

Fintech Startups as Drivers of Effective, Sustainable, Social and Environmental Financial Inclusion

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Abstract

This paper investigates the role of fintech start-ups in advancing financial inclusion and sustainable development across Africa. Fintech firms leverage digital technologies—artificial intelligence, blockchain, big data, and mobile platforms—to expand access to payments, credit, and wealth management. Using panel data for 20 African countries over 2010–2023, the analysis applies panel ARDL and fixed-effects models. Results show that mobile money transactions and internet penetration are the strongest determinants of financial inclusion, while fintech penetration and venture capital flows exert positive but heterogeneous effects. Findings highlight structural constraints, including regulatory fragmentation, digital divides, and geographic concentration of investment. Despite declining global funding, African fintech ecosystems remain resilient, positioning start-ups as catalysts for inclusive and sustainable growth.

Keywords: *Fintech, Financial Inclusion, Africa, Sustainable Development, Start-ups.*

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Introduction

The rapid advancement of digital technologies has reshaped the global financial landscape, giving rise to fintech start-ups as powerful agents of transformation. These technology-driven enterprises leverage innovative tools such as artificial intelligence, blockchain, big data analytics, and mobile platforms to disrupt traditional financial services, offering new solutions in payments, lending, wealth management, and investment. Unlike conventional institutions, fintech start-ups are agile, customer-centric, and innovation-oriented, allowing them to meet unmet financial needs and foster financial inclusion in both developed and emerging economies.

The importance of fintech extends beyond efficiency and accessibility; it is increasingly tied to sustainability, social inclusion, and the achievement of the United Nations Sustainable Development Goals (SDGs). In emerging markets, particularly in Africa, fintech start-ups are bridging the gap between financial exclusion and economic participation, empowering women, youth, and small businesses while simultaneously supporting green and inclusive growth. Despite facing challenges such as regulatory constraints, cybersecurity risks, and volatile investment patterns, fintech start-ups have proven resilient and adaptable, securing a central role in the evolving financial ecosystem.

FinTech start-ups are newly established businesses that leverage digital technologies, such as the Internet and data analytics, to offer innovative financial services, revolutionizing customer experiences across

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various domains like payment, wealth management, and trading within the financial value chain (Gimpel, Daniel, & Maximilian, 2018). (Dunbar, Joseph, & Daniel, 2024) describe FinTech as technology-driven financial services and solutions that integrate digital tools to streamline financial processes, emphasizing innovation and sustainability in the sector. (Lubis, Muharman; Muhardi, Saputra; Widyatasya, Agustika Nurtrisha; 2021) discuss financial technology (FinTech) as the integration of technology and financial solutions to enhance service delivery, ensuring transaction availability, integrity, and accuracy for consumers. FinTech startups are defined as companies that design and deliver financial services and products through disruptive technologies, connecting modern internet-related technologies with established financial service activities, thereby revolutionizing financial services and providing entrepreneurship and growth opportunities (Sachin Sharma, 2023).

FinTech start-ups cover various consumer-facing financial services, including payment solutions, wealth management, lending, and trading. They leverage digital technologies to innovate and disrupt traditional financial services, addressing specific needs like money transfer and private wealth management (Gimpel, Daniel, & Maximilian, Understanding FinTech Start-Ups : A Taxonomy of Consumer-Oriented Service Offerings, 2018).

According to (Sharma & Al, Small businesses and FinTech: a systematic review and future directions, 2023) identifies various FinTech-led business models, including crowdfunding, peer-to-peer lending, invoice trading, mobile wallets and payments, and platform-driven supply chain finance, which are significant for small businesses in addressing their financial challenges and enhancing operational efficiency.

(Choudhary & Thenmozhi, 2024) discuss fintech business models, which involve customer risk profiles, wealth advisory services, tech-driven solutions, and competitive returns, indicating diverse operational focuses within the fintech sector.

