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Fintech and financial inclusion for economic transformation

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***Abstract*---**This study explores the dynamic relationship between fintech, financial inclusion, and economic transformation, emphasizing how digital financial technologies can drive inclusive and sustainable economic growth. Data was obtained from international monetary fund (IMF), and respect of 48 African countries for the study. Using least square regression, and Structural Equation Modeling (SEM), the research analyzes how fintech promotes financial inclusion and, in turn, how both influence key economic indicators such as GDP growth, inflation, interest rates, and foreign investment. The findings show that fintech significantly enhances access to financial services, especially for underserved populations, thereby fostering financial inclusion. Financial inclusion contributes to economic transformation by improving access to credit, encouraging entrepreneurship, and enabling broader participation in formal economic systems. The research recommends policies that promote innovation while ensuring digital literacy, consumer protection, and financial infrastructure development. Future research should explore how fintech affects different demographic groups, including women, youth, and rural communities, to reveal potential disparities in access and benefits. This study contributes meaningful insights for policymakers and development actors aiming to leverage fintech for inclusive and transformative economic development.

***Keywords*---**Fintech, Financial Inclusion, Economic Transformation, Digital Finance, Access to Finance.
Jel Classification: **G21**, **G23**, **O16**, **O33**, **E44**

Introduction

Economic transformation, defined as the structural shift from low-productivity sectors to high-productivity sectors, is a fundamental objective for sustainable

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economic development (Chakrabarti *et al.,* 2025). It entails changes in employment patterns, industrial diversification, technological advancement, and overall economic resilience. A key driver of economic transformation is financial inclusion, which ensures that individuals and businesses especially those in marginalized and underserved communities have access to affordable financial services. In recent years, financial technology (Fintech) has emerged as a transformative force in promoting financial inclusion by providing innovative, technology-driven financial services that reduce costs, improve efficiency, and expand access (DelSarto & Ozili, 2025). Despite the promising role of Fintech in enhancing financial inclusion, its direct impact on economic transformation remains underexplored in the literature, particularly in developing economies where traditional banking services have failed to reach a significant portion of the population.

Economic transformation is essential for long-term and sustainable development, as it fosters higher productivity, innovation, and job creation (Butt, 2024; Bykova *et al.*, 2024). Transitioning from low-productivity sectors such as agriculture to higher-value industries like manufacturing and services, economies can achieve greater economic diversification, reducing dependence on volatile sectors and external shocks. This process enhances income levels, promotes social mobility, and fosters inclusive growth by expanding employment opportunities across various demographics. Furthermore, economic transformation is closely linked to technological advancements and digitalization, which enhance efficiency, encourage entrepreneurship, and attract foreign direct investment (Götz, 2020). Developing nations, in particular, benefit from economic transformation as it enables poverty reduction, infrastructural improvements, and human capital development (Cook, 2006; Ayodeji & Adebayo, 2015; Nwachukwu, 2024). Policymakers prioritize economic transformation as a strategic approach to achieving sustainable development goals, ensuring that economic growth translates into tangible benefits for all societal segments. Therefore, understanding the factors that drive economic transformation, including financial inclusion through Fintech, is critical for shaping policies that support equitable and resilient economic growth.

Empirical evidence suggests that financial inclusion plays a crucial role in economic growth and development. Mbodj and Laye (2025) argue that financial development reduces income inequality and fosters economic growth by providing capital to previously excluded groups. Verma *and* Giri (2024) find that greater financial inclusion is associated with higher GDP growth, particularly in low-income countries. However, these studies primarily focus on traditional banking systems rather than Fintech-driven financial inclusion. Al-Afeef *et al.* (2024) highlight the role of digital financial services such as mobile banking, peer-to-peer lending, and digital payments in expanding financial access. Despite these contributions, there is still a lack of empirical research directly linking Fintech-driven financial inclusion to broader indicators of economic transformation, such as employment shifts, industrial diversification, and macroeconomic stability.

One of the key gaps in the existing literature is the predominant focus on short-term financial access and inclusion metrics rather than a comprehensive examination of how financial inclusion through Fintech fosters long-term

structural economic changes (Alnafrah *et al.*, 2025). While financial inclusion undoubtedly improves individual financial stability and facilitates small-scale entrepreneurship, its broader macroeconomic implications require further investigation (Jin & Liu, 2024). Additionally, many studies overlook the heterogeneity of Fintech adoption across different economic and regulatory environments. For instance, in developing economies, challenges such as inadequate digital infrastructure, limited financial literacy, and regulatory constraints hinder the widespread adoption of Fintech solutions, leading to an uneven distribution of benefits. Mohammady *and* Vepa (2025) emphasizes that while mobile money and digital payments have significantly improved financial inclusion in Africa, disparities remain due to urban-rural divides and gender-based financial access barriers.

