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Administrative Empowerment and Livelihood Impact of Digital Transformation in Africa

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Abstract. This article focuses on the digital transformation of Africa and systematically explores the intrinsic connection and transmission mechanism between administrative empowerment and people's livelihood effects; In the administrative dimension, by citing practical cases from countries such as Kenya, Nigeria, and Rwanda, the empowering role of digital transformation at the administrative level is demonstrated, and its effects are pointed out from three aspects: improving government efficiency, reducing corruption, and enhancing public service transparency; In the dimension of people's livelihood, the actual effects of digitalization are mainly demonstrated in the fields of education, healthcare, and financial services. Typical cases are used to analyze the positive roles of mobile payments, digital education platforms, and health management systems in improving people's livelihood and promoting inclusive development. Meanwhile, through further country comparisons, this article horizontally compares the differences in digital paths and outcomes among different countries due to various factors, and finds that in the future, Africa's digital transformation still faces multiple challenges. The purpose of the study is to emphasize that African countries need to strengthen institutional construction and talent cultivation while promoting technological applications, in order to achieve sustainable and inclusive development of digital transformation and provide theoretical support for Africa to achieve further high-level digitization.

Keywords: Digital transformation in Africa, administrative empowerment, livelihood effect, e-government, digital divide

1. Introduction

According to data released by the World Bank, the contribution of the digital economy to global gross domestic production (GDP) has exceeded 15%; It is expected that by 2030, the contribution of the digital economy to global GDP will reach 30%, while creating 30 million related jobs. In terms of growth rate, compared to the past 10 years, the growth rate of the digital economy has reached 2.5 times that of the traditional economy. It can be confirmed that in the future global economic development, the digital economy will become the core resource driving economic growth and innovation. As one of the most promising regions in the world today, African countries actively participate in the global digital wave and have achieved a series of construction achievements as a result. According to a report released by the Global System for Mobile Communications Association

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(GSMA) in 2022, as of the end of 2021, the mobile adoption rate in sub–Saharan Africa has reached 46%, and the smartphone penetration rate has reached 49%. By 2025, Kenya, Nigeria, and Cote d'Ivoire have surpassed the regional average, and the resulting fintech products are gradually developing into models of digital finance in the new era. With the leapfrog development of the digital economy, Africa is growing into an active digital innovation ecosystem, providing possibilities for further solving practical problems in Africa.

Despite the rapid development of the digital economy in Africa, there still exists a severe 'digital divide'. A large number of economically underdeveloped areas live on the edge of the digital world, and the main coverage areas of 4G and 5G networks are concentrated in traditional big cities like Nairobi and Lagos; In addition, various potential challenges have also slowed down digitalization in some countries. How to handle digital opportunities and various challenges, promote digital transformation in Africa, reshape governance models, and impact people's livelihoods is a problem that African countries will face.

In the field of administrative empowerment for digital transformation in Africa, scholars have focused on the significant impact of digitization on countries such as Ghana, Ethiopia, and Guinea Bissau. Noluthando Mncwango focuses on the administrative efficiency of public sectors in countries such as Nigeria and Rwanda, while the African Financial Inclusion Policy Initiative (AFPI) report mentions the administrative impact of the "regulatory sandbox" mechanism on some African countries [1,2]. On the dimension of livelihood effects, Misha Govind mentioned the important contribution of Nigeria's mhealthy to the healthcare sector, Suri, T mentioned the impact of Kenya's M-Pesa mobile payment software on reducing poverty rates, and Sixbert Sangwasystematically summarized how e-government systems (E-Government) can be transformed into broad-based public values [3-5]. These studies provide a comprehensive overview of the current state of digital economy development in various countries and regions in Africa, as well as the wide-ranging social effects it has generated. However, current research mostly focuses on a specific country or region, lacking macro and comparative perspectives on digital development in Africa, as well as specific explanations of the relationship between administrative empowerment and livelihood effects.

This paper aims to reveal the transmission mechanism between administrative empowerment and livelihood effects. It analyzes how improvements in administration, achieved through the means of digital transformation's administrative empowerment, lead to enhancements in livelihood outcomes. Through a comprehensive comparison of typical cases, it analyzes the similarities and differences in their digital pathways and the reasons for the variations in their resulting livelihood effects, while also providing a profound summary of the underlying digital divide in this transformation.

2. Administrative empowerment through digital transformation in Africa

2.1. Digitalization of government affairs in Africa

Kenya is one of the earliest countries in Africa to implement e-government practices. In 2014, it launched the eCitizen platform as the core of its "Digital Kenya" strategy and its first national level integrated e-government service platform, committed to creating a "one-stop service" portal. As of 2025, the platform has covered all government departments in Kenya, and citizens, businesses, and inbound personnel do not need to travel through multiple departments. They can handle applications, payments, inquiries, and other businesses online through the online portal. According to a government report in 2023, the platform can handle over 5000 services with 12 to 13 million registered users.

