financed by the World Bank to train 50.000 young Ghanaians in entrepreneurial skills, with a focus on business plan development, business registration, legal requirements and market research. The programme provides a basic training phase and then selects the most promising participants to receive grants through the Competitive Business Start-Up Grants scheme, which finances the purchase of technology equipment and services for their businesses. Priority is given to the participation of women and people with disabilities to ensure greater equity in access to economic opportunities.

It is in the implementation phase and concrete results on its impact have not yet been published. However, its comprehensive approach to training and financing makes it a promising initiative to strengthen the entrepreneurial ecosystem in Ghana.

The SME High Growth Programme launched in October 2022, and scaled up nationally in May 2023, aims to support SMEs with expansion potential in implementing strategies to improve their productivity and competitiveness. In addition, it seeks to generate employment, with priority for companies led by women and people with disabilities. The programme covers key sectors such as ICT, agriculture, education, manufacturing, food, textiles, construction, tourism, logistics, health, transport and pharmaceuticals. To qualify for the programme, companies must meet specific criteria, such as being at least 51% owned by Ghanaian nationals and not being involved in extractive activities such as mining or oil and gas. Since its inception, it has generated 3.195 jobs and supported 311 SMEs.

The impact of the programme has been remarkable in terms of employment generation and strengthening of entrepreneurial capacity in strategic sectors. However, challenges remain in terms of access to additional financing for the expansion of beneficiary enterprises and the integration of new technologies in their operations.

A key strategy to improve the effectiveness of the programme could be the implementation of a network of incubators and accelerators that offer continuous support to participating firms. Facilitating access to soft loans and promoting partnerships with the private sector would also help to consolidate the long-term growth of SMEs.

5.2.2. Other relevant initiatives of the Government of Ghana

Ghana has adopted three strategic plans aimed at guiding its economic and social growth. Two of these are the Coordinated Economic and Social Development Policy Programme (2017-2024) and the National Long Term Development Plan (2018-2057). Details of each programme are provided below.

A. Ghana Coordinated Economic and Social Development Policy Programme (2017-2024)

The Coordinated Economic and Social Development Policy Programme (2017-2024) (CPESDP) established by the previous government, is focused on employment generation inclusive economic growth and modernisation of the productive sectors around five strategic pillars: economic development, social development, environment, infrastructure and human settlements, governance corruption and public accountability and Ghana's role in international relations. The following priority plans and programmes were developed:

- Economic development to achieve the goal of doubling GDP per capita by 2024 and achieving an average annual growth of 7.2% it was decided to prioritise industrial transformation, adjusting electricity tariffs to reduce production costs, providing incentives for local production and import substitution, the promotion of R&D and the development of industrial parks through initiatives such as One District One Factory to set up a factory in each district and industrial subcontracting programmes between large companies and SMEs. It was also agreed to adopt measures to make the country more open for business by improving the business climate, facilitating SME financing and promoting domestic trade and exports. Finally, steps were taken to formalise the economy with the implementation of the National Identification System to register citizens and businesses, the digitisation of property registration and the transformation of the National Board for Small Scale Industries into the GEA to strengthen SMEs.
- Social development to ensure inclusive and quality education and to ensure accessibility to health and food security expanded education at all levels, with an emphasis on STEM subjects and the creation of technical and vocational schools (TVET). In the area of health, universal access to health was expanded and in the area of food, foodsecurity programmes were strengthened.

B. Long-term National Development Plan (2018-2057)

The National Long Term Development Plan (2018-2057), also called Black Star Rising, provides a strategic vision for Ghana to be a high-income country by 2057, the centenary year of its independence. It sets out strategies to achieve the following objectives: creating an equitable, healthy and prosperous society, sustainable infrastructure and development, efficient and vibrant institutions, and Ghana's role in international affairs.

C. SME Growth Acceleration Programme

The country has implemented two national programmes and plans aimed at accelerating the growth and development of SMEs, in tandem with the macroeconomic plans described above. In addition to the GEA, the two most relevant government initiatives in this field are the Sme Growth C Opportunity Programme and the National Entrepreneurship and Innovation Programme (NEIP).

The Sme Growth C Opportunity Programme: Launched in July 2024, to enhance partnerships, mobilise financial resources and create a platform for SME growth in the country. It is supported by the Ministry of Finance and the Ministry of Trade and is implemented by the GEA, the Ghana EXIM Bank and the Development Bank Ghana. Each participating institution offers loans, training programmes and incubation programmes to SMEs with the potential to increase their growth. SMEs wishing to apply must have more than 51% Ghanaian ownership, be registered as an SME and meet the requirements to apply for loans and training programmes.

The National Entrepreneurship and Innovation Programme (NEIP), founded in 2017 with the objective of creating an enabling environment for the support of start-ups and SMEs in the country, the plan is focused on creating the conditions for the creation of business incubators in the country and facilitating access to sources of funding for this purpose. It has projects aimed at providing vocational training for 300,000 young people in sectors such as jewellery, confectionery and handicrafts (NEIP Skills for Jobs Project), facilitating employment regardless of racial, social, gender, age and disability considerations (Kayayei Empowerment Programme), competition for access to an annual scholarship for entrepreneurs with innovative and impactful ideas (Presidential Pitch) and job reinsertion and entrepreneurship in the penitentiary environment (Entrepreneurship for Restoration).

It also has a loan called NEIP Hubs Acceleration Grant Programme (HAPG) aimed at strengthening the hubs in the country, improving their capacity and sustainability, as well as designing strategies for their acceleration.

According to its website, since its launch, NEIP has trained 250.000 entrepreneurs, facilitated the expansion of 15.000 start-ups and employed 103.871 people by the end of 2023.

6. Private sector initiatives

Inclusion of the private sector has been identified by the government as one of the key areas to contribute to the dynamisation and growth of the Ghanaian economy going forward, encouraging investment, free competition and the acquisition of digital skills.

Both the macroeconomic plans described above and the specific plans for boosting digitalisation and its dynamisation (5 Year Strategic Plan 2024-2028 of the NCA and the Ghana Digital Economy Policy Strategy 2024 of the Ministry of Communications and Digitalisation) provide for initiatives to involve the private sector.

In the field of industrialisation, the Coordinated Programme of Economic and Social Development Policies (2017-2024) indicates that the One District, One Factory (1D1F) initiative was adopted, aimed at boosting the competitiveness of private companies through (as indicated above) the creation of at least one factory in every district of the country. The implementation of the Stimulus Package incentive is also planned to strengthen the entrepreneurial ecosystem and facilitate access to sources of financing for local industries.

The Ghana Digital Economy Policy and Strategy 2024, outlines initiatives to facilitate the integration of the private sector in building digital infrastructure, implementing electronic payments and increasing the supply of digital financial services. On the legislative front, the Payment Systems C Services Act and the Cybersecurity Act have provisions to incentivise private investment in technology solutions to secure cyber communications and digital transactions.

The Ghana Digital Economy Policy and Strategy 2024 is not the first national digitisation-oriented strategy that incentivises the inclusion of the private sector. This strategy mentions that since the first national digitalisation strategy, the Ghana Digital Economy Policy and Strategy 2024 has been the first national strategy for digitalisation.

-ICT for Accelerated Development Policy (2003), regulations such as the Electronic Communications Act and the Electronic Transactions Act have laid the groundwork for the modernisation of the technology sector, especially the automation of bureaucratic procedures to facilitate entrepreneurship and the use of emerging technologies. Two examples are the 2012 E-Government Strategy which established e-service platforms to automate procedures and facilitate business interaction with the public administration and the post-COVID-19 Ghana CARES to accelerate the digitisation of tax procedures and the expansion of the fibre optic network. Ghana CARES has facilitated the private sector's use of AI and ICT in the value chain and in the delivery of services to customers.

Both the Ghana Digital Economy Policy and Strategy 2024 indicates that there is public-private collaboration in the creation of incubation spaces to promote entrepreneurship and the acquisition of digital skills. Agencies such as NITA and MoCD collaborate with the private sector in the creation of incubators to support entrepreneurs and SMEs in the creation of e-commerce platforms and the adoption of technology policies in agriculture, finance and manufacturing.

Finally, the National Digital Financial Services Policy of 2016 and the National Payment Systems Act of 2019 to facilitate electronic means of payment and secure private investment in payment solutions provide for the participation of SMEs in the provision of digital financial services.

6.1. Financial support funds

The following table indicates the existing financial support funds for SMEs in Ghana based on the websites of these programmes indicating their name, the funder, their objective and the number of beneficiary enterprises according to the available data:

Table 5 Support Programmes for SMEs in Ghana. Source: Websites of the programmes.

Programme Name	Funder	Objective	Number of enterprises beneficiaries
CAP BuSS	GEA	SME recovery after the pandemic, sustaining operations and retaining jobs.	Not specified
NKOSUO	MasterCard Foundation	Support for entrepreneurship in MSMEs and SMEs with growth potential, prioritizing women and young people	Not specified
GEA SME Grant	World Bank	Non-repayable loan for growth, equipment modernization, and expansion of operations.	Not specified

NEIP Hubs Acceleration Grant Programme	NEIP	Grants and technical assistance to incubators, accelerators, and entrepreneurship hubs.	Not specified
Ghana Innovation Hub	Banco Mundial, MDF, Blue Space Innovation Hub, Ghana Communications Technology University	Promoting digital innovation and technological entrepreneurship.	1.420 members, 680 entrepreneurs
Innov GH		Identifying and promoting startups with sustainable technological solutions.	Not specified
Orange Corners	Embassy of the Netherlands	Promoting youth entrepreneurship through training and access to financing.	Not specified
Waterapps Challenge	Ghana Innovation Hub	Technological solutions for the management and sustainable use of water.	Not specified

The CAP BuSS programme, managed by the Ghana Enterprises Agency (GEA), aims to help SMEs recover from the COVID-19 pandemic. It provides loans and grants to sustain operations, retain jobs and encourage the revival of affected businesses. The health crisis significantly impacted SMEs in Ghana, many of which faced revenue reductions and difficulties in sustaining their operations. This programme has been instrumental in preventing massive business closures and ensuring employment stability in the sector.

However, one of the main challenges of this programme has been the equitable distribution of funds and the bureaucracy in obtaining funding. Many SMEs have reported difficulties in accessing these resources due to lack of information and slow administrative processes.

To improve their effectiveness, it is recommended to streamline disbursement mechanisms and increase transparency in the selection of beneficiaries.

NKOSUO is funded by the MasterCard Foundation to support entrepreneurs and SMEs with growth potential. This fund prioritises women and youth, sectors that have traditionally faced barriers to access financing and the entrepreneurial ecosystem. The inclusion of these populations in the country's economic development is key to ensuring equitable and sustainable growth.

Despite its positive impact, the programme faces challenges in terms of training and support. Many of the beneficiary enterprises require not only financing, but also technical assistance to ensure the sustainability of their businesses. It is recommended that training and business support services be strengthened to maximise the programme's impact.

The GEA SME Grant, supported by the World Bank, provides non-reimbursable loans to SMEs and MSMEs to facilitate their growth, modernise their equipment and expand their operations. Its focus on key sectors such as agriculture, light manufacturing and ICT has enabled many companies to improve their competitiveness in the local and international market. However, many SMEs do not meet the requirements due to the lack of formalisation of their businesses. To improve their impact, it is recommended to relax some access criteria and promote the formalisation of businesses through tax incentives and simplification of procedures.

The NEIP Hubs Acceleration Grant Programme is designed to strengthen the innovation and entrepreneurship ecosystem in Ghana. It provides grants and technical assistance to incubators, accelerators and entrepreneurship hubs. While the programme has contributed to the expansion of innovation hubs, its reach remains limited outside major cities such as Accra and Kumasi. To increase its impact, it is recommended to expand the geographical coverage of the programme and include incentives for the creation of hubs in less developed regions.

The Ghana Innovation Hub established in 2018 under the Ministry of Communications' e Transform Ghana project. Located at the Accra Digital Centre, it is a collaborative workspace with the main objective of fostering digital innovation and technology entrepreneurship. It is supported by the World Bank, the consulting firm MDF, Blue Space Innovation Hub and the Ghana Communications Technology University and its partners are AfriLabs, Afric Innov, the Ghana Tech and Business Hub Network (GTBHN), the company New Career Platform and the investment fund GrayMatters Capital.

It currently has 1.420 members (680 entrepreneurs and 34 mentors) of which 1211 are in Ghana and the rest in countries such as the Netherlands, Nigeria, the United States, South Africa, Kenya and the Netherlands.

7. Analysis of Ghana's technology infrastructure

Ghana has made significant progress in the development of its technology infrastructure, making it one of the countries with the best telecommunications coverage in West Africa. According to the International Telecommunication Union (ITU), the country has 97% mobile coverage, 96% 3G coverage and 68% 4G coverage, reflecting a robust digital infrastructure. However, despite the availability of advanced networks, household internet access remains limited, with only 22% of households connected, reflecting a strong digital infrastructure.

22% of households connected, reflecting barriers in accessibility and cost of service.

Ghana's telecommunications market is highly dynamic, with 130 mobile broadband subscribers per 100 inhabitants, a competitive figure in the region and higher than countries such as Senegal and Mauritania, but still below Côte d'Ivoire. However, connectivity does not translate into equitable access to high-speed internet. According to the article *The Internet We Want: A Narrative on Current Realities*, published in September 2024 by the Ghanaian business newspaper *The Business & Financial Times*, the average internet connection speed in urban areas is below 50% of the expected average, posing challenges for digital development.

Access to computer equipment in households remains low, with only 16 % of households owning a computer. This underlines that while telecommunications infrastructure has improved, barriers remain in access to devices essential for digitisation, largely due to the cost of acquisition and maintenance.

In terms of mobile connectivity, Ghana has achieved almost full deployment of basic and advanced services. Coverage of 2G, 3G and 4G exceeds 99%, putting the country 35 points above the African average in access to 4G networks. This progress reflects the government's commitment to ensure the expansion of digital infrastructure in urban and rural areas, ensuring that connectivity is not exclusive to large cities.

Mobile phone access is also a strength in the country. Currently, 74% of the population owns a mobile phone, which is higher than in Côte d'Ivoire (68%), but still below Senegal (79.4%). This reflects the consolidation of the Ghanaian telecommunications market and efforts to promote digitisation through liberalisation and competition among operators.

At the regional level, Ghana excels in internet access among the general population. Fifty-eight percent of the country's inhabitants use the internet, a higher percentage than in Côte d'Ivoire (36%), Mauritania (41%) and Senegal (43%). However, this access is still concentrated in public spaces such as schools and community centres, suggesting that there are still challenges to stable and affordable home connectivity.

Access to digital connectivity varies significantly between urban and rural areas. According to the latest data from the International Telecommunication Union (ITU, 2022), 82% of urban households have internet access, compared to only 45% of rural households. While this figure reflects efforts to expand connectivity in the countryside, the digital divide remains significant, with a difference of 37 percentage points between the two environments. Reducing this gap will be key to ensuring equity in access to digital opportunities and strengthening the economic integration of rural communities.

In terms of telecommunications subscribers, Ghana has high indicators. With 130 mobile subscribers per 100 inhabitants, it is close to Côte d'Ivoire (152) and above Senegal (114) and Mauritania (106).

This reflects the consolidation of the mobile phone as a key tool for communication and digital inclusion, as well as the growing trend towards the use of multiple SIM cards per user.

In contrast, fixed telephony remains marginal in Ghana, with only 1,5 subscribers per 100 inhabitants, a figure similar to the African average. However, the country compensates for this low penetration with a high number of mobile broadband subscribers, reaching 115 per 100 inhabitants, confirming the preference for mobile connectivity over traditional telecommunications infrastructure.

In recent years, Ghana has intensified its efforts to expand fibre optics and improve digital infrastructure. Strategies have been implemented to strengthen the 4G network, plan for the deployment of 5G technology and integrate artificial intelligence into the country's digital systems. These developments not only drive the modernisation of the public sector and the digital economy, but also create opportunities for small and medium-sized enterprises (SMEs), facilitating their integration into the digital ecosystem and improving their competitiveness in national and international markets.

Country	% of population with mobile coverage	% of population with mobile coverage (3G)	% of population with mobile coverage (at least 4G)	% of population owning a mobile phone	% households with Internet access	% households with a computer at home	% Rural households with Internet access	% urban households with Internet access	Mobile phone subscribers (per 100 inhabitants)	Fixed telephone subscribers (per 100 inhabitants)	Active mobile broadband subscribers (per 100 inhabitants)	% population using the Internet
Benin	98%	80%	46%	-	5%	5%	-	-	92	0	27	26%
Burkina Faso	92%	48%	27%	-	-	5%	-	-	106	0	52	22%
Cape Verde	99%	94%	79%	72%	67%	35%	52%	74%	98	10	75	64%
Côte d'Ivoire	98%	95%	60%	68%	17%	12%	7%	25%	152	74	1	36%
Guinea Equatorial Guinea	70%	60%	0%	-	-	-	-	-	46	1	0	26%
Gambia	98%	88%	7%	-	63%	19%	-	-	111	2	55	36%
Ghana	97%	96%	68%	-	22%	16%	-	-	130	1	85	58%
Guinea	88%	40%	29%	77%	13%	7%	1%	9%	105	0	24	26%
Guinea-Bissau	100%	33%	0%	-	-	7%	-	-	97	0	40	23%
Kenya	96%	94%	77%	47%	18%	9%	15%	56%	114	0	47	29%
Liberia	76%	63%	35%	-	-	7%	-	-	33	0	7	26%
Mali	100%	65%	45%	-	22%	5%	10%	50%	125	1	46	27%
Morocco	100%	99%	99%	96%	85%	64%	57%	82%	134	6	75	84%
Mauritania	96%	43%	0%	-	3%	7%	-	-	106	1	62	41%
Niger	92%	24%	15%	65%	10%	12%	5%	39%	59	0	6	10%
Nigeria	91%	74%	41%	41%	15%	6%	2%	18%	99	0	42	35%
Senegal	99%	99%	75%	-	7%	10%	-	-	114	1	67	43%
Sierra Leone	85%	65%	40%	-	14%	6%	-	-	86	0	20	18%
South Africa	100%	100%	96%	78%	63%	23%	43%	70%	162	4	111	70%
Togo	98%	91%	67%	44%	26%	10%	-	-	79	1	31	24%

Table 6: Main ICT development indicators. Source: own elaboration based on ITU data.