Another critical research gap is the absence of comparative cross-country analyses that explore how Fintech-driven financial inclusion affects economic transformation differently across various regions. Most studies focus on individual country case studies or regional analyses, making it difficult to generalize findings across diverse economic and regulatory landscapes. Moreover, the role of Fintech in addressing gender disparities in financial access remains underexplored. While digital financial services have created new opportunities for women, systemic challenges such as cultural norms and lack of financial education continue to limit their participation in formal financial systems (Sikka & Bhayana, 2024; Raheem *et al.*, 2024).

This research seeks to bridge these gaps by systematically analyzing the relationship between Fintech-driven financial inclusion and economic transformation, with economic transformation as the dependent variable. Unlike previous studies that primarily examine access to financial services in isolation, this study investigates how Fintech-enabled financial inclusion contributes to broader economic shifts, such as industrial diversification, employment patterns, and productivity growth. By integrating empirical analysis with case studies from both emerging and developed economies, this research aims to provide a holistic understanding of the mechanisms through which Fintech influences economic transformation.

Furthermore, this study examines the regulatory and infrastructural challenges that hinder the full potential of Fintech, offering policy recommendations to ensure that financial technology serves as an effective tool for sustainable economic development. By adopting an interdisciplinary approach that combines financial economics, technology, and policy analysis, this research contributes to the growing discourse on digital financial inclusion and economic development. The findings of this study will provide valuable insights for policymakers, financial institutions, and technology firms seeking to leverage Fintech for inclusive and sustainable economic growth.

Literature review

Schumpeter's Theory of Innovation (1934) offers a compelling framework for examining the role of financial technology (Fintech) in facilitating economic transformation and financial inclusion. Schumpeter contends that economic

development is driven by surges of innovation that disrupt conventional industries and establish new economic structures. This process, which he terms creative destruction, is characterized by the introduction of new products, production methods, or business models by innovative entrepreneurs, who replace outmoded systems. This results in increased efficiency, productivity, and long-term economic transformation. The transformative potential of digital financial services in reshaping economies is underscored by the application of this theory to the relationship between Fintech, financial inclusion, and economic transformation, particularly in developing regions where traditional financial institutions have failed to reach large segments of the population.

Schumpeter's concept of innovation is epitomized by fintech, which has revolutionized the financial sector through the use of digital platforms, mobile banking, block chain technology, and artificial intelligence. These innovations have substantially reduced transaction costs, improved accessibility, and improved financial security, thereby expanding financial inclusion. Historically, low-income individuals and small businesses have been excluded from financial services by traditional banking systems, which are distinguished by physical branch dependency, high fees, and rigid structures. Fintech disrupts this paradigm by introducing alternative financial solutions, such as decentralized finance, peer-to-peer financing, and mobile wallets, which circumvent conventional banking barriers. Schumpeter's perspective is that technological advancements and entrepreneurial activities drive economic transformation by displacing inefficient economic structures and nurturing new industries. This shift is consistent with this perspective.

Facilitating the integration of previously unbanked populations into the formal economy, financial inclusion is a catalyst for economic transformation, facilitated by Fintech (Adelaja *et al.,* 2024). The availability of digital financial services enhances consumer expenditure, stimulates investment, and empowers small businesses, thereby fuelling economic diversification and job creation. Schumpeter's theory underscores the fact that innovation generates new market opportunities and economic expansion, a phenomenon that is demonstrated by the proliferation of financial ecosystems that are driven by Fintech. For example, the increase in financial access, facilitated entrepreneurial growth, improved agricultural supply chains, and enhanced remittance flows in Sub-Saharan Africa, as a result of the proliferation of mobile money platforms such as M-Pesa. This is consistent with Schumpeter's contention that technological advancements generate new economic opportunities while concurrently disrupting existing economic structures.

Moreover, Schumpeter's Theory of Innovation underscores the importance of financial institutions in supplying the capital required for entrepreneurial ventures to prosper. Fintech democratizes access to credit by utilizing alternative lending platforms, big data analytics, and block chain-based smart contracts, thereby extending this function. In contrast to conventional banks, which depend on extensive collateral and credit history, Fintech companies utilize artificial intelligence and machine learning to evaluate creditworthiness using alternative data sources. This has substantially increased the availability of credit to micro, small, and medium-sized enterprises, which are critical contributors to economic

transformation. Fintech is consistent with Schumpeter's vision of innovation-induced economic progress, which involves the allocation of financial resources to the most dynamic and growth-oriented enterprises, by facilitating investment in productive sectors.

However, Schumpeter also underscores that economic transformation is not a linear process, but rather characterized by cycles of renewal and disruption. The swift evolution of Fintech presents both opportunities and challenges for economic transformation. Despite the fact that digital financial services improve efficiency and inclusion, they also introduce risks, including market volatility, regulatory uncertainties, and cyber security threats. Consequently, governments and regulatory bodies must adjust to these disruptive changes by developing policies that strike a balance between financial stability and innovation. Schumpeter's theory emphasizes the significance of institutional adaptation in the creation of an environment that is conducive to technological advancement. It posits that proactive policy frameworks are required to optimize the advantages of financial inclusion that is propelled by Fintech.

