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Analysing Digital Economy strategy of Malawi against the Digital Economy Ecosystem Framework

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Abstract

African countries are considering digital economy strategies to enhance their competitiveness, create economic value and improve the well-being of their citizens. This paper analysed the Malawi digital economy strategy (2021-2026) against the Digital Economy Ecosystem Framework. The findings showed consistency in elements for macro policy, digital foundations and digital adoption/Transformation; and core, services and solutions respectively. Nonetheless, some of the elements in the Malawi digital economy strategy were missing details and required attention. These include digital taxation, data sector, digital services laws and regulations and cyber security. Lack of details in these elements in the Malawi digital economy strategy can affect the planned activities and outcomes of the strategy. The study contributes towards an understanding of digital economy strategies in the context of developing countries.

Keywords: Digital economy, Digital economy strategy, Digital Economy Kit, Digital technologies, Malawi

1. INTRODUCTION

African governments are changing Information and communication technology (ICT) policies, laws, institutions and regulations to integrate digital strategies into their development agendas (Fu, Avenyo & Ghauri, 2021; Myovella, Karacuka & Haucap, 2020). Digital technologies have been adopted in economic sectors including health, education, agriculture, tourism, manufacturing and finance (Banga, 2020; Etoundi, Onana, Olle & Eteme, 2016). The integration of digital technologies in activities, processes, and services in the economic sectors has the potential to improve innovation and transformation in the production, delivery, consumption of goods and services (Barefoot, Curtis, Jolliff, Nicholson & Omohundro, 2018; Korovkin, 2019).

Abimbola, Aggad and Ndendze (2021:3) reported that *"Only a handful of African countries do not have some form of digital policy or strategy in place. Many outline their digital agendas in their national development plans"*. This could imply that the concept of a digital economy has been adopted silos in Africa due to a lack of a single document digital strategy. The concept of digital economy is partially presented in e-commerce, cybersecurity strategies and e-government strategies documents (Badran, 2021; Oriola, Adeyemo, Papadaki & Kotze, 2021). As a result, some of the tenets of the digital economy elements are present in technology-related policies and strategies. However, some important elements of the digital economy are absent from the policy documents (Hanna, 2020). Such exclusion has implications because policy documents guide what gets implemented (Heeks, 2018; Makoza, 2019; Makoza, 2019b). In some cases, African governments and development partners (for example, international development agencies, international lending institutions, and private sector organisations) are failing to address certain aspects of the digital economy e.g. cyber security issues and digital tax (Etoundi, Onana, Olle & Eteme, 2016; Korovkin, 2019). The situation leaves implementation agencies with a limited holistic understanding of the digital economy strategies and how the strategies are executed (Hanna, 2020).

This study joins the debates on the digital economy and responds to the call for a holistic assessment of digital economy strategies (Badran, 2021; Hanna, 2020). The study uses the case of Malawi which recently developed a digital strategy (e.g. National Digital Economy Strategy 2021-2026). The country is attempting to transform its economy using digital technologies to achieve inclusive economic growth. While the digital economy narrative has gathered interest among government officials and development agencies (see UNCTAD, 2019; World Bank, 2019; World Bank, 2021), to the author's knowledge, few studies have assessed the digital economy strategy. This study attempts to address this knowledge gap.

The study's goal was to analyse the themes of the digital economic strategy and comprehend the actions that will result from strategy. Scholars have argued for the need to scrutinize government assumptions and intentions presented in policy documents so that practices that emerge from digital strategic documents can address the real needs of citizens and improve economies (Alizadeh & Sipe, 2015; Badran, 2021). The study used the Digital Economy Ecosystem Framework (Hanna, 2020) to shed light on the thematic areas that were covered and left out in the Malawi digital economy strategy. The analysis was useful to better understand the elements of the digital economy that were necessary for the country to

achieve its wealth creation and economic goals. The study could be useful to researchers, government officials and development agencies that are supporting the implementation of the digital economy strategy.

2. BACKGROUND TO THE STUDY

2.1. Defining Digital economy

The concept of digital economy has been evolving since its inception in 1996 (see Tapscott, 1996). There are many different definitions of the digital economy in literature. For instance, Lane (1999: 317) define digital economy as a *"convergence of computing and communications technologies in internet and the resulting flow of information and technology that is stimulating all electronic commerce and vast organizational change"*. Dahlman, Mealy and Wermelinger (2016: 11) describe digital economy as *"the amalgamation of several general-purpose technologies (GPTs) and the range of economic and social activities carried out by people over the internet and related technologies"*. Bukht and Heeks (2017:13) define digital economy as *"that part of economic output derived solely or primarily from digital technologies with a business model based on digital goods or services"*. In other words, a sector for producing goods and services that use ICT in the economic spheres. From these few examples of definitions, it is clear that the concept of the digital economy evolves over time and can be described based on technologies and processes in the economic sectors. The study will use a more encompassing definition that considers the different facets of the digital economy from Hanna (2020) as an ecosystem that transforms all economic sectors comprising of digital technologies that support the production and consumption of products and services.