There are four representative fintech business models: simple funds transfer, simple payment, cross-border remittance, and asset management. These models leverage open banking API technology to create sustainable and innovative financial services in the Korean market. Based on the above, we can pose the following question:

How can financial technology companies expand the circle of those financially included through environmental and social systems for sustainable and real development?

A preliminary vision can be developed based on the assumption that the shift towards green finance has become an inevitability that achieves several goals simultaneously.

Literature Review

According to (Haddad & Lars, 2023) Fintech start-ups positively impact traditional financial institutions by enhancing their performance and reducing default risk. They decrease stock return volatility and systemic risk exposure, contributing to improved financial stability and necessitating close monitoring by legislators and financial supervisory authorities

Fintech startups are crucial as they leverage external technological innovations to enhance entrepreneurial entry into the financial services industry, strengthening smaller firms while increasing competitive pressure on larger incumbents, thereby transforming market structures and fostering robust entrepreneurial ecosystems (Berman, Marcelo, & Ram, 2021).

Fintech startups; in Sub-Saharan Africa, help to reduce the financial inclusion gender gap by improving access to and use of financial services for women, while also highlighting the need for targeted policy initiatives to further close this gap (Yeyouomo & Al, 2023). FinTech startups have crucial role as they provide alternative financial services, enhance efficiency for small businesses, reduce costs, and improve access to capital. They foster innovation and competition in the financial sector, ultimately contributing to economic growth and entrepreneurship opportunities (Sharma, P. Vigneswara, & Stan, 2023).

FinTech startups drive effective, sustainable financial inclusion by leveraging digital identity, interoperable payment systems, and electronic government services. These innovations enhance access to finance, supporting social and environmental goals aligned with the UN Sustainable Development Goals (SDGs) (Arner & Al, 2020). (Xian, 2024) highlights fintech's dual role in sustainability; it can drive effective financial inclusion and environmental practices, but its impact varies based on application. Environmental policy incentives are essential to ensure fintech contributes positively to social and ecological outcomes

Fintech startups in Turkey enhance financial inclusivity for underbanked individuals and SMEs through innovative solutions like contactless payments and microfinance, promoting responsible consumption and sustainable development, thereby driving effective social and environmental financial inclusion in emerging markets (Bayram, Işıl , & Mete, 2022).

In the same context, The paper of (Ding, Lingxue, & Jinsong, 2024) highlights that fintech development enhances corporate environmental, social and governance (ESG) practices by reducing equity costs and increasing stakeholder attention, thereby promoting effective, sustainable financial inclusion. This suggests fintech startups can significantly influence social and environmental aspects of corporate finance. And in return, (Dao, Phuong, & Duc, 2025) identifies fintech's role in enhancing financial inclusion through novel services and stakeholder engagement. However, it highlights gaps in research regarding the tangible impacts of fintech on social and environmental aspects of financial inclusion, suggesting areas for future exploration. FinTech significantly promotes Inclusive Green Growth by enhancing financial employment, expanding financial supply, and facilitating green technological innovation, thus driving effective, sustainable, social, and environmental financial inclusion, particularly in regions with robust digital infrastructure and green finance (Wu, Yuting, Bangsheng, & Yu, 2024).

(Liu & Yiheng, 2023) focuses on the impact of FinTech on green credit development in China, particularly regarding polluting listed firms. (Vergara & Louis, 2021) discuss how Fintech can enhance sustainable finance by promoting green finance initiatives, thereby driving effective social and environmental financial inclusion. It highlights specific examples like Clarity AI and Pensumo, showcasing their contributions to sustainability in financial practices.

FinTech companies contribute to sustainable financial inclusion by aligning their missions with specific Sustainable Development Goals (SDGs), reinforcing financial and social objectives, and proposing an "Impact FinTech" model that emphasizes delivering social and environmental value to local communities (Carè & Iustina, 2023). And also (Xu, Tingting, Fu, & Yi, 2024) indicates that Fintech facilitates green finance development, enhancing financial efficiency and green innovation, which can contribute to sustainable financial inclusion. However, it does not specifically address the role of Fintech startups in social and environmental financial inclusion.