Schumpeter's Theory of Innovation offers a comprehensive elucidation of the correlation between economic transformation, financial inclusion, and Fintech. Fintech is a disruptive force that accelerates structural economic shifts, fosters entrepreneurial activity, and dismantles traditional financial barriers. Empowering marginalized populations, enhancing productivity, and facilitating industrial diversification are all critical components of economic transformation, and Fintech enables these through financial inclusion. Nevertheless, in accordance with Schumpeter's emphasis on the cyclical nature of innovation, policymakers must confront regulatory obstacles to guarantee that Fintech's transformative potential is utilized to drive sustainable and inclusive economic growth. Schumpeter's vision of creative destruction as the engine of economic progress is exemplified by Fintech, which is responsible for propelling financial innovation and expanding economic opportunities.

A number of empirical studies have investigated the influence of financial inclusion and Fintech on economic transformation (Aloulou *et al.*, 2024). Financial inclusion is positively correlated with GDP growth and poverty reduction, notably in emerging economies (Khan & Khan, 2024). Their research emphasizes the extent to which digital financial services facilitate broader economic participation by enhancing payment systems, facilitating savings, and providing access to credit. Similarly, (Demirgüç-Kunt *et al.*, 2021; Somuncu, 2025; Rivera *et al.*, 2025) demonstrated that financial inclusion, which is facilitated by Fintech, results in a rise in investment in human capital and entrepreneurship, thereby spurring economic transformation, using the Global Findex Database.

DelSarto *and* Ozili (2025) examined the role of mobile money platforms such as M-Pesa in fostering economic diversification and financial inclusion in the African context. The research determined that mobile banking services considerably enhanced the access to financial services for unbanked populations, resulting in increased household savings, improved income stability, and higher business formation rates. Additionally Ozili (2024) investigated the correlation between

financial stability and digital finance, concluding that, although Fintech enhances financial accessibility, it also introduces risks, including cyber security threats and regulatory challenges, which must be mitigated in order to achieve sustainable economic transformation.

Boachie *et al.* (2023) conducted a panel data analysis of African economies and discovered that financial inclusion promotes economic transformation by enhancing financial stability, increasing productivity, and fostering investment. Their research posits that digital financial services serve as a bridge between the informal sector and formal financial institutions, thereby enabling small businesses to expand and integrate into larger economic structures. Ali *et al.* (2022) also presented evidence that financial development reduces income inequality and promotes economic growth by allocating resources to productive investments.

Data and Methodology

The relationship between fintech and financial inclusion on economic transformation in Africa was measured using panel data extracted from the international monetary fund, global Findex database, United Nations Conference on Trade and Development (UNCTAD), and World Bank in relation to 54 African countries. The study covered the period of 2013 to 2024. The selection of this data period was based on the availability of fintech data, which was only made available to Africa in 2011. Nevertheless, the majority of African countries continue to face challenges in obtaining current fintech data as of 2024. The objective of this study is to empirically examine the causal relationship between economic transformation in Africa, financial inclusion, and FinTech. The research employs linear regression techniques to analyze the linear associations among these variables. In particular, the pooled ordinary least squares (OLS) regression method is employed, as it has been determined to be the most suitable for the dataset by the results of the Hausman (1978) and Breusch *and* Pagan (1980) model selection tests. The incorporation of control variables within the study model mitigates the potential endogeneity issues that the OLS regression approach has in addressing endogeneity, despite the limitations. Additionally, the research endeavours to investigate the indirect influence of FinTech on economic transformation in African economies. In order to accomplish this, structural equation modeling (SEM) is implemented to estimate both direct and indirect effects. In this context, SEM is particularly advantageous, as it enables a more thorough assessment of the causal relationships between the study variables than other statistical methods (Guenther *et al.*, 2023). The comprehensive statistic of the data is presented in Table 1 as follows.

Table 1. Descriptions and measurement of variables

Variable Name	Notation	Variable Measurement	Variable Description	Source of Data
Economic Transformation	ET	Industrial sector contribution to GDP (%)	Measures structural changes in the economy from low- to high-	World Bank, IMF, National Statistics

Variable Name	Notation	Variable Measurement	Variable Description	Source of Data
			productivity sectors	Offices
Fintech	FT	Digital payments volume (% of GDP)	Represents the level of financial technology adoption in an economy	Global Findex, BIS, Central Banks
Financial Inclusion	FI	% of adults with a bank account	Measures the accessibility of financial services to individuals and businesses	World Bank (Global Findex), IMF
GDP Growth Rate	GDPg	Annual percentage growth of GDP	Controls for the overall expansion of the economy	World Bank, IMF, National Statistical Agencies
Inflation Rate	INF	Consumer Price Index (CPI) annual % change	Controls for macroeconomic stability and price level changes	World Bank, IMF, National Banks
Foreign Direct Investment (FDI)	FDI	Net FDI inflows (% of GDP)	Measures the level of external capital investment in the economy	World Bank, UNCTAD
Interest Rate	INT	Central bank policy rate (%)	Reflects the cost of borrowing and its impact on financial inclusion and investment	IMF, Central Banks