The digital economy is also viewed from multiple perspectives. Bukht and Heeks (2017) suggest three perspectives on the digital economy based on technologies, business models and production and consumption of services. The three perspectives are core, narrow scope and wider scope. The core perspective of digital economy relate to ICT sector which comprises organisation for the production of IT hardware, software development, information services and telecommunications. The narrow scope perspective of digital economy is the digital services related to the gig economy, sharing economy and platform economy. The wider scope perspective of digital economy comprise digitised services based on advanced technologies including the Internet of things, artificial intelligence, cloud computing, blockchain technologies, data analytics, robotics, 3D printing etc. (Sturgeon, 2019; Vyas & Jain, 2021). The advanced technologies are used in social media platforms, e-businesses, e-commerce, e-government, precision agriculture etc. to support new business models (Heeks, 2018; Heeks & Bukht, 2018).

2.2. Opportunities and challenges of digital economy

There are opportunities that can be realized in the digital economy in the context of developing countries. Some of the opportunities of the digital economy are promoting innovation and efficiency through the digitisation of information and processes. The digital economy is supporting better delivery of products and services to organisations and consumers through the use of automated systems and digital infrastructure e.g. digital signatures, platforms and connectivity facilities (Heeks, 2018; Moroz, 2017; Vyas & Jain, 2021).

Heeks (2018) noted that developing countries can also participate in the global economy through digital labour platforms (e.g. Uber, Uber Eats, Upwork and Freelancer). Workers in developing countries have opportunities to work for global multinational companies through digital platforms (e.g. that support transaction processing and development of innovative solutions) and participate in the gig economy. Digital labour platforms are addressing unemployment and improving the well-being of workers. Zhao, Wallis and Singh (2014) highlighted that the digital economy can support the development of digital infrastructure that is crucial in providing e-government services to citizens and business organisations. In this regard, digital government through digitization supports public services for health, education and participation in government decisions.

Yoon (2018) reported that the digital economy provides opportunities for development of new skills and knowledge that are being used in the service sectors of economies across the globe. Organisations can now outsource services from skilled individuals for services related to consulting, marketing, finance and accounting. These services can help economies to achieve growth. The digital economy supports innovation using advanced technologies (Vyas & Jain, 2021). Advances in digital infrastructure are enabling businesses to create innovative solutions that maximise profitability and addressing some of the challenges in society. For example, the use of the Internet of things, robotics, blockchain technologies, 3D printing, and drones are being used in business operations and communities (Li, Kim, Lang, Kauffman & Naldi, 2020). New technologies are transforming the economic activities of financial services through mobile banking, electronic bank transfers, e-money, smart card payments and internet banking. These services can improve financial inclusion in economies.

The digital economy is also perceived to support economic resilience and overcome shocks. For instance, Helbert and Laudon (2020) suggest that in the wake of the COVID-19 pandemic, businesses had to find new ways of operating using digital technologies. New business models based on digital technologies emerged that were different from in-person transacting. The new business models supported other sectors to continue operating and enabled the services sectors to contribute towards sustainable economic growth. Similarly, Li, Kim, Lang, Kauffman and Naldi (2020) highlighted the potential benefits of the digital economy in addressing business challenges resulting from the effects of COVID-19 pandemic. The authors suggest the benefits of transacting online, where consumers can access information about products, compare products of high quality and transact at a low cost. Organisations are now able to tap into the global supply chain and access new markets to improve their revenue streams.

The digital economy is not without limitations, especially in the context of developing countries. There are reports of concerns about security, unfair labour practices, loss of information control, an increase in fraud and marginalization of people without access to digital technologies (Ganichev & Koshovets, 2021; Mansell, 2021; Sturgeon, 2019). Heeks and Bukht (2018) raise concerns that while developing countries can participate in digital platforms that offer work opportunities, there are also potential challenges of unfair labour practices, loss of benefits and job security for workers because governments in developing countries do not have adequate legal frameworks to protect workers online e.g. issues related

to fair pay, work conditions, and health and safety. The authors also highlight the challenges of digital economy taxation, where governments in developing countries are still using old business models that do not include taxation of online businesses. This is leading to a loss in revenue for the tax authorities and governments. Ganichev and Koshovets (2021) highlighted the challenges of limited digital infrastructure that can limit the transition and growth of digital services development and markets. Digital infrastructure supports digital services of digital platforms, remote working, remote learning and access to digital public services. This means that countries that do not have adequate digital technology infrastructure cannot fully benefit from digital economic opportunities.

In her review of the digital society transition, Mansell (2021) highlighted security challenges related to privacy protection in situations where large platforms are used without consideration of privacy and rights. The study also shed light on issues related to algorithm biases, supporting surveillance, and limited data control in modern systems e.g. Artificial intelligence applications and data analytics that can restrict public values on human rights and discrimination of consumers. The study raises awareness of the potential domination of large technology corporations, which can affect the benefits of the digital economy to society.

