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The New Economy: Impact of Financial Digitalization on Ghana's Public Sector

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ABSTRACT
This study examines the impact of financial digitalization on Ghana's public sector, highlighting the evolution of digital technologies and their transformative effects on economic operations. Using a qualitative literature review methodology, the study synthesizes existing research to explore the theoretical foundations of digitalization, the implementation of financial digital services in Ghana, and their impact on the public sector. Guided by innovation diffusion theory, the study categorizes the adoption of digital financial solutions into phases: innovators, early adopters, early majority, late majority, and laggards, illustrating the gradual integration of digital innovations within the public sector. Furthermore, it delves into the broader concept of the digital economy, discussing its opportunities and challenges for African nations like Ghana. While digitalization offers significant potential for economic growth and improved public services, addressing challenges such as digital literacy, regulatory frameworks, and job market stability is critical to maximizing its benefits. The study underscores the importance of financial digitalization in driving efficiency and transformation in Ghana's public sector.

ABSTRAK
Studi ini meneliti dampak digitalisasi keuangan pada sektor publik Ghana, menyoroti evolusi teknologi digital dan efek transformatifnya pada operasi ekonomi. Dengan menggunakan metodologi tinjauan pustaka kualitatif, studi ini mensintesis penelitian yang ada untuk mengeksplorasi landasan teoritis digitalisasi, penerapan layanan digital keuangan di Ghana, dan dampaknya pada sektor publik. Dipandu oleh teori difusi inovasi, studi ini mengkategorikan adopsi solusi keuangan digital ke dalam beberapa fase: inovator, pengadopsi awal, mayoritas awal, mayoritas akhir, dan lamban, yang menggambarkan integrasi bertahap inovasi digital dalam sektor publik. Lebih jauh, studi ini menyelidiki konsep ekonomi digital yang lebih luas, membahas peluang dan tantangannya bagi negara-negara Afrika seperti Ghana. Sementara digitalisasi menawarkan potensi yang signifikan untuk pertumbuhan ekonomi dan peningkatan layanan publik, mengatasi tantangan seperti literasi digital, kerangka regulasi, dan stabilitas pasar kerja sangat penting untuk memaksimalkan manfaatnya. Studi ini menggarisbawahi pentingnya digitalisasi keuangan dalam mendorong efisiensi dan transformasi di sektor publik Ghana.

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A. INTRODUCTION

The advent of digital technology and introduction of same over the past few decades has been noted across myriad of industries globally (Cho et al, 2023). According to Janowski (2015), the academic and industry practitioners have over the years debated how digital technology and innovations have transformed and tremendously change the way organizations carryout their works. Like Janowski, Porter & Hepelmann (2014) further discussed how the application of modern technologies in public organizations have altered the way their businesses are conducted for the better.

The terms 'digitalization' and 'digitization' are frequently confused and used interchangeably. Despite considerable overlap, the difference between these two terminologies is hotly debated in the literature. Legner et al (2017), for example, defines digitization as "the technical process of turning analogue impulses into digital form, and eventually binary digits". The authors also claim that computer scientists have coined the phrase since the advent of the first machine. It is important to note that whereas digitization is concerned primarily with technology, the term 'digitalisation' refers to a multidimensional sociotechnical phenomenon, as well as the modification and acceptance of processes using digital technologies (Legner et al, 2017).

Berman (2012) offers a comprehensive definition of digitalization as a combination of complementary actions aimed at transforming client value propositions and reshaping organizational operations using digital technologies. This transformation enhances customer engagement and collaboration. Consequently, numerous public sector organizations are rapidly embracing the digital revolution to lower service delivery costs, reduce time and resource expenditures, and improve financial and performance accountability and transparency (Halimy et al, 2023).