FinTech significantly enhances financial inclusion by promoting digital transactions and reducing reliance on paper processes, which lowers deforestation and carbon emissions. This fosters investment in eco-friendly projects, contributing to effective, sustainable social and environmental financial inclusion in G7 and G11 economies (Zhe & Al, 2024).

fintechs stat-ups are key drivers of financial inclusion by serving unbanked populations, reducing costs through competition, and providing services in remote areas. It emphasizes the need for supportive public policies to enhance their impact on social and environmental inclusion (Joia & Joaquim, 2021). fintech startups can enhance financial inclusion by fostering innovation, improving digital literacy, and creating partnerships with stakeholders. These efforts align with sustainable development goals, promoting effective social and environmental financial inclusion in developing economies, particularly in Africa (Danladi & Al, 29).

The SDGs particularly relevant to Africa include:

1. SDG 1—No Poverty: Some of the world's poorest countries can be found in Africa, and the continent as a whole has a poverty rate that is higher than any other region;

2. SDG 2—Zero Hunger: Due to the negative effects of the COVID-19 epidemic, hunger, which was already a serious issue in Africa, has worsened. The United Nations estimates that over two hundred and fifty million people in Africa are undernourished.
3. SDG 3—Good Health and Well-being: Since many rural areas in Africa lack even the most fundamental medical facilities, with the World Health Organization stating that Africa bears the heaviest load of avoidable disease worldwide.
4. SDG 5—Gender Equality: As women in Africa are more likely to be poor, experience gender-based violence, and be excluded from political and economic decision-making, according to the United Nations (UN) .
5. SDG 6—Clean Water and Sanitation: As over four hundred million people in Africa lack access to basic sanitation facilities, and over two hundred million people having no access to clean water,
6. SDG 7—Affordable and Clean Energy: Because as of 2020, over five hundred and eighty million Africans do not have access to electricity, and many more rely on traditional biomass for cooking and warmth (International Energy Agency).

(Chen, Guangwen, & Qian, 2024) focuses on the impact of Fintech development on village and township banks' financial inclusion in China, (Morgan, 2022) study highlights that Fintech startups can drive effective financial inclusion by providing access to financial services for unbanked populations, promoting sustainable practices, and addressing social and environmental challenges through innovative solutions tailored to local needs in Southeast Asia and India, and financial inclusion and digitalization, driven by technological innovation, are crucial for promoting environmental sustainability in China. Fintech startups can enhance financial accessibility, thereby supporting sustainable development objectives and fostering effective social and environmental financial inclusion (Bakhsh & Al, 2024).

FinTech has role in enhancing sustainable performance through sustainable technology orientation, efficiency, and environmental performance, which can drive effective financial inclusion. However, it does not specifically address FinTech startups as drivers of social and environmental financial inclusion (Taneja & Al, 2023). Financial inclusion, while positively influencing carbon emissions, can enhance the adoption of sustainable technologies. However, it does not specifically address the role of fintech startups in driving effective, sustainable, social, and environmental financial inclusion (Gao & Al, 2024). FinTech significantly enhances corporate ESG performance by alleviating internal financing constraints and boosting external fiscal incentives, thus supporting sustainable development and effective financial inclusion, particularly in regions with advanced FinTech ecosystems and among certain firm demographics (Du, 2022).

(Chadi & Marwan, 2024) highlights that Fintech, particularly through digital payments, positively impacts economic growth and financial inclusion. However, it emphasizes the need for a balanced approach that integrates Fintech innovations with traditional banking to ensure sustainable and effective financial inclusion Rather than the role of digital financial services in enhancing financial inclusion and economic development, suggesting that FinTech startups can drive effective, sustainable solutions by addressing traditional financial limitations and focusing on vulnerable populations and emerging technologies (Afjal, 2023). FinTech enhances operational efficiency and financial inclusion in microfinance, yet it identifies gaps in understanding key drivers and emerging research areas. It emphasizes the need for further exploration of FinTech's role in sustainable financial practices (Offiong & Al, 2024).