2.3. Context of digital economy of Malawi

Malawi has a population of about 19.3 million people (World Bank, 2021). The country is categorized under the very-low human development category of the United Nations Human Development Index (with Gross national income (GNI) per capita of US\$1,035, Expected years of schooling 11.2 years, and Life expectancy at birth of 64.3 years) (UNDP, 2020). Adoption and use of digital technologies remains challenging. For instance, internet teledensity is at 14% and mobile phone teledensity is at 42% (ITU, 2021). The ICT sector has two mobile network operators (Airtel and Telecom Malawi Network Limited) and two fixed line telephone operators (Malawi Telecom Limited and Access Limited). The cost of accessing internet data and ICT services remains high. Further, there are limited ICT skills and experts to support ICT development and implementation of policies (Makoza, 2021; Makoza & Chigona, 2016). This means that part of the population remains excluded from benefiting from digital services and public service delivery relies on manual systems. Further, the lack of ICT skills creates an over reliance on foreign experts and limited local capacity, especially in the public sector.

The Government of Malawi is attempting to address the challenges of digital infrastructure and promote development of the ICT sector, enacting technology related legislation and regulations (UNCTAD, 2019). For instance, the country enacted and implemented the National ICT policy (between 2012 – 2016) and Malawi Growth and Development Strategy III. The government also enacted the Telecommunications Act of 2016 and the Electronic Transactions and Cyber Security Act of 2016 (Makoza, 2019). The technology-related policies, strategies, and legislation addressed broader issues such as infrastructure development, information technology promotion, and regulations of the ICT sector including telecommunications, broadcasting and postal services (See Makoza, 2021; Makoza & Chigona, 2017). The country is still experiences in the ICT sector despite partial implementation of government ICT policy and development strategy. There are efforts to address the sector challenges. The Public Private Partnership Commission of Malawi and the

Ministry of Information and Communication Technology embarked on the Digital Foundation Project (funded by the World Bank). The project promotes the development of digital ecosystem, digital connectivity and digital platforms and services (World Bank, 2021). The government of Malawi, through the National Planning Commission of Malawi (NPCM), developed the Malawi digital economy strategy (2021–2026) in February 2021. The digital economy strategy was developed using Oxford’s Digital Economy Kit (DEK, 2020). The DEK framework supports the development of the digital economy strategy for a country beyond the ICT sector. The DEK framework incorporates the following inter-related elements:

- **Infrastructure** – physical infrastructure that support digital economy including electricity, communication, payment systems and identification systems.
- **People** – digital economy require people with right skills and capabilities to be engaged in economic activities e.g. labour markets and social protection.
- **Finance** – resources required for households, organisations and government to promote adoption and use of digital technologies
- **Policy and regulation** – strategies that government consider and they cover issues related to competition, intellectual property, privacy, cyber security, data protection and technology standards.

The Digital Economy Kit (DEK) was used in other countries in Africa e.g. the DEK framework was used in developing digital strategies in South Africa and Ethiopia. Application of the elements of DEK varies according to context because of the differences in levels of digital technology adoption and maturity in the countries. The main objective of the Malawi digital economy strategy is *"inclusive wealth creation which offers Malawians access to a prosperous economy"* (MDES, 2021:8). The scope of the digital economy strategy addresses three areas: core, services, and solutions. Table 1 summarises the scope of thematic areas in the Malawi digital economic strategy 2021–2026.

Table 1. Scope of the Malawi digital economic strategy (MDES, 2021)

Core	<p>Network Access: Increase internet usage to 80% of the population and broadband coverage to 95% of the population by 2026</p> <p>Device Access: Increasing device ownership from 51% to 80% of the population and energy access to 20% of the population</p> <p>Skills: Raising the pass rate of secondary school examination from 50% to 80% and increasing the availability of digitally relevant skills</p>
Services	<p>e Trade: Reducing trade compliance costs by 37% and time by 31% to enable industrialization through increase competitiveness and eCommerce adoption</p> <p>Digital Financial Services: A 30% increase (2.1 million) in the number of mobile money accounts and a financial market development index score of at least 5 out of 7</p> <p>Digital Government: The National ID is universally used for verification and supports government services delivery and digitization objectives</p>
Solutions	<p>Agriculture: Increase average farm family earnings from USD 1,800 to USD 2,250 by increasing the adoption of agricultural services and access to agricultural technology</p> <p>Health: Increasing life expectancy by an additional two years and supporting efficient resource allocation</p> <p>Digitally Traded Services: Doubling ICT services exports while creating 50,000 new jobs in digitally traded services</p>

As summarised in Table 1 above, core is the development of infrastructure and capabilities that can support the development of the digital economy. The core comprises network access, device access, and skills development. Services focus on electronic trade, financial services, and electronic government services. Solutions mainly concentrate on three economic sectors: agriculture, health, and trade (MDES, 2021). While digital economy strategy development is a positive development in Malawi, there is a need to analyse the document to ensure that the strategy reflects the contextual realities and highlights priority areas. Previous attempts to implement technology-related strategies have not achieved the expected results in Malawi e.g. the Malawi Vision 2020 (Hussein, 2018). The digital economy strategy must be comprehensive to avoid duplication of efforts, waste of resources and failure (Hanna, 2020). The study will attempt to analyse the Malawi digital economy strategy.

3. THEORETICAL PERSPECTIVE TO THE STUDY

There are many ways of viewing the digital economy and several authors have proposed theoretical models and frameworks that can explain the digital economy (e.g. Bakht & Heeks, 2018; Hannah, 2020). The study draws on the digital economy ecosystem framework (Hannah, 2020) because it is more comprehensive with elements that address a holistic state of the digital economy.