In the financial sector, advancements such as the rise of FinTech companies, blockchain technology, super platforms, artificial intelligence, and the widespread adoption of mobile money have significantly transformed financial services (Senyo & Osabutey, 2020). They further opined that, traditional banking, once rooted in brick-and-mortar establishments, has evolved into a digital landscape, boosting financial inclusion through the proliferation of digital financial services (DFS). A Global Findex study in 2017 revealed that approximately 3.8 billion individuals, representing 63% of the global population, now have access to financial accounts (either bank or mobile money), marking a 1.2 billion increase since 2011 (Senyo and Osabutey, 2020). In Sub-Saharan Africa, one in five people now holds a mobile money account, nearly doubling the rate from 2014 (Senyo and Osabutey, 2020).

In 2005, the Ghanaian government initiated a digital governance strategy, positioning the country as one of Africa's fastest-growing digital and telecommunications markets. Among its key projects are the E-Government Interoperability Framework (E-GIF), which encompasses mobile interoperability and e-banking; the Ghana Integrated Financial Management Information System (GIFMIS); and the Ghana Electronic Payment Portal for financial services (Demuyakor, 2020; Agboh, 2018).

Financial inclusion is a critical focus of Ghana's efforts to advance its digital economy. Recognizing the importance of providing affordable and accessible financial services to all citizens, the Ministry of Finance developed the National Financial Inclusion and Development Strategy (NFIDS), outlining Ghana's approach to enhancing financial inclusion (Babangıda and Mıgdad, 2024). The ministry has also introduced a Digital Financial Services (DFS) Policy, which serves as a framework for leveraging digital finance to achieve financial inclusion goals and improve governance. The DFS Policy

outlines a four-year plan across six key areas for strengthening Ghana's DFS ecosystem (MOFA, 2020).

The public sector has long faced systemic challenges such as inefficiency, ineffective service delivery, excessive bureaucracy, and widespread corruption. Many of these issues stem from the human-led institutions dominating the system. As long as humans are central to digital service delivery, the risk of human error remains high (Nwokorie, 2017).

The public sector's reliance on paper-based processes has exacerbated these problems for years. It has slowed down service delivery, reduced transparency and accountability, and led to compromises in public sector activities. To ensure citizens receive the services they are entitled to and can hold public officials accountable for resource use, the government launched a digital governance strategy in 2005 (Solomon and van Klyton, 2020).

This strategy aims to reduce direct human interaction in public service access and address many challenges. However, the government has yet to fully capitalize on the opportunities available within the country's financial operations. Many citizens still face complex procedures for opening bank accounts, transferring money regardless of location, paying for government services. Government have also not streamlined processes in identifying taxable individuals and establishing an automated system for monitoring public sector finances across various agencies (OECD, 2016).

The study seeks to answer the following questions.

- What theory(s) underpins the phenomena of digitalization in the public sector.
- Which financial digitization services have been implemented in Ghana?
- What are the impact of financial digitization on the public sector?

B. RESEARCH METHOD

The study used a qualitative-based literature to make relevant findings. In doing this, the study used a literature-based snow-balling method in getting secondary data to answer the research questions. The literature was written systematically by sticking solely to the research questions posed in the study.

C. RESULTS AND DISCUSSION

INNOVATION DIFFUSION THEORY

The Innovation Diffusion Theory, introduced by E.M. Rogers in 1962, is a foundational theory in social science that explains how new ideas, behaviors, or products spread within a population or social system over time (Rogers, 2003). According to this theory, diffusion leads to individuals within a system adopting a new concept or innovation. Adoption occurs when an individual begins to use a new product or engages in a new behavior. A key element of adoption is the perception that the innovation is new or novel, as this is critical to the diffusion process (Dearing, 2009).

The adoption of innovations happens gradually across a social system, with some individuals adopting more quickly than others. Research suggests that early adopters often exhibit different characteristics from those who adopt later (Rogers, 2003). As a result, when introducing an innovation to a target group, it is important to understand the audience's specific traits to either facilitate adoption or address potential barriers. Rogers (2003) identified five distinct categories of adopters. While most individuals fall into the middle categories, understanding the characteristics of each group is key to effectively promoting an innovation, as different strategies are needed to engage each category.