Authors' Compilations (2025)

Research Model specification

To estimate the effect of fintech, financial inclusion, and the control variables on economic transformation in Africa, the following research model is preferred. The equation examines how Fintech (FT) and Financial Inclusion (FI) influence Economic Transformation (ET), while controlling for GDP growth (GDPg), inflation (INF), foreign direct investment (FDI), and interest rates (INT).

$$ET_{it} = \alpha_0 + \beta_1 FT_{it} + \beta_2 FI_{it} + \beta_3 GDPg_{it} + \beta_4 INF_{it} + \beta_5 FDI_{it} + \beta_6 INT_{it} + \mu_i + \epsilon_{it} \text{-------- (1)}$$

To assesses whether Fintech (FT) significantly enhances Financial Inclusion (FI), while controlling for macroeconomic factors like GDP growth, inflation, FDI, and interest rates.

$$FI_{it} = \alpha_0 + \beta_1 FT_{it} + \beta_2 GDPg_{it} + \beta_3 INF_{it} + \beta_4 FDI_{it} + \beta_5 INT_{it} + \mu_i + \epsilon_{it} \text{----------} \quad (2)$$

The following equation also investigates whether Financial Inclusion (FI) drives Fintech adoption (FT), alongside macroeconomic controls.

$FT_{it} = \alpha_0 + \beta_1 FI_{it} + \beta_2 GDPg_{it} + \beta_3 INF_{it} + \beta_4 FDI_{it} + \beta_5 INT_{it} + \mu_i + \epsilon_{it}$---------- (3)

Where i is Country, t is Time period, α_0 is Constant term, β_n is Coefficients to be estimated, μ_i is Country-specific fixed/random effects, and ϵ_{it} is the Error term. The notations of the rest of the variables are defined in table 1.

Fintech is also measured from the global findex database and represents the level of financial technology adoption in an economy. It is indexed as digital payments volume, a percentage of GDP, and is measured as structural changes in the economy from low to high productivity sectors using industrial sector contribution as a percentage of GDP. The percentage of adults with a bank account is used to measure financial inclusion, which is one of the independent variables. Additionally, the International Monetary Fund (IMF) database measures GDP growth as an annual percentage increase in GDP, which regulates the economy's overall expansion. Inflation is quantified as the consumer price index, and FDI is represented as net FDI inflows (percentage of GDP). Lastly, the central bank's policy rate is a percentage that measures the interest rate, which is a reflection of the cost of borrowing and its impact on financial inclusion and investment.

Results Analysis and Discussions

This section presents and interprets the empirical findings regarding the relationship between economic transformation in Africa, financial inclusion, and Fintech. The results from aggregated OLS regression, fixed effects, and structural equation modeling (SEM) are the primary focus of the analysis, which is based on panel data estimation techniques. The results offer a comprehensive understanding of the direct and indirect impacts of Fintech adoption on economic transformation, as well as the mediating role of financial inclusion. In order to provide a more comprehensive understanding of the influence of Fintech-driven financial inclusion on Africa's economic transformation, the discussion contrasts the empirical results with the existing literature to identify consistencies and deviations. Additionally, robustness assessments are implemented to guarantee the dependability of the estimated models. The implications of these discoveries for economic development strategies, financial institutions, and policymakers are also examined.

Table 2. Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	p1	p99	Skew.	Kurt.
econst	420	1.91	0.68	0.86	3.53	0.89	3.38	0.51	2.26
fintech	420	2.89	1.10	1.17	6.62	1.25	6.06	0.74	3.55
financial	420	1.74	0.68	0.50	4.03	0.54	3.62	0.38	3.10
gdpg	420	2.09	0.56	1.34	3.29	1.38	3.23	0.58	1.85
inflation	420	2.21	0.87	0.90	4.27	1.05	4.11	0.60	2.00

Variables	Obs	Mean	Std. Dev.	Min	Max	p1	p99	Skew.	Kurt.
fdi	420	2.13	0.50	1.03	3.41	1.23	3.24	0.28	2.30
interest	420	3.13	1.33	1.30	10.32	1.42	7.57	1.65	7.19

Authors Computation (2025)