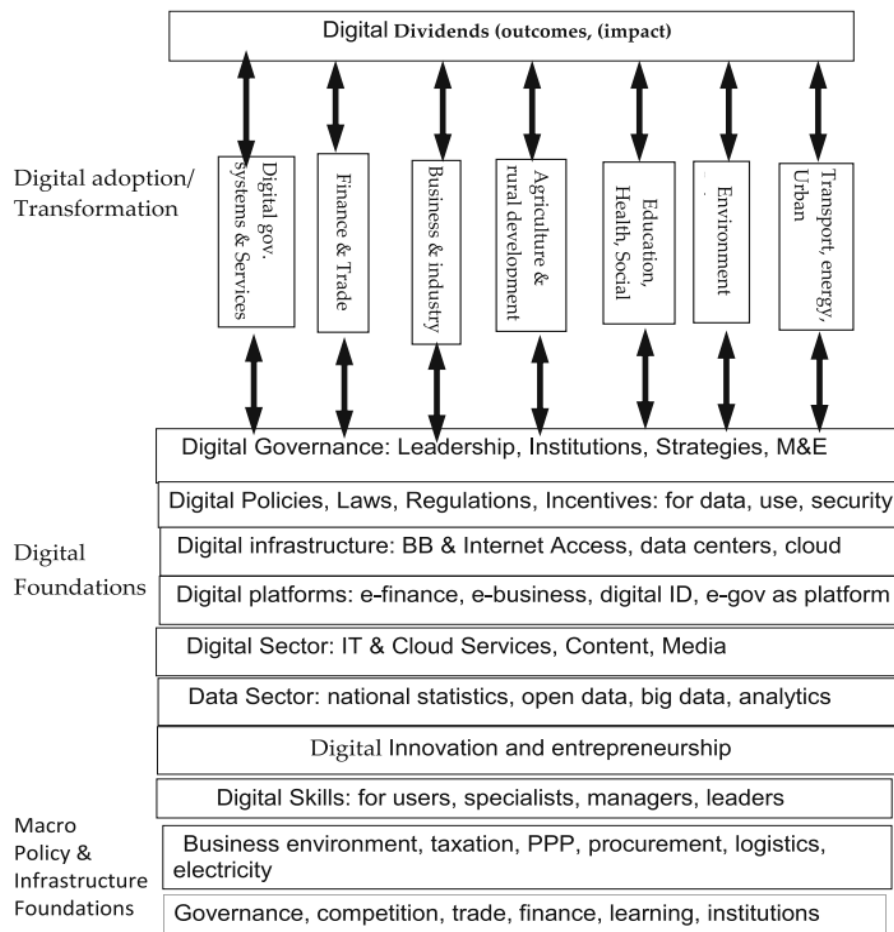


Figure 1. Digital economy ecosystem (Hanna, 2020)

Hannah (2020) proposes three interrelated levels of viewing the digital economy: digital foundations, macro policy and infrastructure foundations, digital adoption/transformation. Figure 1 above, summarises the elements of the digital economy ecosystem framework.

Macro policy and infrastructure foundations relate to necessary elements that are essential for the development and functioning of a digital economy. The elements of macro policy and infrastructure foundation are finance, trade, taxation, governance, innovation, digital skills etc. These elements addressed issues at the strategic level. The second level is digital enablers that support the operational and functional of the digital economy. Examples of elements of digital enablers include physical digital infrastructure, digital platforms, data sectors, laws and regulations that support sector activities. The third level is digital adoption/transformation that digital technologies are applied in the different economic sectors to produce the desired outcomes. The examples of digital adoption/transformation elements are the application and use of digital technologies in sectors such as transport, finance, trade, education, agriculture etc. The potential outcomes of the digital economy are improved social and economic growth of a country (Hanna, 2020).

4. RESEARCH METHODOLOGY

The objective of the study was to analyse the digital economy strategy of Malawi against the Digital Economy Ecosystem Framework. The study employed a qualitative research approach to gain a thorough understanding of the strategy and the context in which it will be implemented (Sutherland, 2016). Qualitative document analysis was used in the study (Altheide, Coyle, DeVriese & Schneider, 2008). In this context, qualitative document analysis is a *"research method for rigorously and systematically analysing the contents of written documents"* (Wach & Ward, 2013). This means that researchers have a set of procedures and steps to identify, collect, and analyse documents that are relevant and provide meaning to the reality of a social context (Altheide, Coyle, DeVriese & Schneider, 2008). Technology strategies, in particular, represent the ideas, intentions, interests, visions, and consensus of stakeholders involved in the development of the document (Makoza, 2017).

The study adopted steps for the document analysis method (Altheide, Coyle, DeVriese & Schneider, 2008; Wach, & Ward, 2013). The process begins with purposefully selecting documents. In the study, Malawi's digital economy strategy was selected because it was relevant to the study and outlined the activities and resources that were to be used in the development of the digital economy. Other supporting documents were also considered, including the Oxford Digital Economy Kit (as a framework used to guide the development of the Malawi digital economy strategy 2021–2026) and the Malawi Vision 2063 document (in which the Malawi digital economy strategy 2021–2026 was aligned to the long-term national strategy). Table 2 summarises the documents analysed in the study.