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The eCitizen platform significantly reduces government processing time, achieves data sharing between departments, and improves transaction efficiency through process reengineering and digitization; At the same time, intermediate links are reduced, the process is transparent and traceable, and according to the requirements of the Kenyan government, all departments are forced to access the system, which effectively alleviates administrative corruption and optimizes resource allocation through data analysis, becoming one of the successful practices of digital transformation in Africa [6].

The Nigerian e-government system was originally designed to address corruption and established "Information and Communication Technology (ICT)" in the early 21st century to promote transparency in public services. In the past decade, the government has improved administrative supervision and governance by launching projects such as the government's comprehensive financial management and information system, unified financial accounts, and public reporting and supervision mechanisms to enhance government processing efficiency [7]. Although its mobile government system has not completely eliminated corruption, it has alleviated the problem of bureaucratization in public services and improved service productivity and transparency. The government has also promoted mobile government by popularizing smartphones and updating the National Identity Card (NIN), enhancing public confidence in government administration [8].

2.2. Data-driven and cross-sector collaboration

For public services provided by the government, a crucial method to better respond to public service demands and achieve administrative empowerment is to break down information silos between government departments, enabling the concentration, sharing, and unified analysis of public service data. The "National Data Platform" adopted by the Rwandan government was established under this guidance. In 2015, Rwanda established the "IremboGov" platform, which is a public-private partnership with ROL company. Over the next few years, it has integrated data from more than 20 government departments, including education, healthcare, agriculture, social security, and other categories, into the platform. Subsequently, the platform will provide visual presentation and intelligent analysis of data for all connected departments. For example, the education department can use enrollment rate data to identify education gaps in urban and rural areas, thereby better allocating educational resources; During the period of COVID-19, the government can quickly implement measures such as material allocation, increasing hospital beds, and counting infected persons in the epidemic outbreak area through integrating platform information, so as to achieve the first time response to medical and health events [9].

Cross-regional and cross-departmental collaboration is an important way to empower data-driven administration, but issues such as information opacity, cumbersome processes, and inconsistent standards constrain cross-border trade efficiency and increase costs. In 2005, the East African Community (EAC) established a customs union and a common market to promote regional economic mobility. In 2025, driven by the East African Regional Digital Integration Project (EARDIP), EAC will rely on its 2050 development vision to promote a seamless cross-border trade system and improve quality and reduce costs through a unified digital system [10]. With the support of the European Union, countries such as Kenya and Rwanda will take the lead in building an integrated collaborative system, while countries such as Tanzania and Uganda will deeply participate in its popularization.

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3. Livelihood effects of digital transformation in Africa

3.1. Education and healthcare

The digital transformation initiatives in Africa have promoted the development of various fields. The digital practices in Kenya and Tanzania have demonstrated significant livelihood value in the fields of education and healthcare, effectively improving local livelihood conditions and providing reference for digitalization in other regions of Africa.

As a leading country in digitalization in Africa, Kenya recognized education digitization earlier than the legal level. The eLimu platform, which was launched in 2012, was originally established to solve the problems of scarce high-quality resources and outdated textbooks in public schools, with strict content benchmarking against national curriculum standards. The platform transforms textbooks into interesting forms such as videos and animations, while providing resources and training for teachers. It also supports low-end devices and offline use to cover areas with weak networks. In pilot schools, the platform has increased children's literacy rate by 20% and significantly increased classroom participation. It not only helps teachers with personalized tutoring but also fills the gap in high-quality education in remote areas and narrows the urban-rural development gap [11].

In the medical field, the current situation of weak primary healthcare and shortage of doctors in Africa, coupled with the impact of the epidemic, has promoted the development of digital healthcare. Tanzania, the third-largest economy in East Africa, took the lead by launching the SMS for Life drug supply chain management platform in 2011, which monitors grassroots drug inventory through SMS or mobile applications to avoid shortages. Afterwards, DHIS2 National Health Information Collection and Query Platform was established, and the construction of hospital electronic medical record system was promoted. The Digl project, launched in 2017, popularized health management for the rural population, pushed prevention knowledge of AIDS, tuberculosis and other diseases in the form of animation, improved awareness of epidemic prevention and coverage of health information, so that remote areas can also enjoy convenient health services [12]. The digital practices of the two countries have provided useful demonstrations for the construction of related fields in African countries.