7.1. Fibre optic deployment and its impact

Fibre optic deployment is one of the strategic priorities of the Ghana Ministry of Communications and Digitisation (MoCD) to ensure a high-speed and reliable digital infrastructure. The National Communications Authority (NCA) has set a target of installing 10.000 kilometres of fibre network in the country, prioritising the connection of key public institutions such as hospitals, educational institutions and government buildings. This effort aims to bridge the digital divide and enable rural and remote areas to access essential digital services. The implementation of this infrastructure is supported by the Ghana Investment Fund for Electronic Communications (GIFEC), which facilitates financial and technical feasibility through public-private partnerships that drive investment and maintenance of the network.

The expansion of fibre optics has a direct impact on strategic sectors such as education and health. Improved connectivity allows access to tele-education and telemedicine platforms, especially in previously isolated areas. By connecting schools and hospitals to high-speed networks, online training opportunities and the provision of remote health services are strengthened, promoting the country's social and economic development. Investment in fibre optic infrastructure also fosters the digital economy, facilitating the creation of technology start-ups and the growth of companies in the sector, generating employment and promoting innovation. By connecting educational centres and hospitals to high-speed networks, opportunities for online training and the provision of remote health services are created, contributing to the comprehensive development of society. This multidimensional approach to fibre optic policy reinforces GDAP's mission to create an inclusive and resilient digital environment.

For SMEs, having a high-speed fibre optic network is essential in their digital transformation process. Robust connectivity enables the implementation of e-commerce platforms, making it easier for businesses to expand their market and access national and international customers. In addition, network stability improves the user experience on digital platforms, optimising online purchasing and payment processes. Optical fibre also enables the adoption of cloud solutions, optimising inventory management, supply chain coordination and internal communication in companies with greater efficiency and lower operating costs. This access democratises the use of advanced digital tools previously reserved for large corporations.

Another crucial benefit of fibre optic infrastructure is the possibility of access to information and communication technology (ICT) training programmes. High-speed connectivity facilitates access to online courses, webinars and digital resources, enabling employers and employees to acquire knowledge in key areas such as e-commerce, digital marketing and data management. In this way, investment in infrastructure not only modernises the country's connectivity, but also strengthens human capital, a key element in improving the competitiveness of Ghanaian businesses in the international marketplace.

7.2. 5G network deployment plans and their impact

The Five-Year National Strategic Plan 2024-2028 has identified 5G as a key pillar for the digitisation of the country. The NCA has established a regulatory framework to ensure fair access and foster competition among operators offering or planning to offer 5G services. In the first phase of implementation, the 5G network will be deployed in urban areas and industrial centres, with plans to expand to rural areas through incentives and subsidies managed by GIFEC. These digital inclusion policies aim to reduce the gap between urban and rural areas by promoting equitable access to high-speed services across the country.

The plan has begun to allocate specific spectrum for 5G, establishing a regulatory framework to ensure competition and the expansion of this technology. Initially, deployment will be concentrated in urban areas and industrial centres, but extension to rural areas is also envisaged through incentives and subsidies coordinated with the GIFEC. This digital inclusion policy aims to reduce the urban-rural divide and facilitate access to high-speed services throughout the country, prioritising urban and industrial areas.

Open RAN (Radio Access Network) policies have been promoted to reduce deployment costs and facilitate the entry of new operators. Through GIFEC, incentives are being promoted for the expansion of 5G in the rural world and remote communities, aimed at ensuring that the rural world also has access to this network, thus reducing the gap with the city.

The adoption of 5G represents a unique opportunity for SMEs, facilitating the transformation of their operations and the optimisation of their services. The ability to transmit data in real time improves customer interaction and enables the deployment of advanced solutions such as

videoconferencing, customer care platforms and remote technical support. In addition, the speed and stability of the 5G network supports the digitisation of business processes, facilitating the adoption of mobile payment and e-commerce platforms that expand market opportunities.

In the education sector, the 5G network opens up new possibilities for ICT training. The increased speed and stability of the connection enables the development of virtual laboratories and interactive courses with augmented and virtual reality technologies, providing immersive learning experiences. Likewise, the reduction of barriers to access to digital training facilitates the upgrading of technological skills, allowing more employers and employees to access online training programmes.

5G also strengthens the competitiveness of SMEs at the regional level by facilitating real-time connectivity with suppliers, customers and strategic partners. This technology boosts operational efficiency and opens up new opportunities for business expansion and diversification in a globalised environment. In this context, Ghana seeks to leverage 5G to strengthen its digital economy and position itself as a benchmark in technological innovation within the region.

7.2.1. Expansion of Ghana's energy infrastructure

The development of Ghana's energy infrastructure is critical to its economic growth and the country's digital transformation. The availability of reliable and affordable electricity is essential for the deployment of technologies, the expansion of telecommunications and the adoption of digital solutions in key sectors such as industry, education and agriculture. In recent years, Ghana has made significant progress in improving access to electricity, diversifying its energy mix and integrating renewable sources, although challenges related to stability of supply and equity in energy distribution remain.

Ghana has experienced a remarkable growth in its electrification rate in recent decades. According to World Bank data, Ghana's electricity access rate reached 85% in 2020, with 95% coverage in urban areas and approximately 74% in rural areas. This expansion reflects the government's efforts to expand the electricity distribution network and improve energy infrastructure throughout the country. However, the disparity in access between urban and rural areas indicates the need to continue working to close the energy gap and ensure equitable supply in all regions.

Aware of the importance of diversifying its energy matrix and promoting sustainability, Ghana has invested in the integration of renewable sources into its electricity system. One of the most prominent projects is the Nzema Solar Power Plant, which, once completed, will be one of the largest solar power plants in

Africa, with an installed capacity of 155 MW. This project will contribute significantly to the reduction of dependence on fossil fuels and the promotion of clean energy sources in the country.

Another relevant project is the Pwalugu Hydropower Plant, currently under construction, which will have a capacity of 60 MW and will be complemented by a 50 MW solar plant, forming Ghana's first hydro-solar hybrid system. This innovative approach aims to improve the stability of the electricity supply and make efficient use of available natural resources.

In addition, the Kaleo Solar Station, inaugurated in August 2022, adds 13 MW to the national electricity system and represents a further step in Ghana's strategy to increase the share of renewable energy in its energy mix.

To ensure a cleaner and more affordable energy supply, Ghana has developed the Tema Liquefied Natural Gas (LNG) Terminal, the first facility of its kind in sub-Saharan Africa to use floating storage and regasification units. Operated by Reganosa, this terminal enables the country to meet the growing demand for natural gas and diversify its energy sources.

In its commitment to combat climate change and foster economic development, Ghana launched an Energy Transition and Investment Plan with the goal of achieving net zero carbon emissions by 2060. This plan includes the adoption of low-carbon technologies in key sectors of the economy and the incorporation of nuclear power into the energy mix. In August 2024, Ghana signed an agreement with Regnum Technology Group to deploy a NuScale Power small modular nuclear reactor (SMR), marking a significant step towards diversifying its energy sources and improving the stability of electricity supply.

Despite the progress made, Ghana faces challenges in power supply stability and equity in energy access, especially in rural areas. Effective implementation of renewable energy projects and modernisation of distribution infrastructure are essential to ensure reliable and sustainable power supply. In addition, investment in innovative technologies, such as modular nuclear reactors, offers opportunities to strengthen electricity generation capacity and support the growth of the digital economy in the country.

In conclusion, the expansion of Ghana's energy infrastructure is a crucial component for its economic development and digital transformation. Efforts to diversify the energy mix, integrate renewable sources and modernise distribution infrastructure reflect the country's commitment to sustainability and energy resilience. However, it is necessary to continue to

address existing challenges to ensure that all Ghanaian citizens benefit from reliable and affordable electricity supply.

7.3. Adoption of artificial intelligence in Ghana

Ghana has started to integrate artificial intelligence into key sectors such as public administration, agriculture and the financial system. In collaboration with the African Union and the World Bank, the country is developing a National AI Strategy to ensure its ethical and safe implementation in both the public and private sectors. Institutions such as the University of Ghana and the Ghana India Kofi Annan Centre of Excellence in ICT have introduced training programmes in AI and data science, training professionals in areas such as machine learning, data analytics and cybersecurity. These programmes are designed to train professionals in areas such as machine learning, data analytics and cybersecurity, enabling the implementation of AI solutions in various sectors. The incorporation of advanced algorithms in public administration has optimised tax and judicial processes, reducing time and errors.

In the agricultural sector, companies such as Esoko and Farmerline have implemented AI-based systems for weather forecasting and real-time crop monitoring. These solutions have improved crop management efficiency and reduced losses due to adverse weather conditions, contributing to food security and sustainable development. In the financial sector, AI has optimised fraud detection and the personalisation of credit services, strengthening the security of electronic transactions and improving the user experience through virtual assistants.

In the financial sector, artificial intelligence has facilitated the creation of fraud detection solutions and the personalisation of credit services, allowing institutions to adapt to the specific needs of each customer. Real-time analysis of large volumes of data improves decision-making and enhances the security of electronic transactions, which in turn builds trust among users. AI has also enabled the development of chatbots and virtual assistants that automate administrative tasks and optimise customer service, which is essential in the digital transformation of the public and private sector.

For SMEs, the adoption of AI-based solutions represents a significant competitive advantage. Automating internal processes and optimising inventory management reduces operating costs and improves responsiveness to market demand. In addition, access to AI-based business intelligence platforms democratises innovation, allowing small businesses to use advanced tools without incurring high infrastructure costs.

Despite increasing investment in telecommunications networks, Ghana continues to face stability and quality of service issues. According to ITU's State of Broadband 2022, the average connection speed in the country is 17 Mbps, significantly lower than the global average of 60 Mbps. In addition, network congestion in major cities and the lack of redundancy in transmission infrastructure affect the quality of service, leading to frequent interruptions in internet access.

Another challenge is the lack of accessible local data centres and cloud services. Most businesses and government agencies rely on servers located abroad, which creates latency and security issues. Building new data centres in the country would improve digital sovereignty and optimise the performance of services in strategic sectors such as banking, public administration and telecommunications.

From the above, it is clear that the challenges in digital connectivity and technology gaps in Ghana require more proactive policies to ensure that advances in digital infrastructure benefit the entire population and enable the full potential to be realised.

7.5. Digitisation of the agricultural sector in Ghana

The agricultural sector is central to Ghana's economy, contributing approximately 20% of Gross Domestic Product (GDP) and employing over 40% of the workforce. Despite its relevance, agricultural productivity faces challenges such as limited access to inputs, climate variability and the adoption of modern farming practices. In this context, digitalisation presents itself as a tool that could be key to improving the efficiency, resilience and profitability of the sector by facilitating access to information, finance and markets.

Over the past two decades, Ghana has witnessed a digital transformation in its agriculture, driven by online platforms that offer accessible services to farmers. Among the most prominent private initiatives are:

- Esoko: provides real-time information on market prices, weather conditions and farming techniques through text and voice messaging, helping farmers make informed decisions.
- Farmerline: provides agricultural advisory services and access to markets through mobile technology, improving productivity and incomes for smallholder farmers.
- Troto Tractor: connects farmers with agricultural machinery service providers, facilitating the rental of tractors and other essential equipment for mechanised farming.

These platforms have improved transparency in the marketing of agricultural products and reduced dependence on middlemen, thereby increasing farmers' incomes. However, their adoption remains uneven, with higher penetration in regions close to urban centres and lower in rural areas with connectivity difficulties.

In addition to digital platforms, Ghana has started experimenting with emerging technologies such as artificial intelligence (AI), the Internet of Things (IoT) and big data analytics to optimise agricultural production. For example, the Ghana Cashew Disease Identification with Artificial Intelligence (CADI AI) project uses drones and machine learning to identify diseases in cashew crops, providing farmers with tools to better manage their plantations. The initiative was developed by the company KaraAgro AI with funding from the German aid agency, GIZ.

Precision agriculture in Ghana is at an early stage, due to high implementation costs and the need for specialised training. However, pilot projects have shown that the use of satellite imagery and data analysis can significantly contribute to improving crop yields and resilience to climate change.

Access to finance is one of the main obstacles facing smallholder farmers in Ghana. Fintech solutions have started to play an important role in financial inclusion in the agricultural sector. For example, digital platforms offer microcredit to smallholder farmers via mobile phones, facilitating investment in inputs and technology.

Despite advances in the digitisation of the agricultural sector, significant challenges remain that limit its expansion. Insufficient technology infrastructure in rural areas, low levels of digital literacy and the high cost of access to devices and services remain key barriers. Moreover, in rural areas, language and lack of education aggravate the digital divide, as a large part of the primary sector population does not speak English as their main language, but communicates in their native dialect, making it difficult to access digital tools and adopt new technologies.

To overcome these limitations, it is necessary to strengthen investments in telecommunications infrastructure in rural areas, promote training programmes in digital skills for farmers and develop support policies that facilitate the adoption of emerging technologies. Digitisation of the agricultural sector has the potential to transform production and marketing in Ghana, but its success will depend on the country's ability to integrate these solutions in a way that is equitable and accessible to all actors in the sector.

8. Digital maturity of SMEs in Ghana

To assess the digital maturity of SMEs in Ghana, it is critical to analyse various dimensions that reflect their ability to adopt and leverage digital technologies. According to the World Bank's Digital Transformation in Emerging Markets report (2022), SMEs are classified into four levels of digital maturity:

1. **Initial:** companies with low technology adoption, no digital presence or management tools.
2. **Intermediate:** companies with internet access and basic use of digital tools, such as social networks or email.
3. **Advanced:** companies using e-commerce platforms, cloud solutions and digital payments.
4. **Digital leaders:** companies with full integration of emerging technologies, such as artificial intelligence, big data and IoT.

In Ghana, it is observed that approximately 60% of SMEs are in the early or intermediate levels of digital maturity, while only 10% can be considered digital leaders. To better understand this situation, five key dimensions are analysed.

First, in the **digital infrastructure and connectivity** dimension, Ghana has achieved near-universal coverage of 3G and 4G mobile networks; however, 4G adoption remains limited in rural areas, restricting equitable access to digital tools. While there are more than 22 million mobile internet subscriptions by 2023, fixed internet access remains marginal. To address these inequalities, the Ghana Digital Acceleration Project, funded with USD 200 million by the World Bank, in partnership with the government, is investing in the expansion of the national fibre optic network. The deployment of 4,400 new 4G/5G towers is expected to enable the launch of the 5G network in the country before the end of 2025.

In the dimension of **adoption of digital tools**, large companies in Ghana have made progress in digitising administrative and financial processes through the adoption of ERP solutions and e-commerce platforms. Although there are more than 30 e-commerce platforms operating in the country, such as Jumia and Tonaton, 60% of SMEs still rely on social networks and traditional methods for selling products and services. In addition, 85% of online transactions are cash-on-delivery, reflecting a lack of trust in digital payment systems. Also, 85% of manufacturing employment comes from SMEs using outdated technology.

If we focus on the **digital skills and training** dimension, as we have been finding in this paper, there is a significant deficit in the digital skills and training of the Ghanaian workforce. Despite government initiatives that have benefited over 15,000 people in recent years, only 25% of the population has basic digital skills, and only 10% have intermediate or advanced digital skills. This lack limits the ability of companies to implement digital strategies and adopt modern technologies.

In terms of **digital security and regulation**, the establishment of the Cyber Security Authority and the National Communications Authority, together with the enactment of the Electronic Transactions Act and the Data Protection Act, has strengthened the digital security and regulatory framework in Ghana. However, enforcement of these regulations remains weak, and many businesses are unaware of their data protection and digital security obligations.

Finally, in the **use of data and market analytics**, although Ghana has established a government open data portal, its development has been limited. Many SMEs still do not use advanced analytics and big data in their operations, which reduces their ability to improve competitiveness and efficiency.

In summary, while Ghana has made progress in digital infrastructure and regulation, significant challenges remain in the adoption of digital tools, workforce training and data use by SMEs. Addressing these areas is crucial to raising digital maturity and taking full advantage of the opportunities offered by the digital economy.

8.1. Digital maturity by business sector

The digital maturity of small and medium-sized enterprises (SMEs) in Ghana varies significantly by sector of activity, influenced by factors such as investment in digital technologies, availability of talent with digital skills, technology infrastructure and supportive government policies. According to the Ghana Digital Economy Policy Strategy Document and the Central Bank of Ghana's SME Sector in Ghana 2023 report, sectors such as telecommunications and IT show high levels of digitisation, while manufacturing and media still face significant challenges in their digital transformation.