Table 2. Summary of documents analysed in the study

Documents	Source	ID
Malawi Digital economy strategy (2021-2016)	NPC	#NPC1
Malawi Vision 2063	NPC	#NPC2
The Malawi 2063 First 10-Year implementation Plan (MIP-1)	NPC	#NPC3
Oxford Digital Economy Kit	DP	#DP1
National ICT policy 2013	EGD	#EGD1
Malawi ICT master plan 2013	EGD	#EGD2
Key: DP= Digital Pathway, Oxford University EGD= e-Government Department NPC= National Economic Planning Commission		

The selected documents were read and re-read to understand the context and note key areas of analysis. Codes were assigned to text in the documents and later grouped into categories. The categories were allocated to the three interrelated levels of viewing the digital economy. The Digital Economy Ecosystem Framework (Hanna, 2021) was used to shed light on themes that require attention in the digital economy strategy. A report was produced at the end of the process. A qualitative data analysis software (Atlas.ti) was used to code the data and manage the categories of the codes. The process was iterative (e.g. the steps were repeated) to improve the findings.

5. SUMMARY OF FINDINGS

This section presents findings of our analysis concentrating on comparing the three areas of the digital strategy: core; services and solutions that were checked against macro policy and infrastructure; digital foundation and digital adoption/transformation. The findings are summarised in the subsequent subsection.

5.1. Macro policy and infrastructure vs core

Macro policy and infrastructure foundations were demonstrated in the development of the digital economy in line with the national development strategy. In the new Malawi Vision 2063, the government identified six thematic areas that would drive the country toward becoming a middle-income economy that is self-reliant and able to create wealth for all its citizens. The six thematic areas were: *"human capital development; agricultural productivity and commercialisation; private sector dynamism; economic infrastructure; enhanced public sector performance; and industrialisation and urbanisation"* (#NPC1). There were perceptions that a digital economy strategy would enhance exploiting the opportunities in the identified thematic areas of the Malawi Vision 2063. One of the thematic areas was core. The objective related to the core of the Malawi digital strategy was summarised as follows:

"The first step towards achieving this is ensuring that the foundations of the digital economy are sound and inclusive. This relates to core enablers like network access, power, devices and skills that ensure that all Malawians can participate in the digital economy" (#NPC1).

From this objective, there were three areas for developing the digital economy: infrastructure, access and digital skills. The government intended to increase network access so that the whole population could access digital services easily. The target for network access was 80% coverage in the next five years. The government planned to improve internet usage and coverage of broadband in the country. In addition, the government also planned to improve regulations and market conditions of the ICT sector: *"This will be achieved through regulation, stimulating investment into necessary ICT infrastructure and correcting market conditions to ensure service providers can offer more affordable data"* (#NPC1). The assumption was that lower prices of data would enable more people to access digital technology services.

Similarly, the government's intention was to increase ownership of digital devices (e.g. computers, laptops, tablets and smartphones) so that users will utilise the digital infrastructure that would be developed in the country. The target for digital devices ownership was also about 80% of the population and 20% for access to electricity. It was interesting to note that digital skills were also considered to ensure that users had adequate knowledge of how to use digital technologies. The target for digital skills was 80%, focusing on secondary schools.

Compared with elements from the digital economy ecosystem under the category of digital foundation, it is observed that some of the important elements were left out as part of the priority areas necessary for the digital economy. These include public-private partnerships and taxation. Public-private partnerships are crucial in the context of developing countries to support the development of the financial and human capacity of the digital economy. In Malawi, policy implementation agencies often lack resources, including finance, human capacity, and technology experts, to successfully execute policy programs and processes (#EGD1). The government could benefit from public-private partnerships where private investors can support the government by mobilizing financial resources and experts to invest in digital technology infrastructure. Such arrangements were required because the country lacked the capacity of public-sector experts to lead the execution of digital infrastructure programs. In addition, the government had limited financial resources to implement large-scale digital infrastructure projects amidst pressure to deliver equally important public services (e.g. education and public healthcare services) that required financial resources. Over the years, the country relied on donor funding and the government had limited financial resources to fund the projects from local resources.

The strategy addresses some of the issues related to taxation. For instance, the proposition to reduce taxes on devices, e.g. mobile phones and storage devices that are often imported:

"The Malawi Revenue Authority needs to temporarily mandate the complete zero-rating of device taxes. Zero-rating device taxes will lower the tax burden on low-income households, allowing them to have more affordable access to basic mobile devices. This will help to rapidly accelerate purchases and participation in the digital economy" (#EGD1).

While the reduction of tax on devices was a welcome development for short-term gains, it was also important to consider the development of the tax regime for the long term. A large part of the economy of Malawi was informal, meaning that some of the organisations were not registered with any authority, did not keep financial records, and did not declare and remit tax to the revenue collection authority. The digital economy strategy did not directly address how the adoption of digital technologies in organisations would increase the tax base under the theme of core. Further, the adverse issues that digital technologies can bring to the economic sectors and society were not considered in detail, e.g. issues of copyright, unfair labour practices, digital fraud, and cybersecurity. Thus, part of the digital strategy could address the formalisation of businesses so that organisations can know the benefits of the digital economy and have the revenue authority to grow the revenue base. Table 3 summarises the comparison of core and macro policy/infrastructure elements.