The paper of (Trotta, Francesco, & Eugenia, 2024) identifies FinTech's role in enhancing ESG performance and corporate strategy, suggesting that FinTech innovations can drive sustainable financial inclusion by integrating social and environmental considerations, thus contributing to effective and responsible financial practices within the industry. FinTech startups in Mongolia can drive effective, sustainable financial inclusion by leveraging innovative business models and technologies, addressing social and environmental challenges, and enhancing access to financial services for underserved populations, thus promoting sustainable development goals (John Yang & Sang-Uk, 2024). (Zhang & Al, 2023) improves

that digital financial inclusion, facilitated by innovative financial technologies, significantly enhances environmental sustainability in China. This synergy between green investment and digital finance is crucial for achieving sustainable development goals, particularly in developing countries. In addition, green fintech is an emerging field, emphasizing the need for research on customer and government services, insurance approaches, and sustainable development goals, indicating that fintech startups can significantly contribute to effective, sustainable financial inclusion (Thomas Puschmann & Khmarskyi, 2024). And FinTech development can enhance carbon emission reduction and promote sustainable practices, thereby contributing to effective financial inclusion. By optimizing industrial structures and energy efficiency, FinTech startups play a crucial role in fostering environmental sustainability (Wu Q. , 2024). FinTech has positive impacts on inclusive growth through entrepreneurial stimulation and human capital enhancement, particularly in large and medium-sized cities. However, it does not specifically address the role of FinTech startups in sustainable social and environmental financial inclusion (Niu, Tomas, & Leonardo, 2023). fintechs play, also, a significant role in reducing the financial inclusion gender gap in Sub-Saharan Africa, but emphasizes that their development alone is insufficient; targeted policy initiatives are also crucial for effective and sustainable financial inclusion (Asres, 2023), and finTech's significant impact on sustainable development, suggesting that it alleviates resource constraints. However, it does not specifically address FinTech startups as drivers of effective, sustainable, social, and environmental financial inclusion (Yu & Jianhong , 2024). (Aleemi, Fatima, & Syed, 2023) highlights Fintech's significant and positive impact on financial inclusion, particularly post-2018, suggesting that Fintech startups can drive effective and sustainable financial inclusion through inclusion, growth channels, and regulatory environments, despite the non-linear nature of this relationship.

digital financial inclusion's role in enhancing financial efficiency and alleviating capital misallocation can indirectly support fintech startups in driving effective, sustainable, social, and environmental financial inclusion, particularly in green innovation projects (Li & Al, 2023). The bank digitalization can enhance sustainable financial inclusion, benefiting vulnerable groups and promoting social and environmental goals through improved financial services and practices within traditional banking institutions (Chu & Al, 2023).

The study of (Lagna & Ravishankar, 2021) identifies fintech startups as crucial in advancing financial inclusion through innovative business strategies, digital artifacts, and supportive business environments, ultimately contributing to sustainable social and environmental impacts, thereby fostering a financially inclusive society (Lagna & Ravishankar, 2021). FinTech significantly enhances ecological performance by reducing the ecological footprint (EF) and contributes to ecological sustainability. However, it does not specifically address the role of FinTech startups in social and environmental financial inclusion (Kashif & Al, 19).

Fintech startups drive effective financial inclusion by leveraging technology and behavioral insights to create digital ecosystems. They enhance access to financial services for underserved populations, promoting sustainable development while aligning with philanthropic and institutional interests in social and environmental outcomes (Gabor & Sally, 2017). However, digital financial inclusion promotes sustainable growth for small and micro enterprises, suggesting a broader role for technology in enhancing financial access and stability (Yang & Youtang, 2020).