Below are the levels of digital maturity by sector, along with an analysis of the main barriers and opportunities for their evolution:

- **Telecommunications and IT:** according to the Ghana Digital Economy Policy Strategy Document report, this sector leads digital transformation in Ghana, with a digital maturity index of 0.80 out of 1. Companies in telecommunications and IT have invested heavily

in cloud computing, big data and AI. A key driver has been the success of mobile money, which has facilitated financial inclusion and driven the digitisation of services across the country. In addition, telecommunications infrastructure has improved with the growth of broadband access, the deployment of 4G networks and the expansion of fibre optics. However, some challenges remain, such as the high cost of digital spectrum, which limits the expansion of networks in rural areas, and the shortage of skilled professionals in key areas such as cybersecurity and advanced data analytics. The lack of adequate training programmes and the brain drain to international markets have hindered the consolidation of this sector as a technological benchmark in the region. To make further progress, it is necessary to strengthen training in digital skills and promote policies for access to technological infrastructure for all companies in the sector.

- Finance and insurance:** with a digital maturity of 0.70 out of 1 due to the adoption of fintech solutions and mobile payment systems and the integration of digital platforms in banking services, which has allowed SMEs to expand access to credit and electronic payments. As a result, Ghana has become a leader in financial innovation in West Africa, with solutions such as MTN MoMo and Vodafone Cash revolutionising the way businesses and citizens manage their finances. However, it faces obstacles that limit the mass adoption of these tools. The technological obsolescence of traditional banks is a major problem, as many financial institutions still operate with legacy systems that make it difficult to integrate new digital solutions. Furthermore, cybersecurity breaches have raised concerns among users, due to the increase in digital fraud and data breaches. To consolidate the sector's digital development, it is crucial to modernise the banking infrastructure and strengthen protection against cybercrime.
- Industry:** The industry has a digital maturity of 0.50 out of 1, due to limited adoption of tools such as **automation, robotics and predictive analytics**. Many companies rely on **traditional technologies and imported machinery** making modernisation expensive and making it difficult to implement digital processes in their operations. This situation is exacerbated by the lack of government incentives for the adoption of advanced technologies in the manufacturing sector. Another factor holding back digitisation is the **shortage of talent trained in industrial digitisation**. Most workers have not yet been trained in digital tools applied to production, limiting the efficiency and competitiveness of companies in the sector. To drive the digital transformation in industry, it is essential to encourage

investment in technological infrastructure, develop training programmes in digital skills and promote access to finance for the acquisition of modern equipment.

- **Health and tourism:** according to the Ghana Digital Economy Policy Strategy Document, digital maturity in these sectors is 0.60 out of 1 due to the gradual incorporation of digital solutions such as telemedicine and online booking platforms in the tourism sector. Despite this, the implementation of these advances is limited due to low investment in ICTs in hospitals and rural health centres, low interoperability of patient management systems and in tourism the lack of digital standards, resulting in low quality services in the processing of online bookings.

8.2. Challenges and obstacles to digitisation

Ghana faces a number of structural challenges that limit the effective adoption of new technologies, especially in rural communities and in the small and medium-sized enterprise (SME) sector. According to the Ghana Digital Skills Needs Assessment Report for Rural Communities by GIZ in 2022, these barriers include the high cost of technology infrastructure, lack of trained personnel, insufficient investment in training and deficiencies in connectivity.

The high cost of technological equipment results in difficulties in accessing quality hardware and software, limiting the productivity and adaptation of SMEs to the digital environment. The price of technological equipment is high due to its importation, with tariffs and taxes making its acquisition more expensive. SMEs resort to foreign software solutions with expensive licences, as local options are still limited. In addition, the high cost of maintenance and technical support, due to the lack of technology specialists, leads to dependence on foreign consultants or highly skilled personnel. The limited availability of funding to acquire technology and go digital slows down the modernisation of their technological processes.

As a result, the adoption of advanced technologies is low, as many companies are unable to purchase modern devices or contract digital services. Difficulties in implementing cloud solutions reduce the operational efficiency of businesses, widening the digital divide between the countryside and the city.

Lack of trained personnel in cybersecurity, data analytics, e-commerce and enterprise software management skills limits the adoption of new technologies by businesses. The lack of educational programmes aligned with the digital needs of the market in colleges and universities limits the creation of talent in the skills described above. In addition, many

SMEs do not have the resources to train their staff in new digital tools, perpetuating the knowledge gap. As a result, there is a talent drain of skilled staff abroad in search of job opportunities, exacerbating the lack of digital specialists in the country. As a result, companies are unable to complete their digital transformation, as they do not have the skilled workforce to do so, impacting their global competitiveness and their expansion into regional and global markets.

Underinvestment in training due to the lack of adequate training programmes prevents workers and entrepreneurs from upgrading their digital skills. This gap is observed both in formal education and in continuous training within the business sector. One of the main problems is the shortage of specialised courses, with few initiatives focused on advanced digital skills such as AI, blockchain and big data, preventing the workforce from adapting to global technology trends.

Cooperation between government, business and training institutions remains limited, reducing training opportunities and making it difficult to update skills in line with market needs. In addition, training costs remain high, making it difficult for SMEs and the self-employed to acquire the required digital skills due to high prices.

Deficiencies in connectivity as quality internet access, especially in rural areas, remains a challenge, limiting the ability of businesses and digital entrepreneurs to adopt digital solutions in their projects.

Low coverage in rural areas impedes the digitisation of the economic activities of businesses in this sector. In addition, the high costs of mobile data plans and broadband remain a barrier for many businesses and households. The persistent lack of advanced infrastructure in the country, especially fibre optic and telecommunications networks, limits the expansion of the internet throughout the country. As a result, e-commerce is experiencing difficulties in spreading beyond urban areas, as there is no infrastructure to ensure secure and stable connectivity for online sales strategies. The expansion of digital education is also affected, as the lack of internet access prevents many students and workers from participating in online training programmes. Finally, in the area of advanced digital skills, poor connectivity limits the use of advanced digital technologies such as cloud computing and big data, both of which require high-speed connections to operate efficiently.

Although the Ghana Digital Economy Policy Strategy Document report indicates that the development of a robust digital infrastructure is a key pillar for economic growth and digital transformation in Ghana.

However, although Ghanaian SMEs have access to the internet, significant gaps in the quality of connectivity persist, especially in rural areas due to the lack of adequate telecommunications infrastructure limiting access to essential digital services such as e-commerce platforms, online banking and cloud-based solutions.

Ghana's digital infrastructure has made significant progress in recent years, with increased internet penetration and the development of fibre optic and broadband networks. Investment in the National Fibre Optic Network and the Eastern Corridor Fibre Optic Backbone project has improved connectivity in some regions, although gaps remain in last mile connectivity.

Affordable internet access remains a challenge in rural areas. Lack of access to appropriate and affordable devices also represents a significant obstacle, limiting the adoption of digital technologies by SMEs. As we can see in the table below, the prices of technological devices (smartphones, tablets and laptops) are high between the exchange rate of the dollar to the Ghanaian cedi:

Table 7 Cost of Technology Devices in Ghana. Source: Ghana Digital Economy Policy Strategy Document 2024

Device	Approximate Price	Approximate Price (GHS)	Remarks (USD)
Smartphone basic	80	960	Basic models with limited functions.
Mid-range mid-range	150	1800	Good value for money, most popular.
High-end smartphones	400	4800	High quality, used by professionals businesses.
Economical notebook	300	3600	Suitable for students and small businesses.
Laptop from mid-range mid-range	600	7200	Good performance for more advanced tasks.
High-end notebook	1200	14400	Used at corporate and professional environments.
Basic Tablet	100	1200	For navigation and basic use.
Tablet mid-range	250	3000	Suitable for Students and remote workers.
High-end tablet	700	8400	Premium models with higher performance.

Despite these advances, digital infrastructure in Ghana faces a number of challenges affecting SMEs. The urban-rural divide remains a key problem. While connectivity in cities such as Accra and Kumasi is stable and relatively fast, infrastructure in rural areas is poor. This disparity limits the ability of rural SMEs to take advantage of digital tools such as e-commerce, digital payments and cloud solutions. Another major challenge is the high cost of technological devices. The price of smartphones, for example, represents 45% of the average monthly income, making it difficult for entrepreneurs and SMEs to acquire these devices. Although financing programmes and subsidies have been implemented, they have not yet reached rural and remote areas.

Another significant challenge is the lack of last mile connectivity. Despite the expansion of the national fibre optic backbone, many rural communities still lack access to reliable telecommunications services. Unstable power supply in some areas affects the quality of connectivity, preventing SMEs from being able to operate digitally. The lack of adequate infrastructure in these areas not only limits the digitisation of SMEs, but also reduces the country's ability to foster an entrepreneurial ecosystem based on technological innovation.

To address these challenges, and as indicated in the table below, the Ghanaian government and the private sector have adopted the following strategies:

Table 8 Initiatives to improve digital connectivity in Ghana undertaken by the public and private sector. Source: Ghana Digital Economy Policy Strategy Document 2024.

Initiative	Type of Initiative	Description
Eastern Corridor Fibre Optic Backbone	Government	Fibre optic project to connect the north of Ghana with the rest of the country. Ghana with the rest of the country.
Ghana Rural Telephony Project	Governmental	Expansion of telecommunications towers in rural areas to bridge the digital divide.
GovNet - Connectivity to Public Institutions	Governmental	Implementation of network infrastructure for public and government institutions.
National Broadband Infrastructure Development	Governmental	Development of broadband infrastructure to improve digital connectivity throughout the country.
Mobile Network Expansion	Private	4G coverage expansion and 5G preparation by telecom operators
Digital Ghana Agenda	Government	National strategy to accelerate the country's digitalization

		with multiple components.
Universal Access Fund (GIFEC)	Governmental	Fund to guarantee Internet access in rural and disadvantaged communities.
Ghana Digital	Governmental	World Bank-funded program to strengthen connectivity and digitalization.
Rural Star Project - Huawei and Government	Public-Private	Huawei and the government collaborate to improve rural connectivity with advanced technology.
Device and Data Access Subsidies	Government	Government subsidies to reduce the cost of devices and internet access in rural areas.

8.3. Recommendations and opportunities for improvement

Despite the challenges, the Ghana Digital Economy Policy Strategy Document offered the following opportunities and recommendations to accelerate the digital transformation of SMEs. It highlights the importance of increasing investment in advanced technologies. To this end, it recommends encouraging access to tools such as business management systems (ERP), big data platforms and artificial intelligence solutions to optimise processes and improve the competitiveness of enterprises.

It calls for the development of training programmes in digital skills. Continuous training should address both basic skills and advanced specialisations, with the aim of closing the skills gap and equipping workers with the necessary knowledge to meet the challenges of digitalisation. The recommendations here are in line with those indicated by the GIZ Ghana-Rural Digital Needs Assessment 2022 report, which indicated that the lack of digital talent was one of the main challenges to the digital transformation of SMEs, recommending training in cybersecurity, data analytics and e-commerce to empower SMEs.

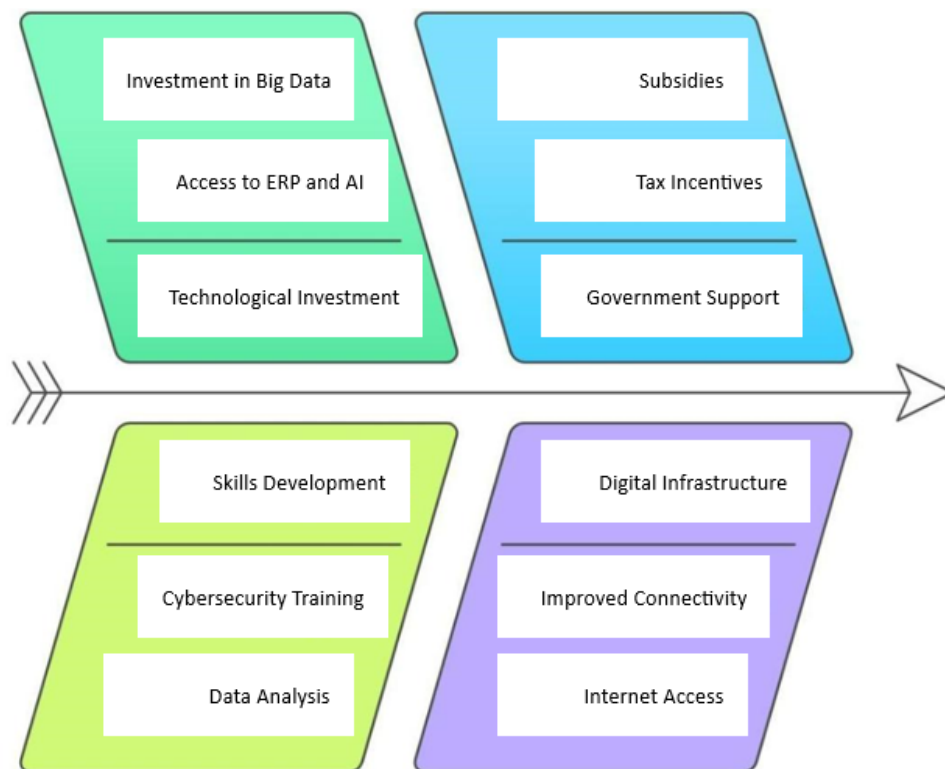
He also recommends the establishment of government incentives. The government could implement measures such as tax incentives and subsidies that facilitate investment in technology by SMEs, allowing them to adopt digital solutions without undue financial burden. The Central Bank of Ghana's SME Sector in Ghana Report 2023,

identified this as one of the main obstacles to digitalisation in the country, especially the purchase of hardware and software.

The Ghana Digital Economy Policy Strategy Document called for the need to foster public-private partnerships. Such partnerships can significantly improve digital infrastructure, especially in rural areas, and promote knowledge and technology transfer between the private sector and public institutions. Finally, he believes that boosting the modernisation of connectivity through investments in broadband infrastructure and mobile networks is essential to ensure faster and more stable access to the internet, which is a key factor for the digital development of SMEs and their integration into the global digital economy.

Therefore, to accelerate the digital transformation of SMEs in Ghana, it is critical to adopt a holistic approach that addresses existing barriers and fosters an ecosystem conducive to innovation and technology adoption. This requires coordinated action by various actors, including government, the private sector and international agencies.

Accelerating Digital Transformation for SMEs in Ghana



Opportunities for improving the technological maturity of SMEs in Ghana. Own elaboration

Based on the diagnosis made in this report, key areas have been identified where a coordinated effort by the public, private and international cooperation sectors is required to strengthen the country's digital maturity. The following recommendations seek to address these challenges and improve Ghana's digital ecosystem.

8.4. Strengthening digital infrastructure and connectivity

Ghana has made significant progress in expanding its mobile coverage and internet penetration, with 3G and 4G networks reaching over 96% of the population. However, inequalities in the quality of connectivity persist, especially in rural areas, where lack of access to high-speed networks impedes the development of digital businesses and access to online services.

Areas for improvement:

- Fibre optic network development: accelerate the implementation of projects such as the *Ghana Digital Acceleration Project*, which foresees the installation of 4,400 new telecom towers to expand 4G and 5G access across the country.
- Reducing internet access costs: regulate providers' tariffs to make fixed and mobile broadband more affordable, especially in low-income communities.
- Expanding internet access in rural areas: incentivise the deployment of community networks and the use of satellite technologies to ensure equitable connectivity.

8.5. Boosting the digitisation of SMEs

Despite the increasing adoption of digital solutions in Ghana, many SMEs still rely on traditional methods for their operations. According to the data analysed, more than 60 % of businesses have yet to incorporate advanced e-commerce solutions and digital management tools.

Areas for improvement:

- Promoting e-commerce: Encourage the adoption of e-commerce platforms through tax incentives and training programmes, facilitating the integration of small businesses into the digital ecosystem.
- Facilitating access to digital tools: Develop financing programmes for the acquisition of modern software and hardware, with an emphasis on strategic sectors such as agribusiness, manufacturing and financial services.
- Transforming business models: support the migration of enterprises to digital environments through the use of e-payments and business management platforms.

8.6. Training and digital skills development

One of the main challenges to Ghana's digitisation is the low proportion of the population with advanced digital skills. According to the report by the International Labour Organization (ILO) and the World Bank, only 25 % of Ghanaian workers possess basic digital skills, while barely 10 % are trained in intermediate and advanced skills.

Areas for improvement:

- Expansion of ICT training programmes: boost technical and vocational training in digital technologies, including courses in cybersecurity, data analytics, artificial intelligence and programming.
- Public-private partnerships for the development of digital talent: foster collaboration between government, universities and technology companies to create training programmes aligned with labour market demand.
- Incorporation of digital skills in basic and higher education: review curricula to ensure that skills in programming, digital literacy and data management are developed from an early age.

8.7. Strengthening the fintech ecosystem and the digitisation of payments.

Ghana has established itself as a leader in the expansion of fintech services in West Africa, with companies such as MTN MoMo and Vodafone Cash leading the sector. However, 85% of online transactions are still cash on delivery, reflecting a lack of trust in digital payment systems.

Areas for improvement:

- Regulation and security in digital payments: implement consumer protection measures to ensure trust in e-commerce and mobile payment systems.
- Digital financial inclusion: promote access to fintech tools among SMEs, especially in rural areas where access to traditional banking remains limited.
- Modernisation of the tax system: integrate digital payments into tax and administrative processes to encourage their adoption.

8.8. Innovation and digital entrepreneurship

Despite a growing startup ecosystem, Ghana faces challenges in accessing funding and consolidating technology hubs outside Accra. Programmes such as the *National Entrepreneurship and Innovation Programme (NEIP)* have been a positive step, but still need to be scaled up.