Table 3. Summary of elements for macro policy

	Elements of macro policy/infrastructure						
	Business environment	Taxation	Public private partnerships	Trade	Finance	Learning	Electricity
Focus of the Malawi digital strategy: Core							
Network access	✓						✓
Device access					✓		
Digital skills						✓	

As illustrated in Table 4 above, digital skills were incorporated into the core of the digital economy strategy. However, details on digital skills appear to be missing specific details on the specific skills required for supporting the digital economy. The scope of digital skills highlighted that:

"Digital core will deliver on improving digital literacy and increasing the availability of relevant skills needed to participate in a modern and digital economy. The skills component of the core will support remote education and up-skilling opportunities, and increase support to current learners" (#EGD1).

The statement may mean that the focus will be on learners in primary and tertiary institutions (e.g. technical colleges and universities). However, part of the adult population does not have ICT skills, especially those in rural and remote areas (#EGD1). Further, digital skills programs should consider the development of local experts so that the country can develop its local capacity and minimize reliance on foreign experts as highlighted in the national ICT policy:

"There are very few certified professionals in specialist ICT areas. Malawi continues to depend on international experts as well as institutions for capacity development and for implementing and managing complex ICT initiatives" (#EGD1).

While there were strategies to collaborate with universities and other higher education organisations in the development of programs for developing and managing new technologies, the digital economy strategy may include a component for supporting the upskilling of ICT professionals in areas that are scarce in both public services and private sector e.g. Artificial intelligence, robotics, data analytics and drones. The upskilling of professionals can help to eliminate over-dependence on foreign ICT experts and improve the local human capacity. The cost of acquiring services from local ICT experts can be lower compared with foreign ICT experts, which includes the cost of travel to deliver the services.

5.2. Digital foundation vs services

Digital foundation focused on the development of areas that were related to the digital services that would support the country in improving trade and the delivery of public services. Three areas were eTrade, digital financial services, and government services. It was perceived that the three areas would stimulate economic activities where participants in the digital economy would access products and services through digital means. eTrade was related to improvements in trade through improved cross-border trade and electronic commerce where domestic industries would explore more sources of income beyond the domestic market. eTrade would reduce trade compliance costs and increase the participation of business organisations in e-commerce with a target of 37% and 31%, respectively.

Digital financial services were also crucial in supporting payments for goods and services in various sectors of the economy. There was a need to improve adoption and access to digital financial services and the target of financial services was 2.1 million mobile money accounts (representing a 30% increase). Government services were important in supporting other digital services in private and public sectors to ensure services were efficient, transparent, secure and maintained low risks. Digital infrastructure including a digital identification system was crucial to support verification of individuals to access digital services and supporting the process of identification when transacting e.g. supporting the implementation of Know Your Customer (KYC) standards. It was believed that better identification would support informal traders and farmers to access credit and capital in the financial institutions: *"Underdeveloped credit infrastructure and high identity verification charges incur high costs and risks for financial service providers" (#NPC1).* This meant that removing the barriers to accessing financial services would allow entrepreneurs and businesses to participate in economic activities and contribute towards the improvement of the economy.

Compared with elements from the digital economy ecosystem for the digital foundation category, there were missing details of digital governance, the digital sector, digital policies, laws, regulations and incentives. Leadership in guiding the government institutions and private sector organisation was important to ensure that strategies were implemented. Lack of leadership could lead to limited prioritisation of translating the strategies into actions. While the digital economy strategy was aligned with the national development strategy (e.g. Malawi Vision 2063), there was a need to ensure policy coordination with other policies, strategies other relevant legislations (e.g. National Broadband strategy, ICT Master Plan, E-Government strategy). Policy coordination could minimize the issues of duplication of efforts: *"Largely responses to the problems have been uncoordinated and far apart"* (#EGD1). This was important to avoid wastage of crucial resources, as there were other competing issues in the country that required resources (e.g. health and education programs). Table 4 summarises a comparison of elements for digital foundations and services.

Table 4. Summary of elements for digital foundations

	Elements of digital foundations						
	Digital skills	Data sector	Digital sector	Digital platforms	Digital infrastructure	Digital policies, laws	Digital governance
Focus of the Malawi digital strategy: Services							
eTrade				✓			
Digital financial services				✓	✓		
Digital Government					✓	✓	✓

As can be seen in Table 4 above, there was emphasis eTrade and Digital platforms where the development of payment systems would take advantage of the presence of mobile payment infrastructure: *"A fully interoperable national switch which facilitates payments across a variety of financial service providers offers the foundation for a thriving digital financial services market"*(#NPC1). The country had an uptake of 28% of digital payment systems and the target was set to reach 50% of the population. Part of the strategies of supporting improvements in digital payment systems uptake was the introduction of consumer protection and financial literacy, implementing zero-rating of USSD financial services and integration of digital financial services in government Social Cash Transfer Programmes.