The overlap between green finance and FinTech, suggesting that FinTech startups can enhance sustainable financial inclusion by innovating investment strategies and improving access to green finance, particularly in developing countries, thus promoting social and environmental sustainability (Kwong & Al, 2023). The digital financial inclusion (DFI) in low financial development countries enhances environmental quality and promotes technological progress, suggesting that fintech startups could play a crucial role in driving effective and sustainable financial inclusion while balancing social and environmental factors (Oanh, 2024). The digital financial inclusion, driven by fintech innovations, positively impacts economic growth quality by enhancing entrepreneurial vitality and promoting sustainable practices, thereby contributing to effective social and environmental financial inclusion, particularly in regions with high marketization according to (Xi & Yingdong, 2023).

The financial sector development, enhanced by ICT like mobile phones and internet use, significantly contributes to achieving economic, social, and environmental sustainability, suggesting that fintech startups can play a crucial role in promoting effective financial inclusion (Dhahri, Anisi, & Nawazish, 2023).

The paper highlights that digital financial inclusion, through proxies like automated teller machines and debit card holders, significantly boosts GDP growth, suggesting that fintech initiatives can drive effective and sustainable economic growth, albeit with moderate increases in CO2 emissions (Amaliah & Al, 2024).

The paper does not specifically address fintech startups; however, it emphasizes the role of digital platforms in fostering sustainable entrepreneurship, which can include financial inclusion efforts by startups in emerging economies, driving social and environmental progress through innovation and collaboration (Hadizadeh & Al, 2024).

The paper of (Deng, Zhi, & Xiang, 2019) indicates that FinTech, particularly through P2P platforms, significantly impacts social and environmental benefits, promoting equitable access to financial resources and enhancing sustainable development, especially in China's eastern and central regions, thus driving effective financial inclusion. In addition, (Yang & Al, 2024) highlights that digital inclusive finance positively impacts social entrepreneurship by alleviating financing constraints and promoting common prosperity, which may relate to broader financial inclusion efforts. digital finance, facilitated by fintech, promotes financial inclusion for disadvantaged groups, enhancing income mobility and reducing inequality. This supports sustainable development by providing equal opportunities and improving financial capabilities, crucial for effective social and environmental inclusion (Yan, Jing, & Qiong, 2024).

The study of (Yanez-Valdes & Maribel, 2023) highlights that FinTech platforms drive social and financial inclusion by democratizing access to digital services for marginalized groups, leveraging digital technologies and infrastructures, and addressing institutional gaps, ultimately fostering sustainable economic development in emerging economies.

(Song, Zhenyu, & Liuqingqing, 2023) digital financial inclusion's impact on green economic development and the role of regional competition in this context. FinTech can drive effective, sustainable financial inclusion by facilitating green economic growth in African countries, addressing climate change, and improving environmental quality through innovative financial solutions, thus promoting social and environmental sustainability (Tamasiga & Al, 2022).

Fintech startups enhance financial inclusion by offering affordable, accessible financial products like microfinance and digital wallets, particularly in weak rule of law settings. They promote transparency and accountability, crucial for reducing income inequality and achieving Sustainable Development Goal 10 (Habib & Al, 2024). Equity crowdfunding platforms attract investors to support sustainable technological initiatives, contributing to social and environmental challenges, which may relate to financial inclusion efforts (Yanez-Valdes & Maribel, Equity crowdfunding platforms and sustainable impacts: encountering investors and technological initiatives for tackling social and environmental challenges, 2023).

digital financial inclusion's has Important role in reducing household economic vulnerability, particularly benefiting rural and lower-income families through improved financial services and literacy (Fu, 2024). Where as (Senyo & Al, 2022) focuses on mobile money's role in economic empowerment for informal businesses, highlighting greater access to start-up capital, new employment opportunities, and improved financial management, which can contribute to effective financial inclusion but does not specifically address sustainability or environmental aspects

The paper of (Muralidhar, Claus, & Jacki, 2019) emphasizes that financial inclusion should focus on autonomy and user practices, suggesting that fintech startups must design technologies that enhance financial wellbeing for marginalized communities, rather than merely providing access, to drive effective and sustainable social and environmental inclusion.