The descriptive statistics in table 2 offer a comprehensive analysis of the variables employed in the investigation, including their distribution and characteristics. The standard deviation of economic transformation (econst) indicates that it has a moderate mean value and relatively low variability. The skewness and kurtosis values indicate that the distribution is moderately peaked and slightly right-skewed. The data indicates that fintech adoption has a higher mean than financial inclusion, which is indicative of its more pervasive development throughout the sample. The standard deviation of fintech is higher than that of financial inclusion, which evidences its greater variability. Skewness and kurtosis values suggest a moderately right-skewed and leptokurtic distribution. The observed economies exhibit a relatively lower mean for financial inclusion, suggesting that access to financial services remains restricted. The kurtosis value suggests a moderately normal distribution, while the skewness is nearly zero, indicating a near-symmetric distribution. The GDP growth exhibits minimal variation across observations, with a relatively low kurtosis and a minor right-skewness, indicating a fairly normal distribution. The inflation levels are slightly more variable, with a moderate level of skewness and a distribution that is not extremely peaked. The distribution of foreign direct investment (FDI) is slightly skewed to the right, and its kurtosis value indicates that it is neither significantly peaked nor flat. Consequently, there is minimal variation across observations. The relatively large standard deviation of interest rates indicates that they exhibit the maximum level of dispersion among all variables. The high skewness and kurtosis values indicate that interest rates are significantly right-skewed, indicating that certain countries have rates that are significantly higher than others. In general, the statistics indicate that the degree of normality varies among the variables, with fintech and interest rates exhibiting relatively higher variability.

Table 3. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) econst	1.00						
(2) fintech	0.654*	1.00					
(3) financial	0.443*	0.762*	1.00				
(4) gdpg	0.741*	0.554*	0.273*	1.00			
(5) inflation	0.718*	0.484*	0.208*	0.943*	1.00		
(6) fdi	0.511*	0.455*	0.298*	0.733*	0.519*	1.00	
(7) interest	-0.361*	-0.261*	-0.198*	-0.302*	-0.357*	-0.07	1.00

*** $p<0.01$, ** $p<0.05$, * $p<0.1$
Authors Computation (2025)

The correlation matrix offers a comprehensive understanding of the connections between economic transformation, fintech, financial inclusion, and other macroeconomic variables. The adoption of fintech is strongly and positively

correlated with economic transformation, suggesting that higher levels of economic transformation are associated with increased fintech adoption. Economic transformation is positively correlated with financial inclusion, although the intensity of this relationship is less robust than that of fintech. This implies that, although financial services facilitate economic transformation, fintech may have a more significant impact on structural economic changes. The notion that increased economic growth facilitates financial development and transformation is further substantiated by the strong positive correlation between GDP growth and economic transformation, fintech, and financial inclusion. Inflation is also strongly correlated with economic transformation and GDP growth, indicating that macroeconomic stability is essential for structural changes within the economy. Foreign direct investment (FDI) is positively correlated with economic transformation, fintech, and GDP growth, underscoring its significance in the promotion of financial expansion and technological advancements. Conversely, interest rates exhibit a negative correlation with all critical variables, such as GDP growth, financial inclusion, fintech, and economic transformation. This implies that the development of fintech and financial inclusion may be impeded by higher interest rates, which could result in increased financing costs and restricted credit access. The poor correlation between interest rates and FDI suggests that domestic interest rate levels may not have a substantial impact on foreign investment inflows. In general, the correlation matrix emphasizes the robust positive correlations between economic transformation, financial inclusion, and fintech. On the other hand, interest rates seem to pose a potential impediment to economic growth and financial development.

Table 4. Pooled ordinary least square estimates

	(1) econst	(2) fintech	(3) financial	(4) gdpg	(5) inflation	(6) fdi	(7) interest
fintech	0.180***		0.521***	0.0301***	-0.037***	-0.035***	0.0113***
	(5.41)		(20.41)	(3.76)	(-2.32)	(-1.82)	(0.11)
financial	0.0671***	0.965***		-0.0250***	0.0059***	0.0586***	-0.225***
	(1.43)	(20.41)		(-2.27)	(0.21)	(2.26)	(-1.61)
gdpg	0.326***	1.101***	-0.493***		1.870***	1.962***	-0.036***
	(1.57)	(3.76)	(-2.27)		(56.11)	(30.77)	(-0.04)
inflation	0.211***	-0.345***	0.0229***	0.473***		-0.865***	-0.451***
	(2.01)	(-2.32)	(0.21)	(56.11)		(-21.81)	(-1.44)
fdi	0.0223***	-0.229***	0.209***	0.355***	-0.619***		0.627***
	(0.25)	(-1.82)	(2.26)	(30.77)	(-21.81)		(2.38)
interest	-0.0476**	0.0037***	-0.037***	-0.0164***	-0.011***	0.0216***	
	(-2.91)	(0.11)	(-1.61)	(-0.04)	(-1.44)	(2.38)	