Areas for improvement:

- Facilitating access to finance: create public and private investment mechanisms that offer seed capital to startups and SMEs with high digitisation potential.
- Promoting emerging technologies: encourage research and development of applications in artificial intelligence, blockchain and big data in strategic sectors.

8.9. Improving the regulatory framework and digital security

The creation of the Cyber Security Authority and the implementation of the Data Protection Act have been significant advances in strengthening cybersecurity in the country. However, the implementation of these regulations remains uneven, with many companies still failing to adopt adequate data protection measures.

Areas for improvement:

- Strengthening cybersecurity in companies: develop certification and training programmes in digital security for SMEs and startups.
- Data protection and digital rights: raise public and business awareness of the importance of personal data protection and online privacy.
- Updating the regulatory framework: ensuring that digital commerce and data protection laws are adapted to new technological challenges and the expansion of the fintech ecosystem.

8.10. Digitisation of the agricultural sector

The agricultural sector accounts for more than 21% of Ghana's GDP and employs a significant part of the population. However, the adoption of digital solutions in the sector remains low, limiting productivity and resilience to external factors.

Areas for improvement:

- Promotion of digital platforms for farmers: encourage the use of tools such as Esoko, Farmerline and Troto Tractor to improve product marketing, access to inputs and climate information.
- Financing for digital agriculture: develop data-driven micro-finance and agricultural insurance schemes to facilitate investment in technology.

9. Gaps and opportunities

The technological maturity of SMEs in Ghana reveals a mixed picture of challenges and opportunities. Despite significant progress in digital infrastructure and the adoption of technology tools in certain sectors, key gaps persist that limit the growth potential and competitiveness of SMEs.

These challenges include uneven connectivity, low adoption of advanced technologies, shortage of specialised talent and limited access to financing for digitisation.

9.1. Technology gaps

The Ghana Digital Economy Policy Strategy Document 2024 and the Central Bank of Ghana's SME Sector in Ghana 2023 report identify several technology gaps that affect the development and competitiveness of small and medium-sized enterprises (SMEs) in the country, highlighting unequal access to digital infrastructure, a shortage of information and communication technology (ICT) talent and difficulties in accessing finance for the adoption of technology tools. These limitations significantly affect the competitiveness of companies, restricting their ability to innovate and expand in a globalised market that requires a high degree of digitisation.

9.1.1. Internet access and connectivity gap

Although internet penetration in Ghana reached 71.9% in 2023, according to the Ghana Digital Economy Policy Strategy Document (2024), significant disparities persist between urban and rural areas. Although internet penetration in the country reached 71.9% in 2023, according to the Ghana Digital Economy Policy and Strategy Document (2024), the quality and stability of internet access remains uneven. In rural areas, many SMEs rely on unstable and high-cost mobile connections, limiting their access to digital platforms and advanced business management tools.

digital tools such as enterprise resource planning (ERP), Big Data, artificial intelligence or e-commerce.

This lack of specialised talent is largely due to the absence of adequate education and training programmes that prepare the workforce for the challenges of the digital environment. Despite government efforts to include digital literacy in school and university curricula, there is still a considerable gap between market demand and supply of skilled ICT professionals. In addition, many SMEs do not have the resources to train their staff in the use of new technologies, which further exacerbates the problem.

The lack of specialised talent not only hinders the digital transformation of companies, but also exposes them to cybersecurity risks. Many SMEs have not developed adequate protection strategies, leaving them vulnerable to cyber attacks and loss of sensitive data. In addition, a shortage of ICT technical training programmes limits the supply of qualified professionals, which increases the costs of recruiting and retaining talent in the technology sector.

To address this gap, the Ghana Digital Economy Policy and Strategy Document proposes to strengthen digital education at all levels by promoting training initiatives in advanced digital skills, especially in artificial intelligence, data analytics and cybersecurity. However, the implementation of these initiatives still faces structural challenges, such as the limited availability of training centres in rural areas and the lack of incentives for SMEs to invest in training their staff.

On the other hand, initiatives such as the Ghana Innovation Hub and the Ghana Digital Acceleration Project have started to address this gap, but these efforts still need to be expanded to reach a larger proportion of the Ghana-Digital-Economy-P.... workforce. In addition, collaboration with universities and technology training centres can be key to generating a supply of talent that is more aligned with market needs.

9.1.4. Difficulties in accessing finance

Access to finance remains one of the main obstacles for SMEs in Ghana to adopt digital technologies and improve their competitiveness. Despite the existence of government and private programmes aimed at boosting digitisation, many businesses struggle to raise capital to invest in technology infrastructure, software and ICT training. According to the SME Sector in Ghana 2023, in 2022 only 30% of startups in Ghana were able to obtain formal funding for the implementation of technology solutions.

SMEs find it difficult to access credit and finance due to stringent bank requirements, high interest rates and lack of sufficient collateral. In addition, many enterprises in the country operate in the informal sector and lack proper financial records, which complicates their access to loans and grants.

The government has implemented initiatives such as the Ghana Innovation Hub and the Ghana Digital Acceleration Project, which aim to facilitate access to finance and encourage investment in technology. However, these efforts have not yet achieved the necessary coverage to meet the demand for SME finance in all regions of the country. It is therefore necessary to strengthen financing mechanisms, promoting innovative models such as crowdfunding, public-private partnerships and specific investment funds for the digitisation of small businesses.

9.2. Technological opportunities

Despite the technological gaps previously identified, Ghana presents multiple opportunities to accelerate its digital transformation and consolidate itself as a benchmark in technological innovation in West Africa. The combination of a growing entrepreneurial ecosystem, government digital modernisation initiatives and the advancement of strategic sectors such as **fintech, digital agriculture, online education and e-commerce** create an enabling environment for the country's technological development.

9.2.1. Expansion of the fintech and digital payments ecosystem

The fintech sector in Ghana has experienced accelerated growth in recent years, with the proliferation of digital financial inclusion solutions. The mass adoption of mobile payments and e-payments, with over 23 million active users, has facilitated the digitisation of commerce and financial services. The government has recognised the potential of this sector and is working on regulations to strengthen transaction security and consumer protection.

This context represents a great opportunity for the development of new digital financial services in areas such as:

- Microcredit and alternative finance: fintech platforms offering loans to small businesses with simplified processes.
- Electronic payments and digital commerce: expansion of services such as MTN MoMo and Vodafone Cash, which already dominate the sector, facilitating digital transactions without the need for traditional banking infrastructure.
- Digital insurance and mobile banking: growth of platforms that allow access to financial products without the need to visit physical branches.

9.2.2. E-commerce development and retail digitisation

E-commerce in Ghana has seen progressive expansion with platforms such as Jumia, Tonaton and Plendify, although adoption among SMEs remains limited. Currently, 60% of SMEs in the country still rely on social media and traditional methods to market their products. Opportunities in this sector include:

- Promotion of digital trade: incentives for SMEs to access online sales platforms.
- Optimising logistics: improving distribution infrastructure and last mile services to facilitate fast and efficient deliveries.
- Integrated e-payment: expanding mobile payment services and reducing cash dependency in e-commerce.

9.2.3. Digitisation of the agricultural sector and the use of technology in production

The agricultural sector, which contributes more than 20% of GDP and employs a significant part of the population, has a huge potential for digitisation. Companies such as Esoko, Farmerline and Trotror Tractor are currently leading the modernisation of the sector through digital tools for crop management, market access and agricultural advice. Technological opportunities in this sector include:

- Use of big data and predictive analytics: optimising agricultural yields through soil and weather monitoring.
- Precision agriculture: integration of IoT sensors and drones to improve resource efficiency.
- Digital agricultural finance: fintech solutions adapted to the sector, providing credit and insurance for smallholder farmers.

9.2.4. Boosting digital education and training in technology skills.

The digital skills deficit in Ghana remains a challenge, with only 10% of the population with intermediate or advanced digital skills. The Ghanaian government has launched initiatives to improve digital literacy, but there is a need to expand its reach, especially in rural areas, and it represents an opportunity to expand digital education and ICT training. Opportunities in this sector include:

- Expansion of EdTech platforms: development of digital content for online training, with a special emphasis on technology skills.

- Integration of digital skills in basic and university education: programmes that strengthen digital literacy from early stages.
- Public-private partnerships for ICT training: collaboration with technology companies to train talent in cybersecurity, big data and software development.

9.2.5. Growth of the innovation ecosystem and tech startups

The entrepreneurial ecosystem in Ghana has grown with initiatives such as the Ghana Innovation Hub and the Ghana Digital Acceleration Project, but still faces barriers to accessing funding. Opportunities exist to consolidate the sector through:

- Public-private investment funds and seed capital: supporting startups with growth potential in digital technology.
- Expansion of start-up incubators and accelerators: strengthening the ecosystem with mentoring and development spaces for innovative projects.
- Promotion of artificial intelligence and big data: incentives for the development of applications in sectors such as health, banking and logistics.

9.2.6. Regulating and strengthening cybersecurity.

With the rise of digital commerce and online financial services, data protection and cybersecurity have become a priority, as strengthening digital security is essential to ensure consumer trust and strengthen the country's digital ecosystem. The creation of the Cyber Security Authority and the implementation of the Data Protection Act have been key steps, but there are still opportunities to:

- Develop cybersecurity certifications for companies and startups.
- Implement awareness campaigns on digital risks and data protection.
- Create a cyber incident response system for SMEs and financial services.

10. Interviews with key Ghanaian stakeholders

Between 3 and 7 March 2025, thirteen meetings were held in Accra (and some online) with key stakeholders in the field of digitalisation, vocational training and employability in the technology sector. These meetings aimed to obtain an accurate diagnosis of the current state of digitalisation in the country, identify challenges and opportunities in digital skills and explore possible strategies to strengthen Ghana's technology and entrepreneurial ecosystem.

In a context of accelerated digital transformation, these meetings were fundamental to understand the needs of the different productive sectors, as well as the degree of alignment between the educational offer in digital skills and the demand of the labour market. The participation of government representatives, technology companies, educational institutions and international cooperation agencies allowed to gather a comprehensive view on the strategic priorities in the Ghanaian digital economy.

Below are the details of each of the meetings, including the topics discussed, the conclusions drawn and the areas of cooperation identified for strengthening the digital sector in Ghana:

1. iSpace

- Date: 3 March 2025
- Time: 09:30 AM
- Venue: Videoconference
- Participants:
 - Josiah Abakah Eyison (CEO of iSpace)
 - Edem Korshie Adzikah (CEL Ghana)
 - Navin Khemlani (IBC Spain)

Meeting notes

Edem Korshie Adzikah opened the meeting by thanking Josiah Abakah Eyison, CEO of iSpace, for his participation, highlighting his role as one of the key players in Ghana's digital ecosystem. It was explained that the interview was part of the EU-funded AfricanTech project with the following objectives:

- To assess the digital maturity of SMEs in Ghana.
- To identify training and employability needs in digitalisation.

Josiah Eyison presented his work on iSpace, an innovation hub based in Accra, which supports the growth of entrepreneurs and startups at different stages, collaborating with the public and private sector to improve the digital ecosystem.

Josiah explained that iSpace categorises companies into two groups:

1. Technology-focused companies: receive training in programming and platform development (HTML, C++, PHP, Python, Java, JavaScript).
2. Technologically enabled companies: they are trained in basic digital skills to improve their business, such as the use of social networks and digital tools.

Among the programmes offered by iSpace, the following stand out:

- Digital skills training: use of tools such as WhatsApp and Facebook to improve online presence.
- Programming courses: intensive training in programming languages for technology entrepreneurs.
- Digital marketing training: differentiation between digital marketing and social media marketing.

iSpace offers various programmes to improve the digital literacy of SMEs, including:

- Invest in Her: programme aimed at women entrepreneurs in the technology sector.
- Code School: training in programming and digital literacy for informal sectors.
- Digital Skills 101: a programme aimed at small entrepreneurs in the informal sector.
- Specific training for trade unions:
 - Example: training 150 members of the Ghana Beauty Association on digital marketing.

iSpace collaborates with different stakeholders to adapt its training programmes:

- Government: participates in the formulation of public policies for the digital ecosystem and proposes training.
- International agencies and NGOs: collaborate with Mastercard Foundation, GIZ and RISA for digital inclusion and gender programmes.
- Surveys and studies: conduct regular surveys to adjust training to the needs of the sector.

Example of collaboration:

- RISA (Gender Equality and Social Inclusion) project: training 22 women in the informal sector on how to use WhatsApp and Instagram to digitise their businesses.

Josiah shared some key indicators (KPIs) that reflect the impact of iSpace:

- Three-month follow-up after the training to measure the impact on businesses.
- Increased market reach of entrepreneurs after training.
- More than 1,500 entrepreneurs trained per year at different levels.
- High impact in the informal sector: iSpace is actively working with sectors traditionally excluded from digital transformation.

It was agreed that Josiah would mail more detailed KPIs to be included in the report.

To ensure the sustainability of its trainings, iSpace implements:

- Partial payment programmes: free training at basic levels, but advanced courses are at a nominal cost (USD 10 per course).
- Partnerships with the private sector: companies fund some programmes as part of their CSR.
- Structured documentation: creation of training manuals for beneficiaries to continue learning after completing the programmes.

iSpace fosters collaboration between startups and innovation hubs through:

- Monthly forums between technology hubs to share best practices.
- Ghana Hub Network, where iSpace leads the coordination of joint initiatives.
- Collaborative projects to avoid duplication of efforts in digital training.
- Research and commercialisation of innovation with 25 hubs in Ghana. Josiah

highlighted iSpace's plans to expand its impact in Ghana:

- Design a national digital training programme for SMEs and entrepreneurs.
- Integrate new technologies into digital training, including:
 - Cloud Computing.
 - Business management systems (ERP, CRM).
 - Cybersecurity.

- Artificial Intelligence applied to business (Chatbots, process automation).
- Promote the use of digital tools in the informal sector to improve the financial sustainability of SMEs.

iSpace is incorporating training in emerging technologies:

- AI applications in SMEs:
 - Use of ChatGPT for digital marketing.
 - Implementing chatbots on websites.
 - Using Trello and CapCut with AI for project and digital content management.
- Cybersecurity training:
 - Data protection and internet security training for SMEs.
- Business management systems:
 - Use of tools such as Siebel (CMS) and QuickBooks (accounting management) to improve the efficiency of SMEs.

It was noted that few SMEs use ERP and CRM due to:

- High implementation costs.
- Lack of awareness of their usefulness.
- Business ecosystem focused on products rather than services.

Josiah highlighted that the main obstacles to the adoption of digital tools in SMEs are:

- High cost of software and digital tools.
- Low culture of data collection in business.
- Lack of knowledge about the value of ERP and CRM systems.
- Difficulty in training companies that do not go to innovation hubs.

iSpace believes that the key to overcoming these challenges is to improve awareness and progressive adaptation of technology to local realities.

Conclusions

- Integrate impact KPIs into the report when they are submitted.
- Strengthen collaboration between iSpace and other hubs in Ghana.

- Explore partnerships with government to expand digital literacy.
- Improve awareness of the use of advanced business tools.
- Include emerging technologies in iSpace's training offerings.

2. Micheal Osei Nkrumah, Consultant

- Date: 3 March 2025
- Time: 11:00 AM
- Venue: CEL Ghana
- Participants:
 - Micheal Osei Nkrumah (Consultant Researcher)
 - Edem Korshie Adzikah (Director of CEL Ghana)
 - Navin Khemlani (IBC Spain)

Meeting Notes

On 3 March 2025, at 11:00 AM, a meeting was held at CEL Ghana with Micheal Osei Nkrumah, Consultant Researcher, and Edem Korshie Adzikah, Director of CEL Ghana. The purpose of the meeting was to discuss the challenges and opportunities in the digitisation of SMEs in Ghana, based on previous research and the experience of the attendees.

Micheal Osei Nkrumah started the meeting by presenting his experience as a researcher and consultant on digitalisation. He highlighted a recent study entitled 'Challenges and Opportunities to a Digitalized, Green, and Inclusive Environment for Entrepreneurs and Small Businesses', conducted in 2024 under the initiative of the Embassy of the Netherlands and the RVO agency. This study analysed the state of digitalisation in terms of infrastructure, adoption and internet penetration.

It discussed the key findings of its research, noting that Ghana has a strong policy and regulatory framework for digitisation, with multiple government-driven policies and strategies. However, the main problem lies in the implementation of these policies, due to lack of funding. The government faces budget shortfalls and prioritises other areas over investment in digital infrastructure.

Another major challenge identified was the lack of coordination between the various agencies working on digital. Many initiatives run in parallel, without a harmonised strategy, leading to duplication of efforts and waste of resources. The creation of a cluster bringing together the public, private and academic sectors was proposed to improve collaboration and efficiency of digital initiatives.

The digital divide between urban and rural areas was also addressed. In Accra, there is significant progress in the adoption of new technologies, but the rest of the country lags behind. Education and digital literacy remain critical challenges, especially in rural areas, where many students do not have access to computers.

Financing remains a key barrier to the digitisation of SMEs. The absence of tax incentives or subsidies to facilitate the adoption of technologies by small and medium-sized enterprises was highlighted. In addition, many digital startups rely on external funding and collapse once international donor support programmes end.

The private sector, while playing an important role in digitisation, is not sufficiently integrated into the country's strategic planning. It was mentioned that telecommunications companies lead innovation in digital solutions, but most SMEs have not yet adopted advanced tools such as artificial intelligence or blockchain.