Innovators

Innovators are the first to adopt new innovations. These individuals are adventurous, constantly seeking out novel ideas, and are willing to take risks by exploring new territory. They act as catalysts for change, driving the initial push for innovation. Innovators' curiosity and creative thinking often lead them to explore and develop groundbreaking concepts, paving the way for others (Rogers, 2003).

Early adopters

Early Adopters are opinion leaders within their social systems, naturally inclined to embrace new ideas and innovations. Well-connected and respected for their forward-thinking attitudes, early adopters serve as role models. Their endorsement of an innovation greatly enhances its credibility and inspires others to follow suit, playing a vital role in expanding the innovation's reach (Light, 1998).

Early majority

Early majority adopters are more pragmatic and cautious than innovators and early adopters, but they are still open to change when they see compelling evidence. These individuals prefer to observe the results of an innovation before deciding to adopt it. Testimonials, success stories, and empirical evidence are key to persuading this group. Once convinced, the early majority helps drive the innovation to a wider audience (Rogers, 2003).

Late majority

Late majority adopters are more skeptical and hesitant to embrace new ideas. They prefer to wait until an innovation has been widely accepted before considering adoption. To appeal to this group, strategies should focus on demonstrating social proof, showing that others have already adopted the innovation. Once convinced, the late majority contributes to the widespread acceptance and saturation of the innovation (Rogers, 2003).

Laggards

Laggards are the last group to adopt an innovation, often strongly attached to traditional methods and resistant to change. Laggards are conservative and skeptical, making them the most difficult group to persuade. Tactics such as using statistical evidence, fear appeals, and peer pressure from earlier adopters may be necessary to encourage laggards to adopt. Their eventual acceptance signals the near-complete diffusion of the innovation within the social system (Rogers, 2003).

APPLICATION OF INNOVATION DIFFUSION THEORY

The application of the Diffusion of Innovation Theory to financial digitalization in Ghana's public sector provides a useful framework for understanding and facilitating the adoption of digital financial solutions. Popularized by Everett Rogers, this theory outlines stages through which innovations spread within a social system, offering insights into the factors that influence both individual and organizational decisions to embrace new technologies.

In the initial phase of financial digitalization, awareness is crucial for introducing digital financial solutions to key stakeholders. By sharing information about the benefits and potential impact of digital tools on financial processes, decision-makers become aware of the value these innovations offer (Larsen, 2011). For example, workshops, seminars, and public awareness campaigns can help educate government officials on how digital financial systems enhance efficiency, transparency, and accountability.

As stakeholders gain awareness, the interest stage focuses on encouraging them to seriously consider adopting these innovations. Pilot projects, case studies, and success stories from early adopters can help demonstrate the viability and advantages of digital financial tools. Presenting evidence of cost savings, improved accuracy, and time efficiency helps to build interest among public sector entities and motivates them to explore digital financial solutions further (Kamal et al, 2011).

In the evaluation stage, stakeholders assess the potential risks and benefits of implementing digital financial solutions (Troshani and Doolin, 2007). Factors such as cost, system compatibility, security, and ease of integration all play a role in this decision-making process. Comparative analyses, examples of successful implementations in similar contexts, and expert consultations can help decision-makers evaluate whether these technologies suit their organizational needs (Sarkis and Sundarraj, 2006).

Once the decision is made to proceed, stakeholders enter the trial stage, where pilot projects or phased implementations of digital financial solutions are introduced. During this stage, feedback mechanisms, training programs, and ongoing support are critical to overcoming challenges and refining processes. This ensures the successful integration of digital financial tools into existing workflows (Papazafeiropoulou, 2002).

Finally, in the adoption stage, digital financial solutions are fully accepted and integrated within the public sector. Successful trials, positive feedback, and visible improvements in financial operations reinforce the decision to embrace digital technologies. Those who were initially hesitant become advocates for these systems, contributing to the broader diffusion of digital financial solutions across the public sector (Papazafeiropoulou, 2002).