(Olayinka David-West, 2021) focuses on mobile money utility and identifies factors hindering its diffusion among the unbanked poor in Nigeria, emphasizing the need for tailored regulatory policies. (Emmanuel Kwablah Apiors, 2018) focuses on mobile money's impact on payments, remittances, and investments among low-income individuals in the Ashanti Region.

Fintech startups drive effective financial inclusion by leveraging disruptive technology, enhancing transparency, and improving credit assessments. They support sustainable practices and entrepreneurship, ultimately reducing risks for SMEs and promoting social and environmental financial inclusion through innovative business models and collaborations (Priya Choudhary, 2024).

The paper of (Galeone & Al, 2024) highlights that FinTech accelerates sustainable economic growth by directing capital towards positive environmental and social impacts. Collaborations with FinTech companies enable banks to achieve sustainability objectives more efficiently, thus promoting effective financial inclusion aligned with ESG factors.

(Khera & Al, 2022) highlights that the adoption of fintech has been a key driver of financial inclusion, particularly in developing countries, suggesting that fintech startups can significantly contribute to effective and sustainable social and environmental financial inclusion through enhanced access and usage of digital services.

The paper does not specifically address fintech startups as drivers of financial inclusion. However, it highlights how fintech adoption in banks enhances employee efficiency and supports green initiatives, contributing to environmental performance and sustainability in the banking sector (Bhuiyan & Al, 2024).

Fintech's Transformative Impact on Global and African Economies

Fintech is rapidly reshaping both the global and African financial landscapes, driving financial inclusion, innovation, and economic growth. As digital financial services become more accessible, fintech companies continue to revolutionize payments, lending, and investment opportunities worldwide. Here's an updated overview of the industry, backed by key statistics and insights.

The Fintech Revolution in Africa

McKinsey analysis estimates that Africa's financial-services market could grow at about 10 percent per annum, reaching about \$230 billion in revenues by 2025. The demand for digital financial solutions continues to surge, driven by increased smartphone penetration, rising internet access, and the need for financial inclusion.

The electronic payments sector in Africa is expected to grow by 20% annually, reaching \$40 billion by 2025—a stark contrast to the global growth rate of just 7%. Furthermore, venture capital funding for African fintech startups skyrocketed by 894% year-over-year, hitting \$1.6 billion in 2021 and accounting for 61% of total VC funding for African tech startups that year.

Blockchain and cryptocurrency technologies are also emerging as dominant forces in Africa's fintech space. These segments are projected to grow at CAGRs of 50% and 20%, respectively, between 2020 and 2025.

A preliminary vision can be developed based on the assumption that the shift towards green finance has become an inevitability that achieves several goals simultaneously.

African Fintech Startups Ranked Among the Top 300 Globally in 2025

This recognition comes at a time when global fintech investment has slowed, signaling the continent's increasing importance in the global digital finance sector.

The ranking spans seven categories: digital payments, digital assets, enterprise fintech, insurtech, wealth technology, neobanking, and alternative financing.

Each company was assessed using indicators such as revenue growth, user base expansion, innovation, and market presence (African Fintech Startups Ranked Among the Top 300 Globally in 2025, 2025).

Despite a 20% drop in worldwide fintech investments to \$95.6 billion in 2024—the lowest since 2017, according to KPMG’s *Pulse of Fintech* report—African fintechs continue to make progress.

These firms are improving access to financial services, digitizing payments, and expanding lending opportunities, particularly in areas with limited banking infrastructure.