The areas that require further attention under services in relation to digital foundations were digital sector and data sector. Digital infrastructure forms part of the core of digital foundations. The strategy was missing the perspectives on the digital sector that would guide the development of relevant content, support media institutions and address

standards for advanced technologies including cloud computing, robotics and artificial intelligence. The data sector objectives could highlight ways of dealing with open data, management of big data and analytics. These areas have attracted the domination of large global technology companies, and it is necessary to have strategies that can address emerging issues of data ownership, copyrights, data jurisdiction, and fair competition to ensure that the rights of consumers and local businesses are protected.

The digital sector and data sector are also important in supporting digital innovation and entrepreneurship. These sectors are supporting the development of new innovations and new business models that are replacing old ways of transacting. While there are tenets of entrepreneurship under eTrade, specific details on how digital entrepreneurship and support of an enabling environment for the creation of digital innovation are missing in the digital economy strategy document. These areas can support part of the digital ecosystem to be more competitive, increase productivity, and enhance the delivery of private and public services in the economic sectors.

5.3. Digital adoption and transformation vs solutions

Digital adoption and transformation were related to the application and use of digital technologies in the economic sectors to achieve impactful outcomes that would lead to the well-being of citizens and improvement of the economy of the country. The solutions in the digital economy strategy concentrated on three sectors: agriculture, health and digital traded services. The three areas were perceived to be priority areas of the digital economy in the context of the country: *"The three priority areas of the solutions layer seek to improve wellbeing, create new jobs and sources of wealth, and accelerate economic diversification"* (#NPC1). Agriculture was the main activity for the majority of the rural population and it supported food security and household income. The target for household income per year was USD 2,250 (#NPC1). The target was to be achieved through the commercialisation of agriculture, formalisation and delivery of digitally enabled support services.

Health services was another element that was related to the well-being of citizens. Health services delivery was to be improved using digital technologies to ensure that the population was able to access the health services without difficulties and improve work capacity in the various sectors of the economy. Some of the strategies for digital health services were the introduction of digitized patients' records, implementation of National Health Management System, Logistics Management Information System and Laboratory Information Management System. Further, mHealth systems will be implemented to provide services to patients in remote areas and improve information collection and sharing.

Agriculture and health services sectors were to adopt digital technologies to improve the availability of services, increase efficiency and reduce costs. Digital traded services focused on the growth of the domestic market for services and increasing exports as highlighted in the following statement:

"Digitally traded services can be leveraged to grow and develop a thriving domestic BPO [Business Process Outsourcing] market in Malawi with solutions and services that can be exported globally" (#NPC1).

For a long-time, the country mainly exported agricultural commodities and the focus was changing to include exporting of services including digital technology solutions: *"Moreover, it enables the country to showcase its capabilities, expertise and talent to digitally trade internationally, scale-up job creation, win business and attract more foreign direct investment (FDI)"*(#NPC1). From the statement, there were perceptions that the business process outsourcing market would support creating jobs and address the high levels of unemployment in the country. The target for ICT exports was 4%, and it was estimated that 50,000 new jobs related to digital services would be created (#NPC1). The strategy for achieving this goal was to establish Business process operators and trade associations to coordinate the industry through collaboration with the Ministry of Trade and Industry. Further, encouraging of government to procure digital solutions developed locally and offer tax incentives to the Business process operators. Table 5 summarises the comparison of digital adoption and transformation elements and solutions in the digital economy strategy.

Table 5. Summary of elements for digital adoption and transformation

Focus of the Malawi digital strategy: Solutions	Elements for digital adoption						
	Digital systems and services	Finance & trade	Business & Industry	Agriculture & rural economy	Education & Health	Environment	Transport & energy
Agriculture				✓			
Health					✓		
Digital government		✓					

Compared with elements from the digital economy ecosystem for the digital adoption/transformation category, there were missing details related to transport, energy, urban; and environment. The implementation of some of the digital foundations e.g. Broadband, Internet connectivity and data centres may require robust transportation systems to support the operations and delivery of the digital services in the various economic sectors. The digital foundations details require consideration of environmental challenges since some of the digital technologies can generate digital waste that requires proper disposal and does not compromise the sustainability of the environment.

The analysis revealed that business process outsourcing strategies covered the strategy of IT professional development in digital and ICT professional's theme in the digital strategy. However, there were lapses in detail on issues related to service level agreements (for both local and international markets), working conditions of workers, legal reform proposals related to the regulation of competition, data ownership, and data security. As an

emerging industry, these issues required clarity to ensure that the implementation of the digital economy was holistic and did not leave gaps. Further, classification of the digital traded services was necessary to ensure that there was an appropriate focus of interventions (e.g. back-office and front-office digital services) and to establish priority areas that were realistic and feasible in the context of Malawi. The strategy could also link business process outsourcing to local innovation ecosystem structures (e.g. e-hubs and universities) so that local capacity can be improved to meet the global standards for innovations and improve the competitiveness of the industry. Lastly, the business process outsourcing strategy lacked details on dealing with risks, e.g. natural disasters, political instability, and economic changes. The strategies required to address these issues to guarantee business continuity and recovery in times of crisis.