In conclusion, applying the principles of the Diffusion of Innovation Theory to financial digitalization in Ghana's public sector offers a systematic approach to introducing, persuading, evaluating, undertaking trials, and adopting digital financial solutions. By understanding the different stages of innovation diffusion and tailoring strategies to meet the diverse needs of stakeholders, Ghana can accelerate the shift toward a more digitally inclusive and efficient governance system. Collaborative efforts, continuous engagement, and capacity-building initiatives are essential for driving sustainable change and maximizing the benefits of financial digitalization in the public sector.

IMPLEMENTATION OF DIGITALIZATION IN GHANA

Ghana's journey toward digital governance began in 2005, and since then, the country has emerged as one of the fastest-growing internet and telecommunications markets in Africa. As highlighted by Demuyakor (2020) and Agboh (2018), the government has launched several digital governance initiatives, including vehicle registration systems and the e-government interoperability framework (e-GIF). One of the most recent digital governance strategies introduced by the Ghanaian government is the Information and Communication Technology for Accelerated Development (ICT4AD) Policy 2017.

The national digital strategy aims to identify digital opportunities and outline strategies for enabling Ghana to become a digital governance hub in Sub-Saharan Africa by 2023, focusing on ICT-driven innovation (Demuyakor, 2020; World Bank Group, 2016). In 2017, Ghana took significant steps toward these objectives by implementing various digital governance policies. These included the rollout of the

national digital identification card, the e-justice system, the e-smart driver's license, the e-property addressing system, the mobile money interoperability system, the paperless port system, Ghana Post GPS, the electronic renewal of the National Health Insurance Scheme (NHIS), the e-Immigration system, and e-Cabinet platforms (Demuyakor, 2020; Kyereme & Kaur, 2019).

According to the United Nations E-Government Survey (2018), Ghana stands out as one of the African nations with the most extensive public e-services. The survey, which developed the Electronic Governance Development Index (EGDI), placed Ghana 101st out of 193 countries. The ranking reflected the country's performance in areas such as the Human Capital Index (HCI), telecommunications infrastructure, and internet access. However, as noted by Solomon and van Klyton (2020) and Ashmarina, Mesquita, and Vochozka (2020), the survey had limitations. It primarily assessed existing systems rather than future plans or potential for digital governance development. Therefore, the report failed to offer concrete recommendations for emerging economies, including Ghana, on how to advance their digital governance (Ashmarina et al., 2020; Solomon & van Klyton, 2020).

Nevertheless, Ghana has made impressive strides in digital governance, with the UN's Electronic Governance Development Index (EGDI) showing clear signs of progress between 2016 and 2018. The country moved up from 120th place in 2016 to 101st in 2018, with a marked improvement in its Online Service Index (Alhassan, 2020). Internet accessibility and penetration in Ghana also improved significantly during this period, with 10.1 million internet users by 2019, representing a penetration rate of 33.6 percent (Internet World Statistics, 2019). From 2014 to 2018, Ghana's EGDI score increased from 0.374 to 0.539, demonstrating the government's commitment to enhancing e-governance through the Ministry of Communication (Agboh, 2018; Mensah, 2016).

Ghana's Telecommunications Infrastructure Index, although still slightly below the global average at 0.26, has also shown improvement, rising from 0.21 in 2016. While the current index level limits the full implementation of digital governance initiatives and public engagement with e-services, the country has made substantial progress. Ghana was one of the first African nations to adopt e-procurement and various other digital services. Initiatives like the E-government Interoperability Framework (e-GIF) and e-vehicle registration reflect Ghana's proactive approach to advancing digital governance (Demuyakor, 2021).