	(1) econst	(2) fintech	(3) financial	(4) gdpg	(5) inflation	(6) fdi	(7) interest
econst		0.366***	0.0735***	0.0181***	0.0462***	0.0074***	-0.423**
		(5.41)	(1.43)	(1.57)	(2.01)	(0.25)	(-2.91)
_cons	0.224	-0.551***	0.721***	0.209***	-0.328***	-0.135***	4.016***
	(1.87)	(-3.25)	(5.96)	(7.90)	(-6.06)	(-2.03)	(13.39)
N	420	420	420	420	420	420	420

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Insights into the relationships between economic transformation, fintech, financial inclusion, and key macroeconomic variables are provided by the pooled ordinary least squares (OLS) regression results in table 4. The results suggest that the adoption of fintech has a substantial positive impact on economic transformation, implying that it contributes to structural economic changes. Reinforcing its role in expanding access to financial services, fintech also has a significant positive impact on financial inclusion (Mbodj & Laye, 2025). Nevertheless, fintech suggests that it may introduce inflationary pressures or influence investment dynamics, despite its support for economic transformation, as it appears to have a small but significant negative effect on inflation and foreign direct investment (Maulana & Suprapti, 2025). Economic transformation is positively and significantly influenced by financial inclusion, albeit to a lesser extent than fintech. This implies that, although increased access to financial services contributes to economic transformation, fintech plays a more significant role (Hun *et al.,* 2024). Foreign Direct Investment is also strongly positively correlated with financial inclusion, suggesting that foreign investment is attracted to countries with greater financial accessibility (Abor *et al.*, 2024). Nevertheless, its inverse correlation with interest rates implies that enhanced financial inclusion is linked to reduced borrowing expenses (Boachie *et al.*, 2023). The role of GDP growth in promoting financial and technological advancements is confirmed by its significant positive impact on economic transformation, fintech, and FDI. Nevertheless, its detrimental impact on financial inclusion implies that financial accessibility is not inherently enhanced by economic growth alone (Bozic & Bozic, 2025). Inflation is positively correlated with GDP growth, but it is negatively correlated with fintech and FDI. This suggests that increased inflation could potentially impede the expansion of fintech and discourage foreign investment.

Foreign Direct investment is positively correlated with economic transformation, indicating that foreign investments contribute to structural economic changes (Tsinaridze & Makharadze, 2023). However, its inverse correlation with inflation underscores apprehensions regarding the ability to attract investments in the context of macroeconomic stability (Muhammad, 2023). The notion that higher interest rates may impede economic and financial development is further substantiated by the fact that interest rates have a negative and substantial impact on economic transformation, financial inclusion, and GDP growth. In general, the findings underscore the important role of fintech and financial inclusion in the process of economic transformation, while macroeconomic factors such as GDP growth, inflation, foreign direct investment, and interest rates affect

these relationships. The results are consistent with the current body of literature, indicating that Africa's economic transformation can be facilitated by a well-developed fintech sector and inclusive financial systems (Esely & Taonezvi, 2024; Tsanis *et al.*, 2025).

Table 5. Fintech and Financial Inclusion for Economic Transformation using Structural Equation Modeling

	ECONS(1)	FINTECH(2)	FINANCIAL(3)
main			
fintech	0.180***		0.521***
	(5.45)		(20.58)
financial	0.0671***	0.965***	
	(1.44)	(20.58)	
gdpg	0.326***	1.101***	-0.493***
	(1.58)	(3.79)	(-2.29)
infl	0.211***	-0.345***	0.0229***
	(2.03)	(-2.34)	(0.21)
foreign	0.0223***	-0.229***	0.209***
	(0.25)	(-1.83)	(2.28)
interest	-0.0476***	0.00257***	-0.0277***
	(-2.94)	(0.11)	(-1.62)
econst		0.366***	0.0735***
		(5.45)	(1.44)
_cons	0.224***	-0.551***	0.721***
	(1.88)	(-3.28)	(6.01)
mean(econst)		1.910***	1.910***
		(57.60)	(57.60)
mean(fintech)	2.888***		2.888***
	(53.79)		(53.79)
mean(financial)	1.744***	1.744***	
	(52.35)	(52.35)	
mean(gdpg)	2.091***	2.091***	2.091***
	(77.02)	(77.02)	(77.02)
mean(infl)	2.215***	2.215***	2.215***
	(52.30)	(52.30)	(52.30)