Conclusions

1. Create a national fund for digitalisation, financed through a digital tax similar to the e-Levy, which would guarantee sustainable resources for the digital transformation of SMEs.
2. Revise the education system to integrate training in digital technologies from an early age and ensure that students have access to technological tools.
3. Promote public-private collaboration by creating clusters that include academia, the private sector and government agencies to improve coordination and implementation of digital strategies.
4. Implement tax incentives for SMEs investing in digital technologies, facilitating their access to finance and reducing their tax burden in the early years of digital adoption.
5. Encourage the use of technologies in agriculture and the green economy, promoting the adoption of digital solutions among farmers and agribusiness actors to improve productivity and sustainability.
6. Develop a national digitalisation plan with an allocated budget, ensuring its effective implementation and long-term sustainability.

The meeting concluded with a commitment to share relevant reports and documents to further strengthen knowledge on the state of digitalisation in Ghana. The importance of working together to drive digital transformation was highlighted,

- Integration with banks and government agencies to improve financial efficiency.

Samuel Amanor identified the main challenges faced by MSMEs in Ghana in adopting digital technologies:

1. High cost of digital infrastructure, especially cloud services.
2. Low digital literacy among entrepreneurs, hindering the adoption of technological tools.
3. Lack of funding for digitisation, as many startups and MSMEs cannot access credit or venture capital.
4. Lack of coordination in the fintech ecosystem, with multiple fragmented initiatives without a comprehensive vision.
5. Limited internet access in rural regions, hindering the expansion of e-commerce and digital services.

Bluespace has developed innovative strategies to address these challenges:

- Use of USSD and basic phones to facilitate the adoption of financial services without the need for internet.
- Specialised fintech training, with the Finsoft Tech Fellows programme, where they train young talent in financial technologies.
- Partnerships with the public and private sector, including the World Bank and MTN Ghana, to develop accessible digital infrastructure.
- Creation of a "Code Factory", where new talents experiment with emerging technologies such as artificial intelligence and blockchain.
- "Be Insured" platform, which allows entrepreneurs to obtain insurance quickly and affordably.

Navin Khemlani proposed the creation of a **digital cluster** that brings together public, private and academic entities. This cluster would:

- Optimise the use of investment funds.
- Coordinate digital training initiatives.
- Create high-impact projects with international funding.
- Reduce duplication of efforts in innovation hubs.

Samuel Amanor mentioned that Bluespace already works on similar initiatives with universities and the private sector, but acknowledged the lack of a formal coordinating body. He expressed his interest in collaborating to structure this initiative.

Strategies to accelerate the adoption of emerging technologies such as artificial intelligence, blockchain and big data in Ghanaian MSMEs were discussed.

Samuel Amanor explained that his organisation has a "Capital Factory", where fintech startups can receive support and mentoring to scale their businesses internationally.

It was mentioned that **collaboration with the European ecosystem could facilitate technology transfer** and generate opportunities for African startups in global markets.

Conclusions

- MSMEs in Ghana face key barriers such as the high cost of technology, lack of digital literacy and lack of coordination in the fintech ecosystem.
- Bluespace has implemented innovative solutions, such as fintech training, digitisation of financial services and collaborations with the public sector.
- The possibility of creating a digital cluster was explored to improve coordination and attract international funding.
- The need to boost the adoption of emerging technologies in the Ghanaian entrepreneurial ecosystem was identified.

4. Ghana Telecom University College

Date: 4 March 2025 (04/03/25) Time:

13:45 (GMT)

Venue: Ghana Telecom University College

Attendees:

- Navin Khemlani (IBC Spain)
- Edem Korshie Adzikah (Director of Center for Enterprise Learning - CEL Ghana)
- Derrick Ofori Donkor (Ghana Telecom University College)

Meeting notes

Edem Korshie Adzikah welcomed Derrick Ofori Donkor and explained the purpose of the meeting: to conduct an interview in the framework of the study on the digital maturity of micro, small and medium enterprises in Ghana.

This study has also been carried out in other countries, such as Côte d'Ivoire, and is currently underway in Mauritania and Senegal.

Navin Khemlani presented the EU-funded project, which aims to identify opportunities for collaboration between Spanish and African companies in the field of digitalisation and technological inclusion of MSMEs.

The importance of equal cooperation with the local ecosystem, including public institutions, universities and the private sector, was highlighted.

Derrick Ofori Donkor explained that the university is part of a consortium focused on innovation and development of technology startups. Its activities include training in digital technologies, mentoring and coaching for entrepreneurs, connecting with investors through investment matching programmes, and coworking and incubation spaces.

Training programmes include financial literacy, digitisation of business operations, e-commerce, fintech and digital marketing, as well as training in artificial intelligence, machine learning and cybersecurity. In the past, these programmes have been funded by the World Bank and have benefited entrepreneurs in various regions of Ghana.

The main obstacles identified in the digitisation of MSMEs include lack of funding, deficiencies in human capital, little training in emerging technologies and little collaboration with the government sector.

The university measures the impact of its programmes through surveys, startup monitoring, periodic evaluations and hackathons.

The university collaborates with various institutions such as AmaliTech Ghana and the Ghana Ministry of Education, seeking international funding and developing coworking spaces and technology labs.

Plans include expanding the coworking space, developing certifications in AI and blockchain, strengthening the tech startup investment ecosystem and creating an investment fund to support students with innovative ideas.

Conclusions

Ghana Telecom University College plays a key role in the digitisation of MSMEs in Ghana. Barriers such as lack of funding and deficiencies in human capital were identified. It was agreed to maintain contact to share progress on the report and explore opportunities for cooperation in digital training.

5. IoT Network Hub s Ghana STEM Network

Meeting Minutes Joshua Opoku Agyemang

Date: 3rd March 2025

Time: 15:30

Venue: IoT Network Hub, Accra, Ghana

Attendees:

- Joshua Opoku Agyemang (Chairman C CEO of IoT Network Hub C Ghana STEM Network)
- Edem Korshie Adzikah (CEL Ghana)
- Navin Khemani (IBC Spain)

Notes from the meeting

The meeting took place at the IoT Network Hub premises in Accra, where Joshua Opoku Agyemang hosted us to discuss the current state of digitalisation and opportunities in Ghana within the framework of the West African SME digital maturity study. During the meeting, various aspects related to training in emerging technology, adoption of digital solutions by SMEs and sustainability strategies for digitisation in the business ecosystem were discussed.

Joshua began by introducing the IoT Network Hub, a space dedicated to the training and development of technology solutions in Ghana. Founded in 2016, the Hub has become a key hub for innovation, learning new technologies and digital skills training. They currently have over 30,000 young people in their network, with a presence in 20 African countries and multiple chapters in universities.

The Hub offers free monthly training programmes, where practical workshops on web development, programming and digitalisation are given to entrepreneurs and students. In addition, they have developed a STEM learning education kit, with the aim of preparing young people aged 8-25 in key areas such as artificial intelligence, robotics and the internet of things (IoT). This kit has been adopted in several schools and has proven to be an effective tool for digital education.

The Hub operates under a self-financing model, combining the sale of its educational kits with training programmes in schools and agreements with international organisations. They have received funding from organisations such as UNICEF and Orange Ghana, and recently participated in the Mastercard ITEC Fellowship programme. In addition, they have implemented a 'Venture Studio' model to

incubate and develop technology startups within their ecosystem, ensuring their long-term growth.

One of the main challenges facing digitalisation in Ghana is the lack of awareness and education on the benefits of technology. Many entrepreneurs perceive digitalisation as an abstract concept or of little relevance to their business. In addition, resistance to change, lack of adequate technology infrastructure and the cost of connectivity remain significant barriers.

To measure the impact of its training programmes, the Hub conducts pre- and post-training evaluations to measure participants' progress. They also implement hands-on projects and encourage collaboration in teams, which allows for the development of communication and teamwork skills. The retention rate of participants is a key indicator of the programme's success.

The Hub plans to expand through the creation of a 'Living Lab', an open innovation space where companies, entrepreneurs and students can develop prototypes and technological solutions. In addition, they are working on organising a national hackathon to bring together all innovation initiatives under one event, thus promoting greater coordination between ecosystem actors.

The Hub has identified a low level of female participation in its programmes, so they have implemented specific strategies to address this gap. They have established partnerships with women-led organisations and have launched exclusive training programmes for women entrepreneurs in technology. They have also received support from international foundations to promote women's access to the technology sector.

The meeting concluded with the recognition that digitalisation is an essential process for the growth of SMEs in Ghana. However, lack of funding, resistance to change and low infrastructure remain critical barriers. The possibility of strengthening partnerships with international entities to encourage technology adoption in the country was discussed. IoT Network Hub remains committed to innovation and digital education as key pillars for the development of the entrepreneurial ecosystem in Ghana.

6.Hopin Academy

Date: 7 March 2025 (07/03/25) Time: 11:45
(GMT)

Venue: Videoconference Attendees:

- Navin Khemlani (IBC Spain)

- Edem Korshie Adzikah (Director of Center for Enterprise Learning - CEL Ghana)
- Muniratu Abdoulaye (Startup Program Officer, Hopin Academy)

Meeting Notes

Edem Korshie Adzikah opened the meeting by acknowledging the presence of Muniratu Abdoulaye, who was indisposed, but decided to participate to support the ongoing work. Navin Khemlani explained the objectives of the two reports being developed under the EU-funded AfricanTech project, which address:

1. The digital maturity of SMEs in Ghana.
2. The training and employability needs in digitalisation.

The importance of listening to key players in the digital ecosystem was highlighted in order to enrich the study with first-hand information.

Muniratu Abdoulaye explained that Hopin Academy is an institution based in Tamale, Northern Ghana, focused on:

- Incubation and training of start-ups in sectors such as fintech, agritech, health, logistics, among others.
- Entrepreneurship training programmes for entrepreneurs who want to scale their ideas and turn them into sustainable businesses.
- Mentoring and integration into the ecosystem to ensure that companies have a viable path to sustainability.

The incubation programme lasts four months and offers training, mentoring and industrial adaptation to help entrepreneurs improve their business models.

Hopin Academy offers a variety of educational and digital training programmes, including:

- Phaba in Tech: specific training for young women, regardless of whether they are entrepreneurs or want to acquire new digital skills. It has been implemented in Tamale, Wale Wale and Damango.
- Digital Taskforce Training: training in basic digital skills, including:
 - Using email.
 - Creating documents in the cloud.
 - Developing digital presentations.
 - Use of online collaboration platforms.

- Peer-to-Peer Learning: sessions in which participants themselves teach digital skills to their peers.

These programmes aim to bridge the digital divide in northern Ghana, where access to technology and training is more limited compared to other regions of the country.

Muniratu explained that the academy operates with different funding models:

- Hopin Academy internal funds.
- Support from international partners, although not always fully funded.
- Specific externally funded projects, such as Phaba in Tech.
- The training programmes are free for entrepreneurs, eliminating economic barriers to access.

Hopin Academy not only trains entrepreneurs, but also provides continuous support through:

- Constant mentoring to help them develop their businesses.
- Access to funding for outstanding projects.
- Creation of the Hopin community, where alumni continue to participate in events, meetings and continuous training opportunities.
- Networking with companies and other entrepreneurs.

Muniratu identified several key challenges:

1. Lack of access to computers:

- The academy has a limited number of computers.
- Students who do not have a computer at home cannot practice outside of class.
- A pair work model is implemented, but it is still a limitation.

2. Infrastructure problems:

- Frequent power cuts hinder digital training.
- Limited internet access: they use Starlink, but it depends on electrical stability.

3. Cost of internet:

- Mobile data is expensive, which prevents many students from continuing their training at home.
- The academy does not offer specific scholarships to cover these costs.

Hopin Academy has programmes aimed exclusively at women, such as Phaba in Tech, which trains 300 women in digital skills and entrepreneurship.

- Other programmes are co-educational, but ensure gender parity in the selection of participants.

Hopin Academy has played a key role in the development of entrepreneurship in northern Ghana:

- Over 250 businesses incubated and graduated.
- Survival rate of 80% of incubated businesses.
- Job creation: start-ups formed have generated employment opportunities.
- Continuous monitoring and evaluation:
 - Hopin regularly visits its alumni to evaluate their performance.
 - Established companies within the Hopin ecosystem offer mentoring to new generations.

The sectors in which most entrepreneurs are currently being trained include:

- Agritech.
- Energy and sustainability (Green Business).
- E-commerce.
- Waste Management (E-Waste Management).
- HealthTech.

Each year, Hopin adapts its programmes according to market trends and needs.

- Hopin Academy has a satellite site in Wale Wale (North East Ghana).
- They are exploring collaborations with other hubs in different regions to expand their impact.

Hopin Academy does not offer advanced technical training in AI, cybersecurity or blockchain, but:

- They organise awareness workshops on these topics.
- In 2024 they ran a session on cybersecurity and data protection for SMEs.
- They are looking to incorporate more content on emerging technologies in the future.

Hopin Academy has developed the digital commerce platform "Danni", which allows entrepreneurs:

- Sell products online without intermediaries.
- Learn how to manage their shops on digital platforms.
- Train in digital sales strategies and social networks.

Conclusions

- Strengthen funding for the acquisition of computers and improved connectivity.
- Explore strategies for mobile data access grants.
- Expand training in new technologies such as AI and cybersecurity.
- Strengthen follow-up of incubated companies to improve their success rates.
- Foster collaboration between Hopin Academy and other hubs in Ghana.

7. Minutes of the CSIR Institute meeting

Date: 04 March 2025

Time: 10:00 AM

Venue: CSIR Institute, Ghana Participants:

- Nana Kofi Safo, Senior Researcher, CSIR Institute
- Navin, IBC Spain
- Edem Korshie Adzikah, Director, CEL Ghana

Meeting notes

The meeting was held at CSIR Institute with the objective of analysing the digital maturity of SMEs in Ghana, understanding the challenges and opportunities facing the business ecosystem and discussing possible strategies to strengthen digitisation and capacity building in emerging technologies.

- Lack of funding for the purchase of appropriate technology (smartphones, management software, etc.).
- Resistance to change and lack of confidence in digital tools.

During the discussion, several initiatives were proposed to overcome the obstacles:

1. Creation of a National SME Digitisation Barometer, in collaboration with the Ghana Chamber of Commerce, to measure progress in digitisation on a yearly basis and put pressure on the government to implement effective policies.
2. Training in artificial intelligence applied to SMEs, including tools such as ChatGPT for market research, task automation and process optimisation.
3. Development of accessible digital training platforms in local languages, allowing entrepreneurs with lesser local languages, allowing less digitally literate entrepreneurs to benefit from new technologies.
4. Training key intermediaries, such as farmers' associations and cooperatives, so that they can transfer AI and digitalisation knowledge to their members.
5. Creation of a digitisation support fund, with public and private funding, to facilitate access to advanced technologies at affordable costs.

Conclusions

The meeting concluded with a commitment to collaboration between CSIR-STEPRI and IBC Spain to further explore joint solutions in the field of digitisation and capacity building in Ghanaian SMEs. It was agreed to:

- Share additional information on the DISS-G project and other documents of interest.
- Assess the feasibility of the proposals presented and their possible implementation in future initiatives.
- Maintain a fluid dialogue to explore sources of funding for these projects.

8. PAMEPI Women in Tech

Date: 4 March 2025 (04/03/25) Time:

11:40 (GMT)

Venue: Videocall

Attendees:

- Navin Khemlani (IBC Spain)
- Edem Korshie Adzikah (Director, Center for Enterprise Learning - CEL Ghana)
- Alberta Ferguson (Program Admin, PAMEPI Women in Tech)

Meeting Notes

Edem Korshie Adzikah welcomed Alberta Ferguson and explained the purpose of the meeting: to conduct an interview in the framework of the digital maturity study of the micro, small and medium-sized enterprises (MSMEs) at Ghana. It was mentioned that this study is also being carried out in other countries, and that Ghana is the only English-speaking country in the that the Spanish government is supporting this research.

Navin Khemlani presented the two main reports under development:

1. Digital Maturity of MSMEs in Ghana.
2. Employability and digitisation training needs for MSMEs.

Khemlani highlighted the importance of listening to all stakeholders involved in the digitalisation value chain and the key role of PAMEPI Women in Tech in this process.

Alberta Ferguson presented her organisation, explaining that its goal is to reduce the gender gap in technology and empower women in the tech sector. She emphasised the importance of the inclusion of women in tech in various industries, not only in STEM, but also in sectors such as accounting and medicine. Among the initiatives they are carrying out are:

- Trainings and training programmes for women in technology.
- Projects in institutes and universities to encourage female participation in technology careers.
- Accompanying women entrepreneurs and supporting them in the creation of digital products and solutions.
- Encouraging the use of technology in all sectors of the workplace.

Ferguson indicated that on 24 March 2025 they will launch the first edition of the Agri Women in Tech programme, focused on the digitisation of the agricultural sector and the empowerment of women in agribusiness. She highlighted that this event will take place at the University of Ghana and invited attendees to participate. The main components of the programme include:

- Training in technology and digitalisation applied to the agricultural sector.
- Digital marketing for international markets.
- Mentoring by international leaders in technology and business.
- Access to funding and investment opportunities, with the support of international partners, including Beyoncé's BeyGood Foundation and other organisations in the US.

- International exchange programmes for women entrepreneurs.

- Innovation in business ideas and technology applied to agriculture. The institution evaluates the impact of its programmes through:

- Monitoring and evaluation of participants' performance.
- Follow-up of the impact on their business and daily lives.
- Ongoing mentoring to ensure the application of knowledge.