3.2. Finance and payment services

Financial products are a significant component of digitalization. As mobile money increasingly replaces traditional currency, the advantage of conducting transactions and managing finances via mobile devices has led to rapid development of digitalization in the financial sector. This is particularly true in countries where all or most of the population has access to quality, affordable, convenient, and appropriate formal banking or financial services, such as savings and deposit accounts, loans, and insurance. Digital financial tools like mobile payments and inclusive finance have gradually developed and expanded.

Some studies have shown that as the most digitized country in East Africa, Kenya has undoubtedly achieved significant demonstrative results in digital finance, which is attributed to Kenya's mobile payment platform M-PESA. In 2007, Kenya launched M-PESA as a mobile currency service tool, and in the following 10 years, the system has spread throughout the country, with 96% of households having at least one person able to use the system as a payment tool; Moreover, M-PESA has continuously promoted cooperation with various banks in recent years, extending the system to areas such as remittance, loans, and savings, further opening up the

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downstream of the financial industry. When the more inclusive M-PESA appeared in people's eyes, rural poor, urban residents, women, and even the government all connected to this convenient, safe, and fast system [13].

Investment and savings are key elements of macroeconomic development, and cultivating a savings environment is crucial for developing countries. In Africa, high bank fees hinder savings, prompting many countries to promote low or even no threshold savings services. The procedures of the Central Bank of Nigeria are cumbersome and expensive, giving rise to the fully digital bank Kuda Bank. As a free digital bank authorized by the central bank, it has no minimum balance requirement, online authentication account opening, free fund transfer, debit card processing and other services, quickly attracting digital users who want to avoid high transaction fees. Subsequently, services such as personal budget management, investment, and corporate invoice management were launched to expand its influence.

In addition, other digital banks such as Carbon and Opay also provide digital savings and microcredit services. These digital banks, with their fully digital channels, low or free policies, and efficient review processes, have significant advantages over traditional banks, greatly increasing the coverage of financial products in Nigeria and laying the foundation for the development of financial digitization [14].

3.3. Country-specific study of livelihood effects

Although African countries have undertaken similar developments in the realm of digital livelihoods, differences persist among them. In fact, even countries using the same systems may have different contexts and methods for generating digital livelihood effects, determined by their respective national conditions.

In East Africa, due to its early development, relatively complete infrastructure, and suitable soil for deep digital cultivation, Kenya has basically led the digital transformation of the region. Whether in the fields of education, healthcare, digital finance, or mobile payments, Kenya has a deep involvement. Its digitalization has become a highly inclusive and empowering digital livelihood ecosystem. In recent years, Kenya has been committed to building the entire country into an economic and technological powerhouse in East Africa. The loose policies towards the market economy and the increasingly perfect market supervision system have made the private economy very active. With the birth of successful cases, more enterprises are encouraged to engage in technological innovation in more fields. They can learn from successful systems such as M-PESA and eLimu and obtain technical support, which makes them easier to develop compared to other East African countries that started from scratch [15].

Compared to Kenya, Tanzania's digital development is relatively slower. Although Tanzania is the third-largest economy in East Africa and has a relatively active private sector, its late start has resulted in a more conservative approach both socially and policy-wise. As an economy still reliant on agriculture and natural resources, Tanzania lacks a thriving ecosystem for tech startups, and government control over the economy remains stringent. Influenced by these factors, digital transformation in Tanzania's livelihood sectors is concentrated in areas accessible to the government or in pilot projects by international NGOs, with its independent innovation capacity slightly lagging behind Kenya's.

As a populous and economically powerful country in West Africa, Nigeria's digital transformation has more national characteristics. Like its orientation in the administrative field, Nigeria's digital transformation in the field of people's livelihood is still influenced by an existing problem in reverse. That is to say, in dissatisfaction with various problems in the backward

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traditional market, some private enterprises see opportunities flooding in, resulting in innovative development in individual fields. Due to the enormous demand generated by Nigeria's large population, the blank market left by the insufficient efforts of traditional systems has become an active area for the private economy, such as Kuda Bank, which developed in this context. It can be said that the pain points of the market and the boost of capital ultimately enabled Nigeria to achieve digitalization of people's livelihoods.

4. Challenges and deficiencies in digitalization

4.1. Foundational level

Although Africa's digital development leads in growth rate, it still faces two critical bottlenecks: the digital divide and inadequate electricity supply, which constrain the overall process.