mean(foreign)	2.134***	2.134***	2.134***
	(86.99)	(86.99)	(86.99)
mean(interest)	3.133***	3.133***	3.133***
	(48.41)	(48.41)	(48.41)
var(e.econst)	0.160***		
	(14.49)		
var(fintech)	1.211***		1.211***
	(14.49)		(14.49)
var(financial)	0.466***	0.466***	
	(14.49)	(14.49)	
var(gdpg)	0.309***	0.309***	0.309***
	(14.49)	(14.49)	(14.49)
var(infl)	0.753***	0.753***	0.753***
	(14.49)	(14.49)	(14.49)
var(foreign)	0.253***	0.253***	0.253***
	(14.49)	(14.49)	(14.49)
var(interest)	1.758***	1.758***	1.758***
	(14.49)	(14.49)	(14.49)
cov(fintech,financial)	0.573***		
	(12.43)		
cov(fintech,gdpg)	0.339***		0.339***
	(9.93)		(9.93)
cov(fintech,infl)	0.462***		0.462***
	(8.93)		(8.93)
cov(fintech,foreign)	0.252***		0.252***
	(8.49)		(8.49)
cov(fintech,interest)	-0.381***		-0.381***
	(-5.18)		(-5.18)
cov(financial,gdpg)	0.104***	0.104***	
	(5.41)	(5.41)	
cov(financial,infl)	0.123***	0.123***	
	(4.17)	(4.17)	
cov(financial,foreign)	0.102***	0.102***	
	(5.84)	(5.84)	

cov(financial,interest)	-0.180***	-0.180***	
	(-3.99)	(-3.99)	
cov(gdpg,infl)	0.455***	0.455***	0.455***
	(14.06)	(14.06)	(14.06)
cov(gdpg,foreign)	0.205***	0.205***	0.205***
	(12.11)	(12.11)	(12.11)
cov(gdpg,interest)	-0.223***	-0.223***	-0.223***
	(-5.93)	(-5.93)	(-5.93)
cov(infl,foreign)	0.226***	0.226***	0.226***
	(9.44)	(9.44)	(9.44)
cov(infl,interest)	-0.411***	-0.411***	-0.411***
	(-6.90)	(-6.90)	(-6.90)
cov(foreign,interest)	-0.0431	-0.0431	-0.0431
	(-1.32)	(-1.32)	(-1.32)
var(e.fintech)		0.324***	
		(14.49)	
var(econst)		0.462***	0.462***
		(14.49)	(14.49)
cov(econst,financial)		0.205***	
		(8.30)	
cov(econst,gdpg)		0.280***	0.280***
		(12.20)	(12.20)
cov(econst,infl)		0.423***	0.423***
		(11.95)	(11.95)
cov(econst,foreign)		0.175***	0.175***
		(9.33)	(9.33)
cov(econst,interest)		-0.325***	-0.325***
		(-6.95)	(-6.95)
var(e.financial)			0.175***
			(14.49)
cov(econst,fintech)			0.489***
			(11.21)
N	420	420	420

Authors Computation (2024)

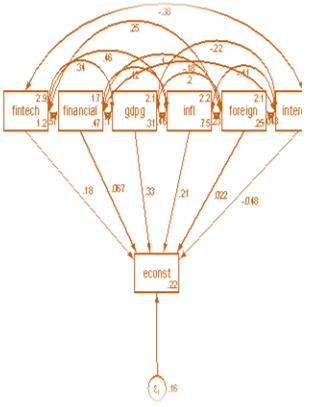

Figure 1

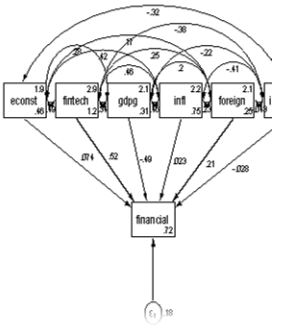

Figure 2

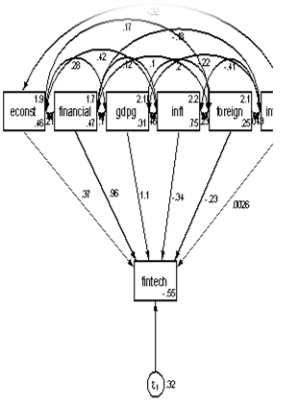

Figure 3

The structural equation model results in table 5, and figures 1, 2, and 3 shows the ways in which financial inclusion and fintech contribute to economic transformation. The model concentrates on three primary variables, financial inclusion, fintech development, and economic transformation. A set of macroeconomic indicators influences each of these variables, and they also influence one another. It is suggested that the expansion of fintech services has a substantial and beneficial impact on both financial inclusion and economic transformation (Kanga *et al.*, 2022). This, in turn, stimulates economic development by improving access to financial systems. Financial inclusion also contributes to economic transformation, although its impact is less significant than that of fintech. It is intriguing that fintech is significantly impacted by financial inclusion, which underscores a reciprocal relationship in which inclusive financial systems promote the development of fintech and vice versa. GDP growth has a positive impact on both economic transformation and fintech, but it has a negative impact on financial inclusion, among the observed variables. This implies that, although innovation and transformation are facilitated by overall economic performance, it may not explicitly guarantee broader access to financial services (Odio *et al.,* 2021). Inflation has a minimal impact on financial inclusion and has a negative impact on fintech, while it contributes positively to economic transformation. Foreign investment has a marginally beneficial impact on financial inclusion and economic transformation, but it has a detrimental effect on fintech, potentially as a result of regulatory or competitive tensions. Interest rates have a detrimental effect on both economic transformation and financial inclusion, while fintech is almost entirely unaffected. This suggests that increased borrowing costs can impede inclusive financial access and economic outcomes (Khan *et al.*, 2025; Becha *et al.*, 2025).