Since its foundation, they have trained more than 350 women, according to preliminary data. Among the main challenges they have identified are:

- Lack of funding to expand their programmes.
- High digitalisation costs, which hinder the adoption of technology by women entrepreneurs. To promote women's employability in technology, PAMEPI collaborates with:

- AmaliTech Ghana, which trains and employs tech talent.
- Embassies of Switzerland, Germany and Turkey, with whom they have developed initiatives such as the "Advancing Girls' Rights through Digital Technology" programme and entrepreneurship competitions in Sunyani.
- Ghana's Ministry of Education, with whom they have worked on outreach programmes, although without direct funding.

As for the financial sustainability of the organisation, they depend mainly on international funds and collaborations with public and private institutions.

Conclusions

- PAMEPI Women in Tech seeks to promote the participation of women in technology from secondary education to the professional world.
- Interest was identified in digitisation programmes for the agricultural sector, with opportunities for training, mentoring and funding.
- Alberta Ferguson will provide more information on ongoing and future programmes.
- The possibility of collaborating on future initiatives to enhance the digitisation of women entrepreneurs in Ghana will be explored.
- It was agreed to maintain contact to share progress on the report and future opportunities for collaboration.

9. Ghana Chamber of Young Entrepreneurs (GCYE)

Date: Monday, 3 March 2025 Time:

14:15

Venue: Ghana Chamber of Young Entrepreneurs (GCYE) Participants:

- Sherif Ghali Abdulai, President, Ghana Chamber of Young Entrepreneurs (GCYE)
- Edem Korshie Adzikah, Director of CEL Ghana
- Navin Khemani, CEO of IBC

Spain Meeting notes

The main objective of the meeting was to learn about the work of the Ghana Chamber of Young Entrepreneurs (GCYE) in the field of digitisation of micro, small and medium enterprises (MSMEs) in Ghana, as well as its role in training and supporting young entrepreneurs. The conversation focused on identifying the challenges faced by start-ups in the process of adopting digital technologies, as well as possible strategies to address these difficulties.

Navin Khemani explained that the research being conducted by IBC Spain is being carried out in four African countries, including Ghana, the first English-speaking country to join the study after Mauritania. The purpose of the research is to assess the digital maturity of MSMEs and analyse the skills gaps in order to propose interventions to improve the competitiveness and digitisation of entrepreneurs.

Sherif Ghali Abdulai explained that GCYE conducts multiple activities focused on strengthening the digital capabilities of young entrepreneurs in Ghana. He noted that every year they conduct an assessment of the areas where their members face the greatest challenges in terms of technology and digitisation. Based on these results, they design training and capacity building programmes.

For example, in recent years they identified cybersecurity as a critical issue, with many young businesses suffering from cyber attacks due to a lack of knowledge on how to protect themselves online. In response, the GCYE developed a nationwide training programme with the support of German Incubation to educate entrepreneurs about digital security.

One of the key points discussed was the existence of three major barriers to the digitisation of MSMEs in Ghana, referred to as the 'three A's':

- Availability: there are still areas of the country without internet access, which greatly limits digitisation.
- Affordability: the cost of internet in Ghana is one of the highest in West Africa, making it difficult for small entrepreneurs to stay connected.
- Accessibility: Many entrepreneurs do not have adequate devices, such as computers or smartphones, which restricts their access to digital tools.

In addition to these barriers, the lack of technical knowledge and adequate training is a significant obstacle to the adoption of new technologies.

Sherif Ghali mentioned several initiatives that the GCYE has implemented to address these challenges, including the creation of a technology advisory service where members can request assistance in website creation, social media management and graphic design. He also highlighted the need for greater coordination between the public and private sector to enhance digital opportunities for entrepreneurs.

Navin Khemani proposed the possibility of structuring a tax incentive programme for companies investing in technology, following successful models implemented in other countries, such as Spain.

As a result of the meeting, it was agreed that the GCYE will distribute the online survey prepared by IBC Spain among its members to gather detailed information on the state of digitisation of MSMEs in Ghana. In addition, Sherif Ghali committed to share the previous assessment reports conducted by the GCYE, which will serve as input for the ongoing research.

Conclusion

The meeting was highly productive and validated many of the previous findings of the study on the digital maturity of MSMEs in Ghana. The importance of improving connectivity, reducing internet access costs and promoting more training in digital tools for entrepreneurs was reaffirmed. Opportunities for future collaboration between GCYE and IBC Spain were also identified to foster the digitisation of the entrepreneurial ecosystem in Ghana.

10. Soronko Academy

Date: 4 March 2025 (04/03/25) Time:

5:30 (GMT)

Place: Soronko Academy, Ghana

Attendees:

- Navin Khemlani (IBC Spain)
- Edem Korshie Adzikah (Director, Center for Enterprise Learning - CEL Ghana)
- Regina Honu (CEO of Soronko Academy)

Notes from the meeting

Edem Korshie Adzikah presented the purpose of the meeting: to analyse the digital maturity of micro, small and medium enterprises (MSMEs) in Ghana, assess digital skills gaps and determine training needs to improve employability in the digital sector. The importance of gathering information from all key stakeholders, including academia, the private sector and the public sector, was highlighted.

Navin Khemlani explained that the study is part of the EU-funded AfricanTech project, which is also being developed in Côte d'Ivoire, Senegal and Mauritania. She expressed her interest in learning about the work of Soronko Academy and its impact on the digital literacy of women in Ghana.

Regina Honu presented Soronko Academy as an organisation specialising in coding and digital skills training, with a focus on bridging the gender gap in technology. She highlighted that its programmes are designed to train women in digital skills demanded by the labour market, provide training in soft skills and entrepreneurship, and facilitate job placement and access to business opportunities for its female students.

Soronko Academy offers programmes at different levels of difficulty:

Intermediate level:

- Digital Marketing
- Web development
- Graphic design
- Content creation and social media

Advanced level:

- Python programming
- Artificial intelligence

- Data science and analytics
- Cybersecurity (soon to be implemented)

Soronko Academy is in constant contact with employers to align its training programmes with the needs of the market. It is currently implementing a strategy whereby before starting a training, they negotiate with companies to hire graduates, guaranteeing job opportunities.

Another key factor is its collaboration with global companies for the remote recruitment of its female trainees. Currently, 130 women are working on digital micro-tasks for an international company.

The main challenges that face Soronko Academy include:

- Funding: The academy is funded by partners such as Mastercard, MPN and the Internet Society Foundation. However, contract renewal and fundraising are constant challenges.
- Affordability: Many students cannot afford their training. The cost of a course can be as high as \$2,500, forcing the academy to seek external funding.
- Infrastructure and connectivity: High data costs and lack of access to devices limit the participation of many women, especially in rural areas.
- Cultural stereotypes: Traditional ideas still persist that hinder women's participation in technology, such as the belief that an empowered woman loses her "place" in the family.

Soronko Academy has implemented strategies to ensure the inclusion of women in technology, such as:

- Flexible trainings tailored to the needs of women with family responsibilities.
- Childcare spaces, allowing mothers to attend with their children.
- Training in rural regions**, in partnership with local hubs.
- Inclusion of people with disabilities, although they are still working on improving their infrastructure to ensure full accessibility.

It was proposed to establish links with Business C Professional Women (BPW), a global network of professional and entrepreneurial women based in Africa.

Regina Honu also mentioned her involvement in government initiatives. In 2024, Soronko Academy was included in the national budget as one of the key institutions to accelerate the digital economy, although they have not yet received cash funding.

Conclusions

- Soronko Academy plays a crucial role in the digital training of women in Ghana, with a significant impact on employability and entrepreneurship.
- Barriers such as funding, accessibility and cultural stereotypes were identified.
- It was proposed to strengthen collaboration with international actors and seek greater integration with government initiatives.
- Connection with BPW will be explored to expand support networks and opportunities for graduates.
- The importance of fostering partnerships between technology hubs, private sector and public sector to increase the impact of digital literacy in Ghana was highlighted.

11. Ghana Hubs Network

Date: 5 March 2025 (05/03/25) and 7 March 2025 (07/03/25) Time: Part

One: 13:15 (GMT)| Part Two: 12:30 (GMT)

Venue: University of Ghana (first meeting), Videoconference (second meeting).

Attendees:

- Navin Khemlani (IBC Spain)
- Edem Korshie Adzikah (Director of Center for Enterprise Learning - CEL Ghana)
- Yaw Adu-Gyamfi (Chairperson of Ghana Hubs Network)

Notes from the meeting

Yaw Adu-Gyamfi welcomed and outlined the purpose of the meeting: to assess the digital maturity of micro, small and medium enterprises (MSMEs) in Ghana, identify digital skills gaps and explore opportunities for coordination and improvement of the digital ecosystem in the country.

Navin Khemlani presented the study as part of the EU-funded AfricanTech project involving Ghana, Senegal, Mauritania and Côte d'Ivoire. He explained the importance of gathering information from all key stakeholders, including the private sector, the public sector and academia, to develop proposals aligned with the needs of the Ghanaian digital ecosystem.

Yaw Adu-Gyamfi explained that Ghana Hubs Network (GHN) is a network of 100 hubs in the 16 regions of the country, providing support through:

- Strengthening hubs' business models and operations.
- Financial, operational and programmatic resilience, ensuring long-term sustainability.
- Fostering access to markets and funding through investors and support programmes.

Challenges in terms of financial and operational sustainability were identified.

- GHN is financed through fixed annual membership fees, consultancy, grants and corporate support.
- It is proposed to strengthen the certification of hubs to standardise and improve the quality of services.
- The possibility of a network of experts to support hubs in different areas was discussed.

GHN is collaborating with GFA and GIZ on digital literacy programmes focusing on:

- Women entrepreneurs and informal sector businesses.
- Use of digital platforms in local languages and with video and voice support.
- Community radio programmes to train MSMEs in digital technology.

Discussed the need to develop:

- A digital directory of startups and hubs, accessible by subscription.
- A hub certification system, based on criteria such as:
 - Legal registration in Ghana.
 - Training of managers and programme managers.
 - Sustainable business models and training offerings.
 - Compliance with government regulations and best practices. Navin

Khemlani proposed the creation of a digital cluster that brings together:

- Technology hubs.
- Private companies in the digital sector.
- Universities and training centres.
- Government representatives and funding agencies.

GHN is establishing partnerships with hub networks in East Africa, starting with hubs in Kenya to:

- Knowledge exchange in digital innovation and circular economy.
- Strengthening startups with opportunities under the AfCFTA (African Free Trade Agreement).
- Developing joint programmes in green and digital innovation.

It was confirmed that the annual Ghana Hubs Network event will be held on 24-25 July 2025 in Accra, where:

- All hubs in the country will come together.
- Present success stories and innovative programmes.
- Encourage interaction with investors and strategic partners.

Conclusions

- Assess the feasibility of hub certification and the digital directory.
- The creation of the digital cluster will be explored to improve ecosystem coordination.
- Synergies with Kenya and other international networks will be strengthened.
- Progress will be made in formalising strategic alliances with funding agencies.
- Participation in the annual Ghana Hubs Network event in July will be organised.

The meeting ended with a commitment to continue discussions and strengthen the collaboration between IBC Spain and Ghana Hubs Network.

- The main challenges of the digital ecosystem in Ghana were identified:
- High cost of data access and connectivity.
- Lack of internet infrastructure in rural regions.
- Gender gap in technology.
- Deficiencies in digital literacy and talent training.
- Lack of coordination among actors in the digital ecosystem.

The creation of a digital cluster was proposed that includes all key actors: public sector, private sector and academia. This cluster could help optimise the use of investment funds, facilitate collaboration between different hubs and startups, and design higher impact projects for funders such as Mastercard, the World Bank and the French Development Agency.

Soronko Academy was mentioned as a successful example of technology training for women. The academy works closely with MSMEs to identify their needs before designing training programmes, ensuring a direct link between training and market demand.

Navin Khemlani explained how artificial intelligence (AI) has been used to improve efficiency in reporting and market research. It was highlighted that companies need to adopt AI, blockchain and other emerging technologies to improve their competitiveness, and that the use of AI in proposal writing can significantly reduce work time and increase productivity.

It was proposed to develop an annual digital barometer in collaboration with the Ghana Young Entrepreneurs Chamber of Commerce. This study could provide up-to-date data on the digital needs of MSMEs, key indicators on the adoption of emerging technologies and a tool to improve government and business decision-making.

Findings

- It was confirmed that Ghana's main challenges in digitisation include:
- High data cost.
- Lack of connectivity in rural regions.
- Gender gap in the technology sector.
- Weaknesses in digital literacy.
- Lack of coordination among stakeholders in the digital ecosystem.
- Explore the creation of a digital cluster.
- Replicate the Soronko Academy model to strengthen digital training.
- Promote the use of AI and emerging technologies.
- Develop a digital barometer to improve the monitoring of the digital maturity of MSMEs.

13. Ghana's Ministry of Communication, Digital Technology and Innovation

Date and time: 5 March 2025, 15:30 (GMT)

Venue: Ministry of Communication, Digital Technology and Innovations, Ghana

Attendees:

Navin Khemlani (IBC Spain)

Edem Korshie Adzikah (Director of Center for Enterprise Learning - CEL Ghana)

Victor Adadjie (Monitoring and Evaluation Practitioner at eGhana Project, Ministry of Communication, Digital Technology and Innovations)

Rebeca Okai Hamond (Tender Specialist at the Ministry)

Meeting notes

The meeting aimed to review the digitisation strategies and programmes implemented by the Ministry of Communication, Digital Technology and Innovations of Ghana within the framework of the eGhana Project and to discuss the role of digitisation in the development of micro, small and medium enterprises (MSMEs) in Ghana.

Navin Khemlani presented the EU-funded AfricanTech project, which covers Ghana, Senegal, Mauritania and Côte d'Ivoire, highlighting the need to study the level of digital maturity of MSMEs and detect digital skills gaps.

Victor Adadjie explained that the eGhana Project, funded by the World Bank, had three main components:

- Strengthening the digital environment: setting up the Accra Digital Centre to improve the digital infrastructure in the country.
- Priority e-application development: training in the use of digital platforms.
- Youth support and digital entrepreneurship: training of young people in digital skills to foster employability.

The \$8.8 million Accra Digital Centre (partly funded by the Rockefeller Foundation and the World Bank) has become an innovation hub where large technology companies operate. In addition, two dedicated buildings were set aside for training young people in digital skills.

Based on the success of the project, the Ghana Digital Acceleration Project was launched in 2024, with a budget of 6 million dollars to continue training in digitalisation and entrepreneurship.

From 2018 to 2024, the digital training programmes trained 30,000 youth through hubs such as Ghana Innovation Hub, Ghana Tech Lab and Kumasi Business Incubator.

Of those trained, 5,799 found employment directly:

- Males: 2,756
- Women: 3,043

The rest started their own projects or are self-employed.

The new Ghana Digital Acceleration Project will focus on training an additional 15,000 young people in two and a half years, with a target employability rate of 20%.

Rebeca Okai Hamond explained the recruitment process for the new digitisation programme within the Ghana Digital Acceleration Project:

Initially a direct recruitment was proposed for the hubs that had already worked in the previous phase.

However, the World Bank requested a new competitive process.

The TOR is being redefined to open a new tender with proven experience criteria.

Additional evaluation points will be awarded to hubs with previous experience in similar projects.

The following challenges in the digitisation of MSMEs were identified:

Access to digital infrastructure.

Internet coverage: 70% coverage is estimated, but the quality of service in rural areas remains low.

Data costs: remain high compared to other countries in the region.

Rural-urban digital divide: 22% of households have internet access and only 16% own a computer.

Lack of training in digital skills.

The importance of training MSMEs in the use of digital tools was highlighted.

The creation of a national digitalisation training programme for MSMEs was proposed, in collaboration with universities and the private sector.

Navin Khemlani proposed the creation of a National Digital Cluster, bringing together:

The public sector (Ministry of Communication, Ministry of Commerce and Ministry of Education).

The private sector (technology companies and innovation hubs).

Universities and training centres.

International organisations such as the World Bank and the Mastercard

Foundation. The objective of the cluster would be:

Coordinate digitisation strategies in the private and public sector.

Optimise investment in digitisation by avoiding duplication of efforts. Encourage collaboration between hubs, companies and government entities.

The possibility of seeking funding for this cluster through the World Bank, the African Development Bank and international cooperation agencies was raised.

Possible incentives to encourage the digitisation of MSMEs were discussed:

- Grants and soft financing for technology acquisition.
- Tax incentives for companies investing in digitisation.
- Access to free training platforms on digitisation and e-commerce.

Currently, the ministry does not offer direct tax incentives, but international benchmarking was recommended to assess their feasibility.

Initiatives to expand digital access in rural areas were reviewed:

- Ghana Electronic Communications Investment Fund, which has connected 2,016 communities in the last 8 years.
- Plan to connect an additional 500 communities in the coming years.
- Expansion of the e-justice system and the government's digital payments platform.

Conclusions

- Revise the term of reference (TOR) of the new digitisation programme for MSMEs, ensuring that companies with previous experience have a competitive advantage.
- Explore the feasibility of a National Digital Cluster, promoting better coordination between the public sector, private sector and academia.
- Identify sources of funding for the digitisation of MSMEs, including tax incentives and international grants.
- Improve communication between the ministry and technology hubs, ensuring that the needs of the private sector are heard.
- Explore partnerships with the Mastercard Foundation and other international actors to improve access to digital training for entrepreneurs and MSMEs.

10.1. Surveys conducted

In order to assess in depth the current situation and the degree of technological maturity of small and medium-sized enterprises (SMEs) in Ghana, a questionnaire was developed for key players in the Ghanaian entrepreneurial ecosystem. With a total of 33 responses from private entities, sectoral associations, NGOs and public bodies, this exercise provided a detailed picture of the degree of digitalisation of the Ghanaian business fabric, its main barriers, digital tools used and the level of technological adoption.