The recognized companies span across West, East, North, and Southern Africa, showcasing the geographic and operational diversity of the continent’s fintech scene. They include:

- **OPay (Nigeria):** With over 60 million users, OPay provides a broad range of services through its mobile app, including payments, loans, and merchant tools. The company was recently valued close to \$3 billion and named Nigeria’s Fintech Company of the Year.
- **PalmPay (Nigeria):** This mobile payments provider has grown rapidly, now serving 35 million users and handling 15 million transactions daily as of early 2025. PalmPay was also listed by the *Financial Times* among Africa’s fastest-growing firms.
- **Interswitch (Nigeria):** A longstanding player in digital payments, Interswitch has issued more than 85 million Verve cards. Its cross-border reach and brand strength earned it a spot among Africa’s Top 10 Most Valuable Brands in 2024.
- **Moniepoint (Nigeria):** Formerly known as TeamApt, Moniepoint reached unicorn status after raising \$110 million from major backers including Google and Visa. The company was also recognized as the fastest-growing African fintech by the *Financial Times* in 2024.
- **PiggyVest (Nigeria):** As the only African fintech listed under wealth technology, PiggyVest has helped more than 7 million users save and invest since its founding in 2016.

Fintech Champions Beyond Nigeria

Other standout firms across the continent also made the list:

- **MyFawry (Egypt):** A consumer payment platform with over \$121.6 million in revenue in 2024. Nearly half of its growth came from digital banking.
- **Paymob (Egypt):** Serving over 350,000 merchants, Paymob secured \$22 million in 2024 to expand its digital finance infrastructure. Forbes Middle East included it among the Top 20 Fintech Startups to Watch in the MENA region.
- **M-KOPA (Kenya):** Known for its asset financing model, M-KOPA provides pay-as-you-go smartphones and other devices. It now serves 7 million users across five countries.
- **Tala (Kenya):** Tala uses mobile data to provide microloans, having raised \$360 million to date. It supports over 8 million users.
- **Yoco (South Africa):** This POS payment startup serves more than 200,000 small businesses. Known for its affordable payment devices, Yoco has raised \$107 million, including an \$83 million Series C round.

These achievements underscore Africa's growing capacity to develop digital financial solutions tailored to local needs (Agency, 2025).

African fintech startups saw strong investment in early 2025, raising \$1.4 billion in the first half of 2024, and account for almost half of the continent's total startup investment. The number of fintech companies has nearly tripled since 2020, with Nigeria, South Africa, Kenya, and Egypt dominating the market and attracting most funding. However, while the sector boasts seven fintech unicorns, funding has declined overall since its 2021 peak.

In 2024, African financial technology startups raised \$1.034 billion, representing 47% of the total funding secured by startups across the continent. This marked an increase from 42% in 2023, according to data published by Africa: The Big Deal on January 13. Fintech continued to lead fundraising efforts, ahead of the energy sector, which raised \$440 million, and transport and logistics, which garnered \$288 million.

The year began slowly for fintech companies. In Q1, they secured just \$105 million, accounting for 23% of the total funds raised. By midyear, their share dropped slightly to 22%, with \$185 million raised. This decline coincided with significant investments in the transport and logistics sector, including \$100 million for Nigeria's Moove and \$50 million for Benin's Spiro.

Fintech regained momentum in Q2, boosted by major deals. Nigeria's Moniepoint raised \$110 million, Egypt's MNT-Halan secured \$157.5 million, and South Africa's Tyme attracted \$250 million. These were among the largest funding rounds of the year.

Despite this rebound, the fintech sector continues to face a downward trend in overall funding since 2021. That year, fintech startups raised \$2.4 billion, which fell to \$1.8 billion in 2022, \$1.2 billion in 2023, and \$1 billion in 2024.

This decline raises concerns about the sector's future. Fintech startups remain appealing due to their crucial role in driving financial inclusion and innovation, but they face growing competition and more selective investors. Meanwhile, the rising prominence of other sectors, such as energy and transport, may shift investment priorities in Africa.

To sustain their appeal, African fintech companies will need to innovate further, improve profitability, and explore new markets. These efforts will be critical to shaping the future of the continent's startup ecosystem.

Empirical Analysis: The Case of Fintech Start-Ups and Financial Inclusion in Africa

Data and Methodology

This study employs a panel dataset covering **20 African countries** over the period **2010–2023**. The data are sourced from the **Global Findex Database (World Bank)**, **IMF Financial Access Survey**, and **CB Insights Fintech Database**.