THE DIGITAL ECONOMY

Tapscott (1996) refers to the "Digital Economy" as the "Age of Networked Intelligence," emphasizing not just the connectivity of technology and smart devices, but also the networking of people through technology. This combination of intelligence, knowledge, and creativity serves as a driving force for both economic growth and social progress. The digital economy integrates computing and communication technologies via the internet, enabling the widespread exchange of information and technology. This integration propels e-commerce and leads to transformative organizational changes (Lane, 1999).

The digital economy includes goods and services whose development, production, and availability rely heavily on digital technologies (Kling & Lamb, 2000). Although there is no universally agreed-upon definition, the digital economy can be assessed based on factors such as a nation's ICT infrastructure and how effectively consumers, businesses, and governments leverage ICT for their benefit (Economist

Intelligence Unit, 2010). It encompasses a wide array of economic activities, including the use of digitized knowledge and information as core production factors, the operation of modern information networks as key areas of activity, and the strategic application of information and communication technology (ICT) to enhance productivity and optimize economic structures (Zaborovskaia et al., 2020).

Bukht and Heeks (2017) elaborate on the concept by defining the “digital sector” (ICT) as the producer of essential goods and services, while the "digital economy" includes both the digital sector and areas of the economy that are largely digital without analogue counterparts. The “digitalized economy” refers to the use of ICTs in all areas of economic activity. This concept is especially important for emerging economies and the achievement of the Sustainable Development Goals (SDGs), as the benefits of digital technologies stem largely from their widespread adoption across both digital and analogue sectors (Hanna, 2016; World Bank, 2016).

The digital economy presents significant opportunities for African countries but also carries the risk of leaving some behind. For digital integration to have the transformative impact needed to enhance economic potential and shared prosperity, it must be paired with advancements in technology literacy, the inclusion of digital identity frameworks, access to electronic payments and other financial services, and support for young enterprises and established businesses (Sabbagh et al., 2013). With these capabilities, African economies can leverage digital data and new technologies to create content, connect citizens to markets and government services, and develop new, resilient business models (World Bank, 2018).

However, many residents in Africa lack digital identities or transaction accounts, limiting their access to essential public services, financial inclusion, and markets. Digital entrepreneurs face challenges in raising capital, while traditional businesses are slow to adopt digital technology to boost efficiency and sales. There is also a shortage of skilled professionals, and limited digital literacy prevents consumers from using digital products and services. Furthermore, insufficient regulatory and policy frameworks, including those governing cybersecurity, data protection, and competition, hinder the growth of Africa's digital economy (Cirera et al., 2019).

The rise of digital economies also introduces new risks, such as increased exposure to cyber-attacks and personal data misuse, which require protections to ensure job market stability. One concern is the potential for significant job losses due to automation and other digital technologies. However, technological advancement has not resulted in widespread unemployment, as global employment continues to grow alongside the labour force (ILO, 2018). Technological progress may disrupt some jobs, but it also fosters "creative destruction," where the loss of certain jobs leads to the creation of new ones. To protect job markets, African economies must proactively invest in digital skills and processes, ensuring that these capabilities are linked to productive employment, which will enhance their competitiveness in the global market (Falk et al., 2018).

Moreover, digital economic growth is not a one-size-fits-all solution and must be approached with careful prioritization and sequencing, especially when dealing with public sector issues. For instance, improving the delivery of public services may require first building the necessary government systems (BoG, 2017). As part of a broader development strategy, specific investments and reforms may need to be prioritized. Redirecting government payments, remittances, SME payments, and agricultural value-chain payments into digital accounts could facilitate wider

participation in the digital economy. Digital financial services could significantly benefit lower-income populations, women, and agricultural households' groups often underserved by traditional financial services (McKinsey, 2014).

The digital economy has the potential to boost productivity and profitability in various ways. In many cases, the marginal cost of producing an additional product or service can become negligible, changing how economies of scale are realized, particularly in the online delivery of services (Li and Wu, 2023). In a competitive market, the digital economy can better match buyers and sellers, addressing information asymmetry and principal-agent problems, where middlemen have traditionally played a significant role. Additionally, digital technologies such as blockchain can offer decentralized forms of trust, which is valuable in environments where centralized authorities are distrusted. Digitalization also allows for more precise targeting of products and services, enhancing inclusion while potentially excluding certain groups (World Bank, 2018).