The digital divide is reflected in the multiple divisions between countries, urban and rural areas, and different groups. At the national level, the mobile phone penetration rates in North Africa and sub-Saharan Africa are 68% and 45% respectively. In 2025, the Internet penetration rate in Morocco will reach 92.2%, while that in Chad, Central Africa and other landlocked countries will be less than 20%. Kenya, Nigeria and other countries will hover around 50% for a long time. At the urban and rural level, the capital and major cities have complete Internet, software and other infrastructure, complete fixed broadband construction, and higher digital skills and acceptance; The vast rural areas suffer from a lack of infrastructure, low network quality, poor connectivity, and obstacles to digital promotion. Currently, about 74% of devices rely on mobile networks for operation, and insufficient rural network infrastructure further exacerbates the difficulty of application implementation.

Inadequate electricity supply is a major obstacle to the stable operation of digitalization. Approximately 600 million people in Africa lack access to basic electricity. The electricity access rate in Sub-Saharan Africa is only 55.2%, with the situation more severe in rural areas; for instance, Angola's rural electricity access rate is merely 7.3%. Even in cities, the reliability of electricity supply is questionable. Countries like Nigeria and South Africa frequently experience nationwide blackouts due to policy changes, social unrest, etc. The electricity deficit and weak grid infrastructure mean that digital infrastructure lacks stable support, posing a long-term risk to Africa's digital development.

4.2. Population literacy level

Digitization is an emerging field that highly relies on the supply of various high-tech talents. Only by possessing basic digital literacy and receiving high-level digital training can one master the basic abilities of digitization. Overall, Africa has been experiencing rapid development in statistics in recent years, with a continuous improvement in digital literacy rates. However, the skills and talent gap in Africa remains significant, hindering the country's digitalization process. In Rwanda, the digital literacy rate has increased from 8% to 35% from 2017 to 2023. However, nearly two-thirds of the population still lack basic digital skills, and the low literacy rate in rural areas has led to low digital literacy, resulting in a low level of digitalization promotion in these regions. According to the 2024 GSMA report, approximately 1.7% of young people in Tanzania are engaged in jobs that require digital skills, 3.2% in Kenya, and 5.6% in Nigeria. The number of employed people under this ratio is insufficient to support the rapid development of digitization; In some countries, basic digital skills are only possessed by a small population, such as only 16% in Djibouti and 4% in South Sudan. Although some countries have incorporated advanced digital skills into their higher

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education systems (such as Kenya and Nigeria), they still face problems such as graduates not meeting industry demands and outdated teaching content, which deeply plague the digitalization process of African countries today.

4.3. Institutional level

The lack of policy support brings uncertain challenges such as data privacy, network security, and Artificial Intelligence (AI) regulation to digital development, weakens the security of critical infrastructure, and hinders the effectiveness of administrative empowerment and people's livelihoods. In 2018, only 19 African countries enacted data security and privacy laws, while major countries such as Angola and Ethiopia still have gaps; Only Kenya has relevant laws in the field of AI regulation, and the lack of regulation has led to increased security risks, making it difficult to build a suitable digital environment. In 2023, 30 countries signed the Malabo Convention to promote data protection legislation with the help of the European Union. However, some countries have difficulty implementing their laws due to insufficient government capacity, funding shortages, or political turmoil, falling far behind global standards.

African governments generally lack funding, and the construction of digital infrastructure and the introduction of technology are often interrupted. Therefore, PPP models are often adopted to alleviate the funding gap and coordinate management. However, there are numerous obstacles to the development of this model: political instability, unclear investment risks and returns leading to private sector hesitation in investing in long-term, large-scale digital infrastructure; The lack of government coordination ability and legal protection often leads to project stagnation. At the same time, African countries generally lack professional technology and management experience in digital infrastructure, and have no successful case studies to draw on. They can only rely on exploration or international assistance, making it difficult to localize experience and hinder independent development. These problems require high costs and greatly limit the promotion of models.

5. Conclusion

The digital transformation process in Africa shows that digital technology is almost certain to become a powerful engine for promoting administrative empowerment and improving people's livelihoods. However, this process has also deeply exposed various challenges faced by the African continent, such as infrastructure gaps, insufficient digital literacy, and weak institutional frameworks. In the future, digital development in Africa will present both opportunities and challenges. To unleash the full potential of digitization, African countries must adopt more systematic and inclusive strategies. The digital path of Africa in the new era must be a development path that integrates infrastructure construction, human capital investment, and institutional environment optimization in a coordinated manner.

The digital vision of Africa should not be a simple replication of external models, but a unique path rooted in local needs, capable of effectively stimulating internal vitality, and benefiting all people. By bridging the digital divide, strengthening endogenous drivers, and deepening regional cooperation, a more resilient, innovative, and inclusive 'Digital Africa' will play an increasingly critical role in the global digital landscape, laying a solid foundation for its sustainable socio-economic development.

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