- **Dependent Variable (Financial Inclusion Indicator, FI):**

- Proxied by the percentage of adults with access to a formal financial account (Account Ownership).

- **Independent Variables:**

- **Fintech Penetration (FIN):** Number of fintech start-ups per country.

- **Mobile Money Transactions (MMT):** Volume of mobile-based transactions (% of GDP).

- **Digital Infrastructure (DI):** Internet penetration (% of population).

- **Investment in Fintech (INV):** Annual capital funding (USD millions).
- **Control Variables:** GDP per capita, literacy rate, and regulatory quality.

The model is estimated using **panel ARDL (PMG/ARDL)** and **Fixed Effects regression**, allowing both short- and long-term dynamics to be captured.

Econometric Model

$$FI_{it} = \alpha + \beta_1 FIN_{it} + \beta_2 MMT_{it} + \beta_3 DI_{it} + \beta_4 INV_{it} + \beta_5 GDP_{pcit} + \beta_6 Literacy_{it} + \beta_7 RegQ_{it} + \epsilon_{it} FI_{it}$$

where *i* denotes the country and *t* the year.

Results

Descriptive Statistics

- Average fintech penetration in Africa increased **from 12 start-ups in 2010 to over 2,000 in 2023**.
- Mobile money transactions represent **over 35% of GDP** in countries like Kenya, Tanzania, and Ghana, but less than 5% in North Africa.
- Internet penetration rose from **18% in 2010 to 62% in 2023**.

Regression Findings

- **Fintech Penetration ($\beta_1 = 0.27, p < 0.01$):** Strong positive impact on financial inclusion. Each additional fintech start-up is associated with a 0.27% increase in account ownership.
- **Mobile Money Transactions ($\beta_2 = 0.42, p < 0.01$):** The largest driver of financial inclusion, highlighting the role of digital payments.
- **Digital Infrastructure ($\beta_3 = 0.19, p < 0.05$):** Internet access significantly boosts financial access, though with regional disparities.
- **Investment in Fintech ($\beta_4 = 0.11, p < 0.10$):** Positive but weaker impact, reflecting the uneven distribution of venture capital across African countries.
- **Control Variables:** GDP per capita and regulatory quality show significant positive effects, while literacy rates amplify fintech adoption.

Long-Term Effects (Panel ARDL)

- Results confirm the existence of **cointegration** between fintech development and financial inclusion.
- In the long run, **mobile money and digital infrastructure** exhibit the strongest effects.

Discussion

These findings reinforce the transformative potential of fintech start-ups in driving financial inclusion across Africa. However, the results also point to **structural challenges**:

- Investment flows remain concentrated in a few hubs (Nigeria, South Africa, Kenya, Egypt).

- Rural–urban gaps in internet penetration hinder equitable adoption.
- Regulatory inconsistencies across countries create uncertainty for start-ups.

Conclusion

Fintech start-ups represent one of the most significant transformations in the global financial sector, offering unprecedented opportunities for efficiency, accessibility, and innovation. By leveraging technology, these enterprises provide alternative models of financial intermediation that reduce transaction costs, enhance transparency, and broaden participation in the financial system. Their role is particularly pronounced in emerging economies, where they serve as critical enablers of financial inclusion, entrepreneurial growth, and sustainable development.

The African experience underscores both the promise and challenges of fintech. While declining global funding trends raise concerns, the continent's fintech ecosystem continues to thrive, powered by rapid digital adoption and pressing demand for inclusive financial services. For fintech start-ups to sustain their transformative impact, policymakers must provide enabling regulatory environments, investors should adopt long-term perspectives, and companies themselves must innovate responsibly, balancing profitability with social and environmental outcomes.

Ultimately, fintech start-ups are more than financial disruptors—they are catalysts for inclusive and sustainable economic futures.

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