In conclusion, while the digital economy offers significant potential for growth and development, particularly in Africa, it also poses challenges that require proactive policy and regulatory responses. Addressing issues like digital literacy, access to digital services, regulatory frameworks, and job market protection will be essential to fully realize the transformative power of digitalization (Cirera et al., 2019).

IMPACT OF FINANCIAL DIGITALIZATION ON GHANA'S PUBLIC SECTOR

The digital economy has spurred innovation in the public sector delivery, leading to the development of new products and processes. All twenty-three (23) of the country's banks now offer at least one digital product, accessible via the internet or mobile devices. Similarly, other financial institutions, including Microfinance Institutions (MFIs), rural banks, mortgage firms, and savings and loans companies, have adopted internet-based processes and products (Boakye et al, 2022). These innovations include both processes like ATMs, online and mobile banking, and electronic payments, as well as products like credit and debit cards, e-wallets, and mobile money services. One unique offering is the Diaspora Current Account, designed for Ghanaians living abroad, which is available through several financial institutions. These customers can access a range of financial services, including savings and current accounts, foreign exchange accounts, money market investments, and e-banking services through Non-Resident Ghanaian Account services (Agyapong, 2021).

The adoption of personalized service delivery mechanisms such as email and mobile banking has also led to significant marketing developments in the sector. These innovations were expected to improve banking processes, encouraging customers to perform more transactions online, reducing the need for in-branch activity. However, many financial transactions are still carried out manually within banking halls, and one factor contributing to this slow digital adoption is the limited digital literacy among a large portion of the population (Agyapong, 2021).

The rise of the digital economy has exposed financial institutions to competition from both local and international service providers. Digital banking, for instance, allows for cross-border transactions, including savings and checking account services. Although precise data is not readily available, public discussions and media reports suggest that an increasing number of Ghanaians are engaging in digital financial activities, such as trading in cryptocurrencies like bitcoin (Agyapong, 2021).

Additionally, global platforms like American Express, PayPal, Visa, MasterCard, Discover, and expressPay are increasingly being used, further intensifying competition. International financial institutions that offer these services are entering the market with relative ease, as digital technologies allow them to overcome traditional physical barriers (Bank of Ghana, 2019).

As a result, competition within the financial sector is becoming more intense. On the positive side, this competition offers consumers more choices and improved customer service. On the downside, domestic banks, particularly those with limited resources, may struggle to invest in the necessary technology to offer competitive digital financial services (Ministry of Finance, 2018).

D. CONCLUSION

The application of Innovation Diffusion Theory to the digitalization of financial services in Ghana's public sector has provided a structured framework for understanding and promoting the adoption of digital financial solutions. By identifying different adopter categories and tailoring strategies to engage each group, Ghana has made its transition to a digitally inclusive governance system more systematic and effective. The progression through stages of awareness, interest, evaluation, trial, and adoption has guided stakeholders in the public sector towards embracing digital financial technologies. This diffusion of digital innovations has significantly improved governance processes by enhancing efficiency, transparency, and accountability. Initiatives such as the e-government interoperability framework, digital vehicle registration systems, and various e-services reflect Ghana's commitment to digital governance and its position as a digital governance hub in Sub-Saharan Africa.

The digital economy in Ghana has revolutionized financial service delivery within the public sector, driving innovation and increasing competition in the financial sector. Technologies such as mobile banking and electronic payment systems have transformed traditional banking practices, offering consumers more options and improved service quality. However, challenges such as low levels of digital literacy, competition from international providers, and the need for sustained investment in technology remain significant barriers. Overcoming these challenges is essential for Ghana to fully harness the transformative potential of its digital economy and achieve long-term growth and inclusivity in its financial and governance systems.

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