6. DISCUSSION OF FINDINGS

The objective of the study was to analyse the themes of the digital economy strategy of Malawi using the Digital Economy Ecosystem Framework (Hanna, 2020). The findings revealed that the Malawi digital economy strategy (2021 to 2026) was aligned with the three elements: macro policy, digital foundations, and digital adoption/transformation. The elements presented under the macro policy include the business environment, finance, learning, and electricity. However, the themes for trade and taxation were outlined under digital foundations, with digital platforms, digital infrastructure, digital governance, and digital policies and laws. The findings showed that key details for the digital sector and data sector were missing from the digital foundations. Finance and trade, agriculture and rural economy, education and health are examples of elements that were consistent with the framework under digital adoption and transformation. However, there were limited details on the environment and transport. These findings demonstrate that the use of Oxford's Digital Economy Kit (DEK) can vary based on the context of the country. In this case, Malawi had an agriculture-based economy that was considering a transition to a digital services-based economy. It was important to align the thematic areas with the existing economic sectors. For example, solutions in the Malawi digital economy strategy concentrated on agriculture, trade, and health sectors.

The discussion will now focus on the three thematic areas of the Malawi digital economy (e.g. core, services, and solutions), to note the specific contributions of the study. These are summarised in the subsequent paragraphs.

Core objectives were related to improving network access, devices, and skills. The objectives were consistent with the idea of the narrow presentation of the digital economy (Bukht & Heeks, 2017). However, the missing elements related to macro policy/infrastructure (e.g. public-private partnerships and taxation) can affect progress on the implementation of the strategy. Hanna (2020) noted that an incomprehensive approach to digital strategies was one of the reasons why many developing countries were failing to transform their economies. Thus, a holistic view of elements related to macro foundations (especially public-private partnerships) was necessary for the digital strategy of Malawi.

Services objectives in the Malawi digital economy strategy concentrated on eTrade, digital financial services and digital government services. There was an overlap of these

elements with macro foundations elements of the digital economy ecosystem (Hanna, 2020). The findings showed that the digital sector and digital services were not adequately addressed in the Malawi digital strategy. The digital sector is crucial in the development and delivery of digital services (Mansell, 2021). The sector also requires strategies on how it will be developed, regulated and supported by the government (Bukht & Heeks, 2018). The implications of details for the digital services and digital sector is that the country cannot adequately address issues related to copyrights of digital content, data governance, privacy issues, cybersecurity and digital work fair practices (Etoundi, Onana, Olle & Eteme, 2016; Fu, Avenyo & Ghauri, 2021; Oriola, Adeyemo, Papadaki & Kotze, 2021).

The objectives of solutions in the Malawi digital strategy focus on agriculture, health and digital governance. The three areas were consistent with elements of the digital economy ecosystem (Hanna, 2020). The findings showed that the transport, energy and environment sectors received less attention in the Malawi digital strategy. Digital economy operations and activities depend on robust infrastructure, including transport and energy (Abimbola, Aggad & Ndzendze, 2021). The use of infrastructure has implications for the environment, e.g. increase in digital waste that can compromise the sustainability of the environment (Li, Kim, Lang, Kauffman & Naldi, 2020). The implication of missing details of the environment and transport objectives in the Malawi digital economy strategy was that solutions may be narrow in scope in dealing with issues emerging from the digital economy strategy related to energy demand and sustainability of the environment and climate change (Dahlman, Mealy & Wermelinger, 2016; Hanna, 2020).

The study was not without limitations. The researcher not able to conduct interviews with stakeholders and policymakers that were engaged in the development of the Malawi digital strategy to clarify why some of the thematic areas of Oxford's Digital Economy Kit (DEK) were left out in the final document. However, from the findings highlighted above, the study gives a starting point for areas of further research. Related to core, studies can explore the role of public-private partnerships in supporting digital infrastructure investments in areas related to network access, devices access and digital skills. Further research can be conducted on the theme of services of the Malawi digital economy strategy on how laws and regulations will affect the processes and activities in the digital sector and digital services. Another interesting area is the taxation of digital economy services, e.g. What is the effect of the digital economy on the development of the tax base? More studies can look at the theme of solutions within the Malawi digital economy strategy relating to issues of digital waste. For example, what are the synergies between the Malawi digital economy strategy and other digital waste management strategies in supporting environmental sustainability?

The study makes the following recommendations for policymakers and practitioners: (a) Strengthening collaborations through public-private partnerships in the digital economy strategy's implementation. (b) Implement legislative and regulatory reforms to address emerging issues in the digital economy in digital sectors and services, such as copyright, industry competition, and fair digital work practices. (c) The government (through the Office of President and Cabinet) should champion monitoring and evaluation of the strategy to ensure that plans are executed and the digital economy goals are achieved.

7. CONCLUSION

In conclusion, the study set out to analyse the themes in Malawi's digital economy strategy (2021–2026). Using content analysis, the study highlighted the areas that required attention for the Malawi digital economic strategy to support wealth creation and access to a prosperous economy. The findings revealed that the core, services, and solutions thematic areas were consistent with the macro policy foundation/infrastructure, digital foundation, and digital adoption/transformation thematic areas. However, the elements of the core in the Malawi digital economy did not adequately address themes of digital taxation and public-private partnership. The service's theme was missing some details on the digital sector and data sector. The elements for data adoption/transformation had limited details on the environment, transport, and energy concerning the digital economy. The study has identified potential areas for further research to contribute towards a better understanding of issues surrounding digital economy strategies in the context of developing countries.

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