Details of the questionnaire are included in the annexes, while the results obtained are analysed below:

1. Polarisation in the level of digitalisation: between the cutting edge and subsistence.

The Ghanaian business ecosystem presents a dual scenario: while a minority of companies - mainly technological or with access to innovation hubs - reach a high level of digital maturity, the majority of SMEs still operate with basic technologies. Only one third of the companies surveyed identify themselves as "highly digitised", compared to 66% who admit to being in the early or middle stages of technology adoption. This gap is not only structural, but also sectoral: financial services and e-commerce lead, while manufacturing, agriculture and third sector companies lag behind.

2. Limited use of advanced technologies: prevalence of basic tools

The most common technologies among Ghanaian SMEs are the basics: office tools, email and occasionally digital marketing. Less than 15% of companies have implemented solutions such as process automation, data analytics or cloud services. Big Data, artificial intelligence and cybersecurity are not yet part of the strategic horizon of most businesses, reflecting a digital maturity focused on day-to-day operations rather than on transforming the production model.

3. Structural barriers outweigh attitudinal barriers

Cultural resistance to change or lack of awareness of the benefits of digitalisation - common in other contexts - are not the main barriers in Ghana. Instead, structural factors stand out: the high cost of technologies, the lack of adequate infrastructure (especially outside the big cities) and the shortage of skilled personnel. 75% of companies point to more than one of these barriers as a direct obstacle to advancing their digitalization.

4. Company size as a critical factor for adoption

There is a clear correlation between the size of the company and its level of digital maturity. Organisations with more than 50 employees show higher levels of technological adoption and access to finance, while micro-enterprises (less than 10 employees) - which represent more than 60% of the sample - tend to remain in an incipient digital state, which makes them more vulnerable to the competitive demands of the global market.

5. Weak take-up of public and cooperative programmes

Only a small number of firms have accessed government or cooperation agency support programmes to strengthen their digital capabilities. This low participation does not seem to be due to a lack of interest, but rather to poor dissemination of the programmes, complex bureaucratic processes or a design that is not adapted to the operational realities of SMEs. The report thus reveals a worrying disconnect between the institutional offer and the real demand for digitisation.

6. High digital expectations, but misaligned with available resources

When companies are asked about the priority tools for the next two years, ambitious answers emerge: artificial intelligence, e-commerce, accounting software or process automation. However, these aspirations contrast with current limitations in infrastructure, skills and funding. This mismatch between expectation and capacity can lead to frustration or inaction if not accompanied by realistic support measures.

7. e-business and document management are the two immediate priorities

In the open-ended responses, many businesses explicitly mention the digitisation of sales processes (e-commerce platforms, digital payments, social media presence) and improved document management (digital archiving, transaction traceability, accounting tools) as future priorities. These needs reflect a transitional stage, where digitalisation is still conceived as a way to optimise processes and not as a business model in itself.

8. Sectors such as agriculture and manufacturing are notably lagging behind.

Despite their weight in the national productive fabric, key sectors such as agriculture and manufacturing show worryingly low levels of digital adoption. There are many reasons for this: less access to digital networks in rural areas, lack of adaptation of technological solutions to the needs of the sector and lack of specific policies for their modernisation.

This generates a sectoral gap that, if not corrected, could limit the impact of any national digital transformation policy.

9. Lack of local digital ecosystems accessible to SMEs

One of the major shortcomings pointed out by the surveys and interviews is the scarce existence of shared platforms, networks of local technology providers or collaborative spaces where SMEs can access low-cost training, advice or digital solutions. Although there are technology hubs and incubators in Accra or Kumasi, most small businesses still operate in isolation, with no real connections to the innovation ecosystem.

10. Practical and clear strategic recommendations

The organisations recommend concrete actions to advance digital maturity, such as reducing the cost of training, adapting programmes to the realities of the Ghanaian business environment, improving access to basic technological equipment, promoting the use of digital platforms in local languages and creating public incentives for companies that are committed to digital transformation. These proposals reflect an urgent demand for realistic, accessible and contextualised solutions.

Driving digital transformation in Ghana

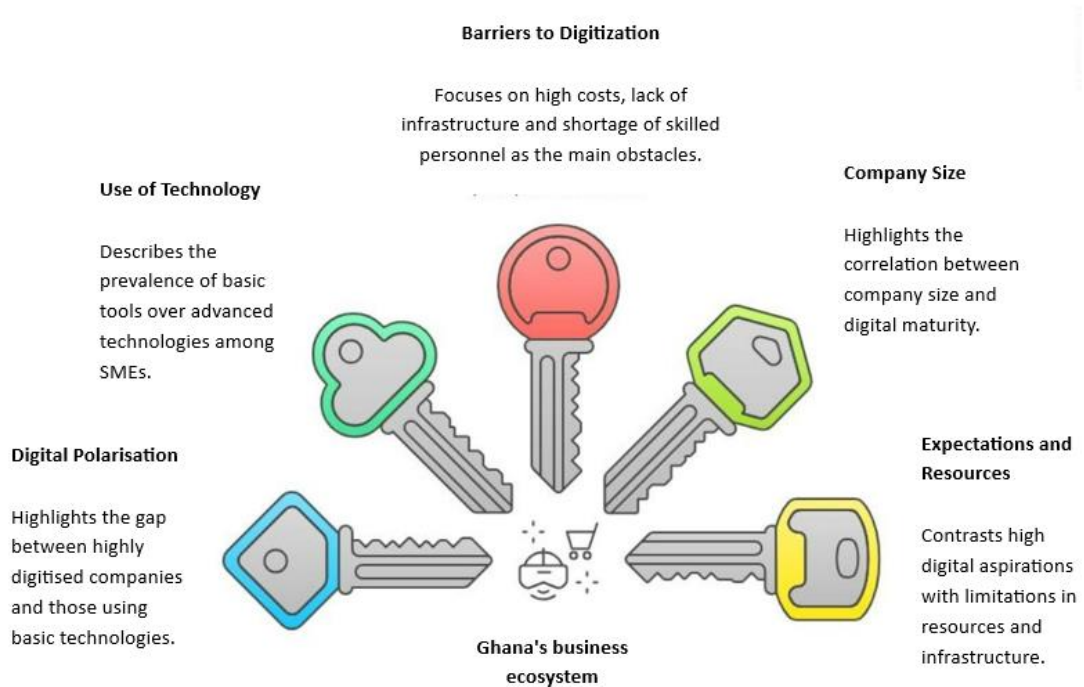


Illustration 13. Main findings of the survey conducted in Ghana. Own elaboration

11. Recommendations for improve the technological maturity of SMEs in Ghana

Despite the growth of digitisation in Ghana, small and medium-sized enterprises (SMEs) continue to face significant challenges in their digital transformation process. Lack of infrastructure in rural areas, high cost of digital services, low level of adoption of advanced technological tools and shortage of skilled talent limit their ability to compete in an increasingly digitised environment. To accelerate the technological maturity of Ghanaian SMEs, there is a need to implement comprehensive strategies that address these challenges and facilitate the transition to more innovative and sustainable business models.

In line with international best practices and considering the country's socio-economic context, the following recommendations are presented, structured along six key axes: **digital infrastructure, access to finance, digital skills and training, adoption of digital tools, digital regulation and security, and strengthening the innovation ecosystem.**

11.1. Strengthening digital infrastructure and bridging the connectivity gap

Unequal access to the internet remains one of the main constraints to the digitisation of SMEs, especially in rural areas. To improve digital connectivity and reduce the technology gap, the following are recommended:

- **Expansion of fibre optic infrastructure and mobile networks:** the government should accelerate fibre optic deployment and expand 4G and 5G coverage in rural areas, ensuring equitable access to high-speed internet for all businesses.
- **Reducing the cost of internet access and digital services:** implement tax incentives for telecom operators and encourage competition in the market to reduce mobile data and fixed broadband tariffs, facilitating affordable access for SMEs.
- **Develop free connectivity spaces:** Expand the network of digital community centres and coworking spaces with free internet access, especially in rural communities, so that businesses can take advantage of digital platforms without financial constraints.

Addressing the Digital Connectivity Gap for SMEs

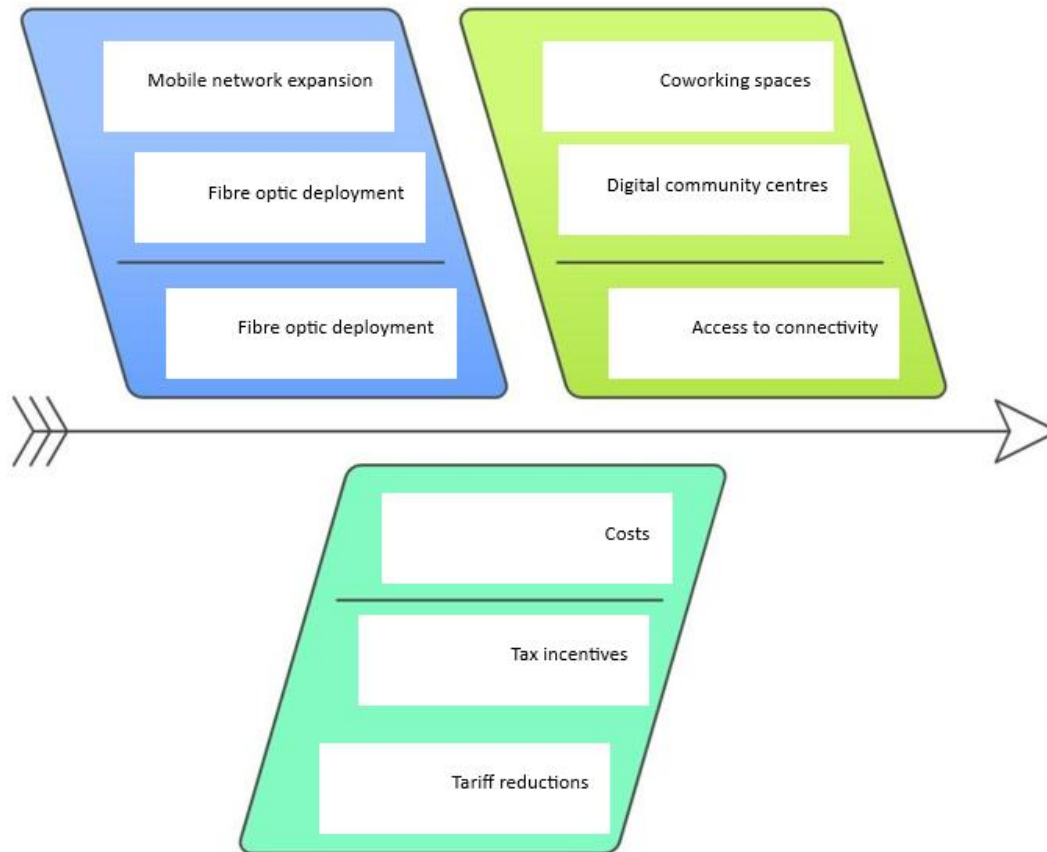


Illustration 14. Bridging the connectivity gap in Ghana. Own elaboration

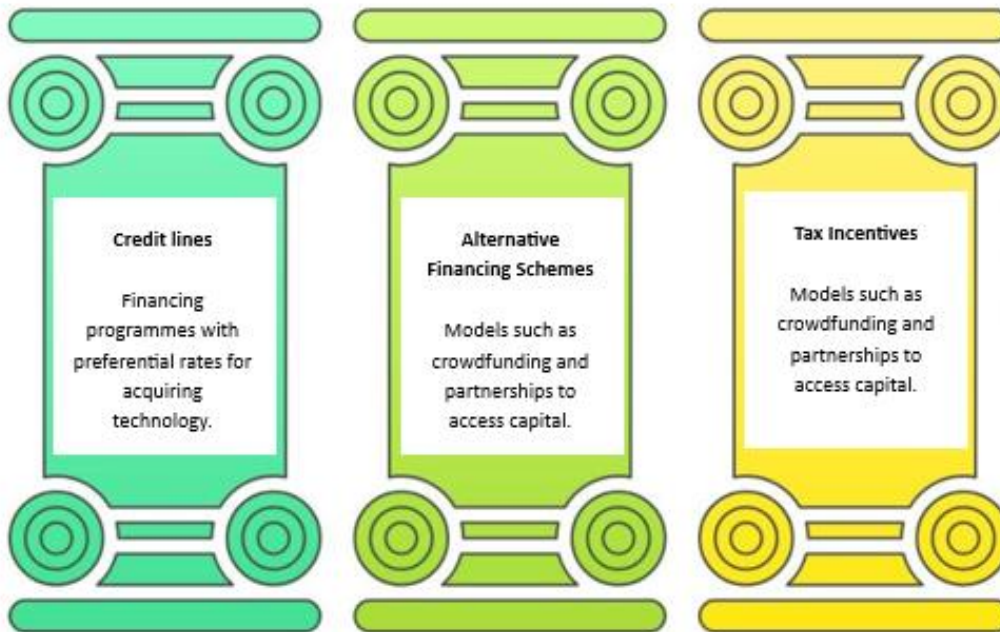
11.2. Access to finance for SME digitisation

One of the main obstacles to the digital transformation of SMEs is the lack of access to finance to invest in technology. To mitigate this problem, the following is recommended:

- **Creation of specific credit lines for digitisation:** establish financing programmes with preferential rates for the acquisition of technological equipment, business management software and cloud solutions.
- **Encourage alternative financing schemes:** promote models such as crowdfunding, leasing of technological equipment and public-private partnerships so that SMEs can access capital without relying exclusively on the banking system.

- **Tax incentives for investment in digitalisation:** implement tax relief systems for reinvestment of business profits for companies that invest in digital infrastructure, ICT training and process automation.

Promoting the Digitalisation of SMEs through Innovative Financial Strategies



Strategies to improve access to finance for SMEs in Ghana. Own elaboration

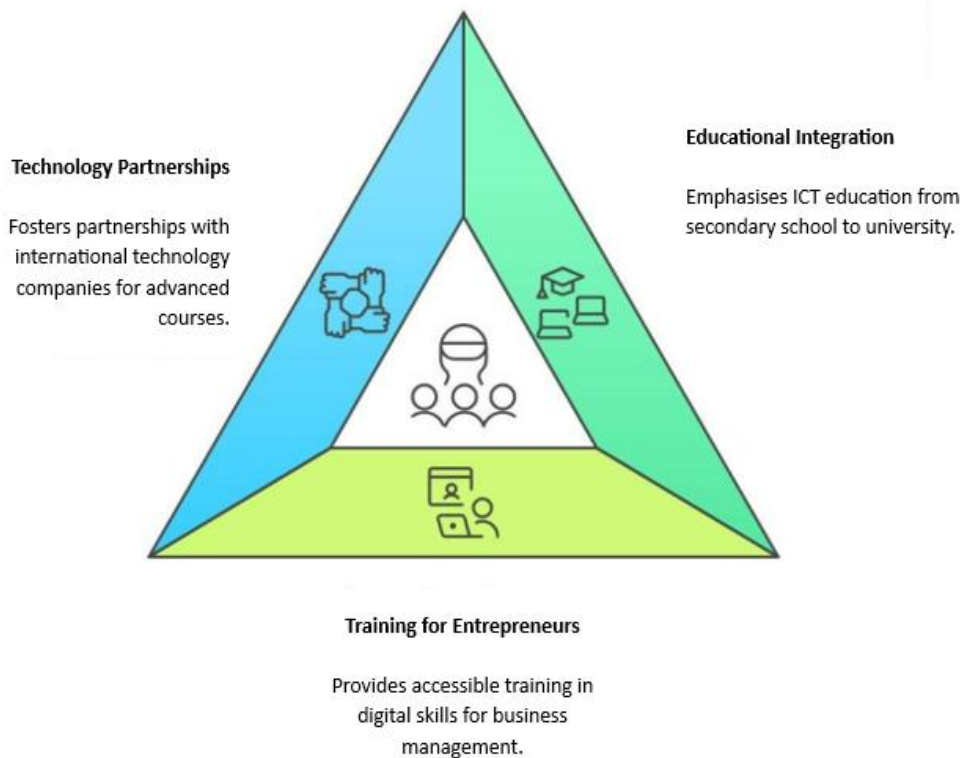
11.3. Digital skills development and training for technological transformation

The shortage of specialised ICT talent is a key barrier to the digitisation of Ghana's business fabric. To improve the digital skills of workers and entrepreneurs, the following are recommended:

- **Integration of digital training programmes into technical and university education:** strengthening ICT education from high school to university, with a focus on skills such as programming, cybersecurity, data analytics and digital marketing.

- **Accessible training for entrepreneurs and workers:** implement online and face-to-face training programmes with certifications in essential digital skills for business management.
- **Fostering partnerships with international technology companies:** develop agreements with technology giants such as Google, Microsoft and Huawei, as well as international foundations (MasterCard, Visa, Rockefeller, etc.) for the provision of training courses in advanced digital skills.

Promoting Digital Skills through Education and Partnerships



Improving digital skills in Ghana. Own elaboration

11.4. Boosting the adoption of digital tools by SMEs

Many SMEs still rely on traditional methods to manage their operations, which limits their efficiency and scalability. To promote the adoption of digital tools, the following are recommended:

- **Promoting e-commerce and digital payments:** encouraging the use of online sales platforms and the adoption of fintech solutions such as MTN MoMo and Vodafone Cash to reduce reliance on cash and improve traceability of transactions.
- **Support for the implementation of business management software:** create subsidy programmes or free access to accounting, e-invoicing and ERP software for SMEs to optimise their administrative and financial processes.
- **Development of digital solutions tailored to key sectors:** boost digitisation in strategic industries such as agribusiness, manufacturing and tourism through specialised platforms that facilitate process automation and efficient supply chain management.