The constant terms and means of the model demonstrate that fintech has the highest average level among the latent variables, suggesting its significant presence or development in the context under investigation. In addition, the active responsibilities of economic transformation and financial inclusion in the system are reflected in their strong mean levels. In addition, the macroeconomic variables exhibit relatively high mean levels, suggesting that the dataset represents a

context with moderate inflation, stable foreign flows, active economic performance, and relatively high interest rates. The variances and covariances indicate robust correlations between financial inclusion and fintech, as well as between these two variables and macroeconomic indicators such as inflation and GDP growth. Reiterating the notion that higher rates may impede economic and financial expansion, negative covariances with interest rates are consistently observed.

In general, the model illustrates a system that is both statistically significant and coherent, in which fintech serves as a significant driving force behind economic transformation and financial inclusion. The relationships among the variables are indicative of real-world dynamics in which innovation in financial technology promotes broader access to finance and improves economic outcomes, particularly when accompanied by stable macroeconomic conditions.

Conclusion recommendations and policy implication

The relationship between economic transformation, financial inclusion, and fintech was investigated in this study using ordinary least square, and structural equation modeling. The findings indicate that fintech is instrumental in the improvement of financial inclusion, which in turn has a beneficial impact on economic transformation. By utilizing digital technologies, fintech services eliminate conventional financial obstacles and offer financial products that are both affordable and efficient. Increasing the number of individuals and small businesses who have access to formal financial systems through fintech, they are better positioned to engage in productive economic activities, which in turn lead to an increase in investment, consumption, and innovation across sectors. The quality, scale, and reach of fintech adoption substantially contributed to the influence of financial inclusion, which was discovered to be both a direct and indirect driver of economic transformation. The analysis also underscored the significance of critical macroeconomic factors, including inflation, interest rates, GDP growth, and foreign direct investment, in shaping the outcomes of financial inclusion and fintech development. These results emphasize the idea that fintech can only achieve its maximum potential when it is bolstered by a stable and enabling economic environment.

In conclusion, the research confirms that fintech is not merely a technological advancement, but also a critical economic lever for the transformation of economies and the promotion of inclusive development. Several strategic actions are required to optimize the benefits of fintech in promoting financial inclusion and advancing economic transformation. The initial step is to prioritize the development of a robust digital infrastructure, particularly in rural and underserved regions. The advantages of fintech cannot be completely realized in the absence of reliable internet and mobile networks. Furthermore, to foster inclusive innovation, governments and development partners should establish favorable conditions for fintech firms, particularly those that specialize in providing services to marginalized populations, including women, informal workers, and smallholder farmers. Additionally, initiatives should be implemented to improve digital and financial literacy to guarantee that individuals are adequately prepared to utilize fintech platforms. Education programs and

public awareness campaigns can be instrumental in fostering confidence and increasing adoption. In conjunction with these initiatives, it is imperative to enhance consumer protection. Risks associated with fraud, cybercrime, and the misuse of personal data increase as digital finance becomes more prevalent. It is imperative to establish robust regulatory frameworks that promote innovation and safeguard users. Additionally, the guarantee of interoperability among fintech platforms will facilitate seamless financial transactions, thereby reducing systemic inefficiencies and expanding inclusion.

The results of this investigation have substantial implications for policymakers. Fintech should be acknowledged as a critical component of economic reform strategies and national development agendas. Fintech should be integrated into broader financial and economic planning, rather than being regulated in isolation. It is essential to have a regulatory environment that is conducive to innovation, such as regulatory sandboxes, while also maintaining supervision to protect consumers and ensure financial stability. Additionally, the efficacy of fintech in fostering inclusion will be further bolstered by economic policies that guarantee macroeconomic stability, such as moderate inflation and accessible interest rates, to develop inclusive fintech solutions, it is imperative to establish collaborative partnerships between the public and private sectors. In order to increase access to financial services, particularly in remote regions, governments should collaborate with banks, fintech companies, none governmental organizations, and international agencies. Ultimately, it is imperative to implement a governance approach that is informed by data. Policymakers can ensure that financial inclusion efforts are responsive and impactful by monitoring progress, identifying gaps, and adjusting strategies accordingly in light of real-time data on fintech adoption and utilization.

Although this study provides valuable insights, it also presents numerous opportunities for future research. It is imperative to investigate the differential impact of fintech on a variety of population segments, such as women, adolescents, rural residents, and small-scale entrepreneurs. Disaggregated analysis would enable more effective and precise policy interventions. Furthermore, comparative studies conducted in countries or regions with differing degrees of fintech maturity could assist in the identification of contextual factors and best practices that either facilitate or impede the adoption and impact of fintech.

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