Driving Digital Transformation through Innovative Solutions

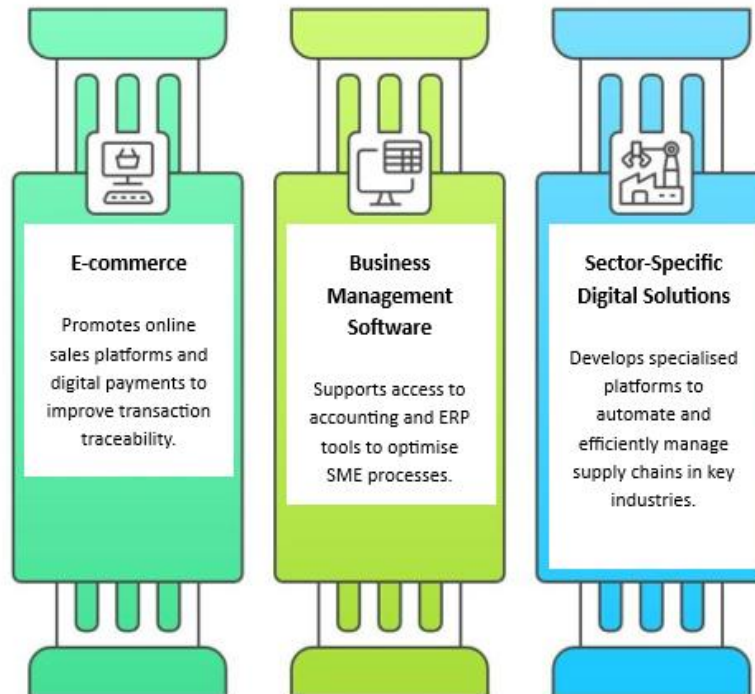


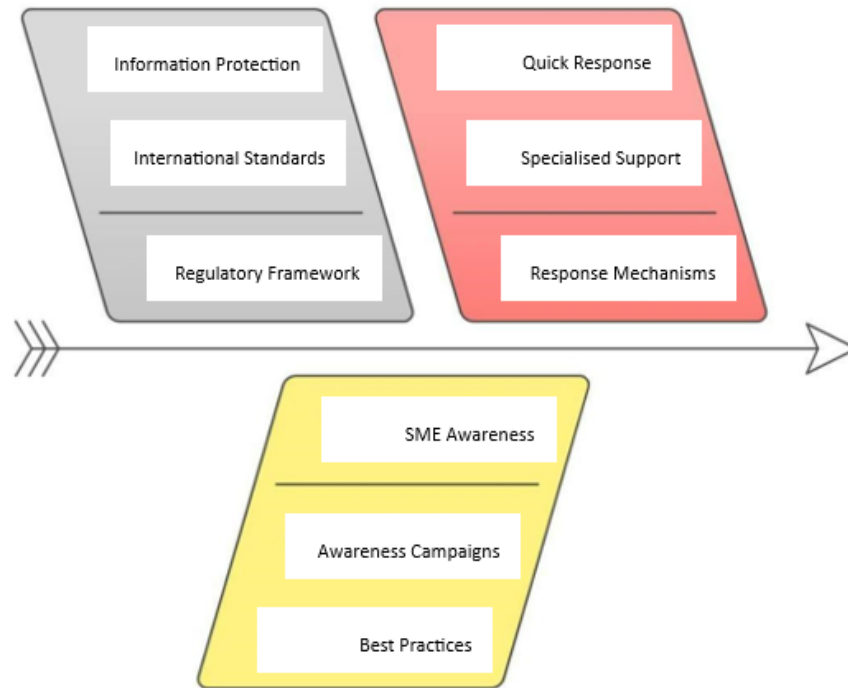
Figure 17. Adoption of digital tools in Ghana. Own elaboration

11.5. Regulating and strengthening digital security

As the adoption of digital tools grows, it is crucial to ensure a secure environment for online transactions and data protection. To this end, it is recommended to:

- **Strengthening the regulatory framework on data protection and cybersecurity:** implementing stricter regulations for the protection of business and customer information, aligned with international standards.
- **Raising awareness of digital security in SMEs:** develop cybersecurity awareness campaigns and establish good practice guidelines for the protection of corporate data.
- **Strengthening cyber incident response mechanisms:** create specialised cybersecurity support units to help companies respond quickly to attacks or security breaches.

Improving Cybersecurity and Data Protection



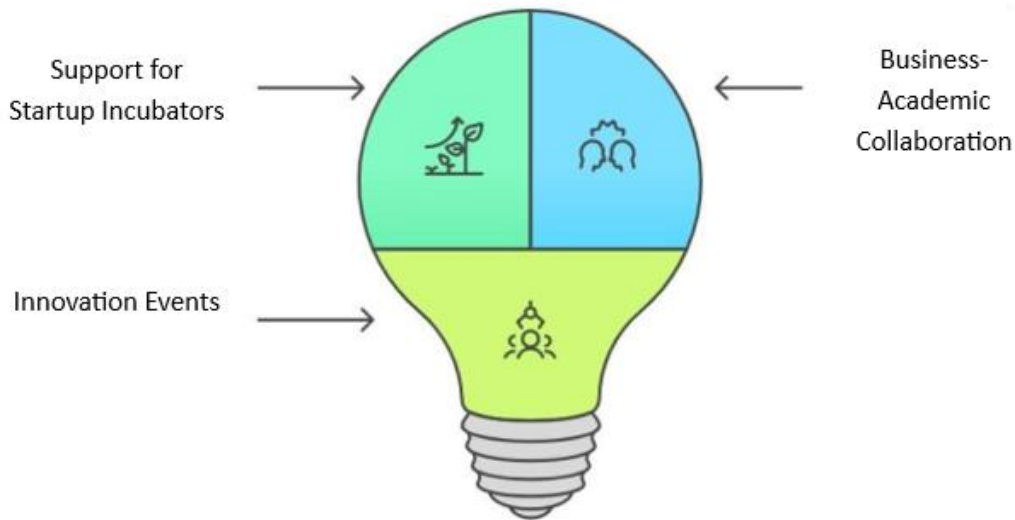
Improving cybersecurity in Ghana. Own elaboration

11.6. Creating a digital entrepreneurship and innovation ecosystem

The development of a robust technology ecosystem can accelerate the digital transformation of SMEs in Ghana. To this end, it is recommended to:

- **Supporting incubators and accelerators for digital startups:** strengthening programmes such as the Ghana Innovation Hub and NEIP to boost technology ventures and facilitate their access to international markets.
- **Encourage collaboration between companies and universities:** develop applied research centres in digital technologies, where SMEs can access innovative solutions developed by academic institutions.
- **Organisation of digital innovation fairs and events:** to create spaces for networking and exhibition of emerging technologies where SMEs can connect with investors, technology providers and potential customers.

Improving the Digital Ecosystem



Improving the digital ecosystem in Ghana. Own elaboration

12. Conclusions

The analysis of the technological maturity of SMEs in Ghana reveals a mixed picture in which advances in digital infrastructure and technology adoption coexist with structural challenges that limit the digital transformation of the business fabric. While the country has made significant progress in expanding connectivity and access to digital tools, significant gaps persist in terms of access, affordability, training and adoption of advanced technologies.

In terms of infrastructure and connectivity, Ghana has achieved near-universal coverage of 3G and 4G networks, with a progressive roll-out of 5G technology planned for the coming years. The expansion of the fibre optic network and the government's digitisation initiatives, such as the *Ghana Digital Acceleration Project*, have laid the groundwork for greater technology penetration. However, connectivity remains uneven between urban and rural areas, with a significant digital divide affecting SMEs outside the main urban centers.

urban centres. The lack of access to stable and affordable connectivity in many rural regions impedes the adoption of advanced digital tools and limits the competitiveness of enterprises in digital markets.

The cost of access to digital technologies remains a limiting factor for the technological maturity of SMEs in Ghana. Despite the increasing penetration of e-commerce and digital payments, the high price of internet services and the purchase of technological devices remains a barrier, especially for small businesses and entrepreneurs in informal sectors. This challenge is exacerbated by the instability of electricity supply, which forces many businesses to rely on expensive and unreliable energy sources, affecting their operational and digital capacity.

In terms of digital skills and training, the ICT skills gap represents one of the main obstacles to business digitisation. The shortage of specialised talent in key areas such as cybersecurity, data analytics and artificial intelligence hampers SMEs' adoption of advanced technologies. Although the government has boosted digital skills programmes, their reach remains limited, and most small businesses lack access to training in emerging technologies. Moreover, the lack of education in digital skills affects not only employees, but also entrepreneurs and managers, who in many cases do not have the necessary skills to integrate digital tools into their business models.

The adoption of advanced technologies remains low among Ghanaian SMEs. While sectors such as fintech and digital commerce have experienced significant growth, many companies still rely on traditional methods of operation and marketing. Lack of access to dedicated financing for digital transformation is a key factor in this lag. Strict lending requirements by banks, a lack of collateral from companies and a shortage of investment programmes for digitisation hinder the technological modernisation of SMEs.

In the area of cybersecurity and digital regulation, Ghana has made progress in consolidating a regulatory framework that promotes data protection and digital security. However, the implementation of these regulations still faces challenges, and many businesses are unaware of their cybersecurity obligations and rights. This creates vulnerabilities that affect trust in digital payment systems and the adoption of e-commerce platforms.

Despite these challenges, the opportunities for growth in the digitisation of Ghana's business fabric are significant. The expansion of the fintech ecosystem, the digitisation of strategic sectors such as agriculture and manufacturing, and the increasing penetration of digital commerce represent key areas for the country's technological development. The implementation of

government strategies to improve technology infrastructure, reduce the cost of internet access, strengthen digital skills training and facilitate access to finance can accelerate the digital transformation of Ghanaian SMEs.

In conclusion, Ghana is at a stage of transition towards a more inclusive and competitive digital economy. To consolidate this progress, a holistic approach combining investment in infrastructure, digital education, innovation support policies and robust regulatory frameworks is critical. Collaboration between the public and private sector, together with the promotion of international cooperation initiatives, will be crucial to bridge digital divides and ensure that the digital transformation benefits the country's entire business ecosystem.

12.1. Opportunities for Canary Islands-Ghana collaboration

The analysis of technological maturity in Ghana highlights several areas in which the Canary Islands can play a key role, mainly in knowledge transfer, digital training and support for the digitisation of the business fabric. Unlike other cooperation models focused on infrastructures or large-scale investments, collaboration between the Canary Islands and Ghana has greater potential if it focuses on creating knowledge networks, training talent and strengthening the entrepreneurial ecosystem, taking advantage of the Canary Islands' experience in digitisation and its connection with European markets.

One of the main opportunities for collaboration lies in **digital skills** training. Ghana faces a significant deficit of ICT talent, with only 10% of the population having intermediate or advanced digital skills. The Canary Islands' experience in training in digital transformation, cybersecurity, e-commerce and software development can contribute to the development of specific programmes tailored to the needs of the Ghanaian business ecosystem. In addition, the creation of online training platforms would facilitate access to this knowledge, allowing workers and entrepreneurs to train without economic or geographical barriers. Cooperation in this area can be complemented by organising exchanges between academic institutions and training centres in both territories, thus strengthening the mobility of digital talent.

The entrepreneurial ecosystem in Ghana has grown significantly, driven by sectors such as fintech, digital commerce and agribusiness technology solutions. However, many startups and SMEs still face difficulties in **accessing support networks and international markets**. The Canary Islands can act as a strategic bridge, facilitating the connection of Ghanaian companies with experts, mentors and potential business partners in Europe. Collaboration in this area can include the participation of Ghanaian start-ups in incubation and acceleration programmes in the Canary

Islands, as well as the organisation of networking events and forums where entrepreneurs can present their solutions and establish strategic alliances.

Digital commerce in Ghana has experienced remarkable growth, although barriers remain in terms of trust in electronic payments, logistics and access to online sales platforms. The Canary Islands, with its experience in the digitisation of commercial sectors, can provide practical knowledge on e-commerce strategies, payment optimisation and digital marketing. Through workshops and specialised advice, initiatives can be developed to **improve the digital presence of Ghanaian SMEs** and their integration into e-commerce platforms. In addition, linking with logistics operators and digitised distribution platforms could improve efficiency in the supply chain, a key aspect for the growth of online trade in Ghana.

Another area with high potential for collaboration is the **digitisation of strategic sectors** such as agribusiness. The experience of the Canary Islands in the modernisation of production processes and the adoption of digital technologies in the agricultural sector can be relevant for Ghana, especially in the application of data analysis tools, digital traceability of products and the use of smart sensors to improve agricultural productivity. Sharing knowledge on these technologies and their implementation in environments with similar characteristics would allow Ghanaian SMEs to optimise their processes and improve their competitiveness in the market.

For these collaboration opportunities to materialise effectively, it is essential to **strengthen institutional ties between the Canary Islands and Ghana**. The facilitation of business missions, the creation of stable business-to-business networks and the exchange of experiences in digitisation policies can contribute to structuring a more fluid and results-oriented cooperation. Taking advantage of European programmes to support digital transformation in Africa can be a way to consolidate joint initiatives and ensure that Ghanaian SMEs benefit from best practices in innovation and technological adoption.

In short, the relationship between the Canary Islands and Ghana has enormous potential if it focuses on **knowledge transfer, digital empowerment and the integration of SMEs into the global digital ecosystem**. More than large investments, the success of this collaboration will depend on the capacity to generate effective connections between institutions, companies and professionals in the technology sector, ensuring that the exchange of experiences boosts the digital maturity of the Ghanaian business fabric and fosters its competitiveness in the digital economy.



- Artificial intelligence
 - E-commerce
 - Digital marketing
 - Other
6. What is the level of technology adoption in your organisation? *
- Low (we use basic technologies)
 - Medium (we have implemented some technology solutions)
 - High (our organisation is highly digitised)
7. What are the main barriers your organisation faces in moving towards digitisation (tick all that apply)?
- Lack of technological infrastructure
 - High costs
 - Lack of qualified personnel
 - Lack of information on available technologies
 - Lack of awareness of the benefits
 - Other
8. Which digital tools or services do you consider most important for your organisation in the next two years? *

Section 3: Digital training needs

9. What is the current level of digital skills of your employees? *
- Basic
 - Intermediate
 - Advanced
10. Has your organisation provided digital skills training to your employees in the last 12 months? *
- Yes
 - No
11. If yes, what type of training has been provided? (Please tick all that apply)
- Basic office skills
 - Digital marketing
 - Cybersecurity
 - Use of automation tools
 - Programming or software development

- Other
12. What digital skills do you see as priorities for your organisation in the next two years?

- Data management
- Software development
- Artificial intelligence
- Process automation
- Digital marketing
- E-commerce
- Other

13. What is your organisation's preferred training modality? *

- Face-to-face
- On-line
- Blended

14. What are the main difficulties in training your employees in e-skills? (Tick all that apply) * Lack of time

- Lack of time
- Cost of training
- Lack of suitable training providers
- Lack of adequate technological infrastructure
- Other

Section 4: Employability and skills gap

15. In your sector, which technological skills are currently most in demand? *

- Programming and development
- Data analysis
- Technology project management
- IT security
- Other

16. Do you think that the training of technology workers in Ghana is sufficient to meet the needs of your sector? *

- Yes
- No
- Don't know

17. Are there significant skills gaps in your sector? If yes, which ones? Which ones? *
18. What are the most difficult technology profiles to recruit in your organisation? *
19. What actions do you consider necessary to improve employability in the technology sector in Ghana (tick all that apply)?
- Improve the training offer
 - Strengthen the collaboration between educational institutions and companies
 - Create more government incentives for technology training
 - Facilitate access to technological resources
 - Other

Section 5: Support policies and programmes

20. Has your organisation received support from governmental or non-governmental programmes to improve its technological capabilities? *
- Yes
 - No
21. If yes, what type of support have you received (tick all that apply)?
- Grants or funding
 - Access to technology infrastructure
 - Training programmes for employees
 - Technical assistance
 - Other
22. What types of support programmes do you think are most needed to improve employability and digital skills in Ghana? *

Section 6: Conclusion

23. What recommendations would you make to improve digital skills in your country? *
24. What measures could improve the employability of tech workers in your sector? *

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13.3. List of Abbreviations.

- ADB - African Development Bank.
- BFT - Business C Financial Times
- BMG - World Bank in Ghana
- BoG - Bank of Ghana (Central Bank of Ghana)
- GDI - Ghana Digital Initiative
- GDAP - Ghana Digital Acceleration Project
- GEA - Ghana Enterprises Agency / Ghana Employers Association
- GIFEC - Ghana Investment Fund for Electronic Communications
- GIZ - Deutsche Gesellschaft für Internationale Zusammenarbeit (Deutsche Gesellschaft für Internationale Zusammenarbeit)
- GSS - Ghana Statistical Service
- ICT - Information and Communication Technology
- ICEX - ICEX Spain Exports and Investments
- ITU - International Telecommunication Union
- MoCD - Ministry of Communications and Digitalisation (Ghana)
- NEIP - National Entrepreneurship and Innovation Programme
- NCA - National Communications Authority
- UNDP - United Nations Development Programme
- SME - Small and Medium Enterprises
- SME - Small and Medium Enterprises
- AU - African Union
- YAI - Youth Action for Innovation