

Impact of FINTECH Adoption on Economic Development

A Comparative Analysis Between Advanced and Developing Economies

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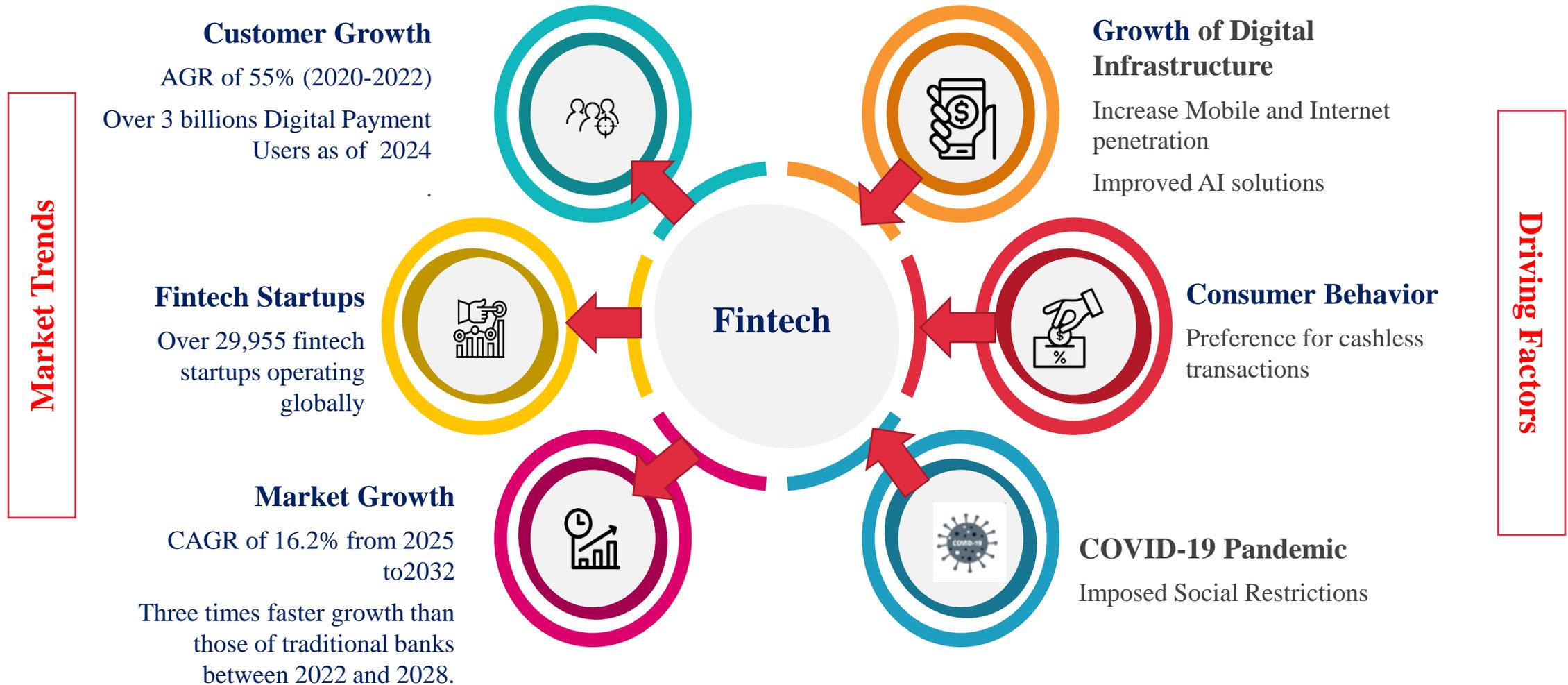
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Introduction – Background and Motivation

Fintech - Technologically enabled financial services such as payments, loan advisory, and investment management.



Introduction – Background and Motivation

- **Digital Commerce**

Consumer transactions of goods and services made via digital platforms (Statista, 2023).

(Online transactions, e-payments, digital marketing strategies)

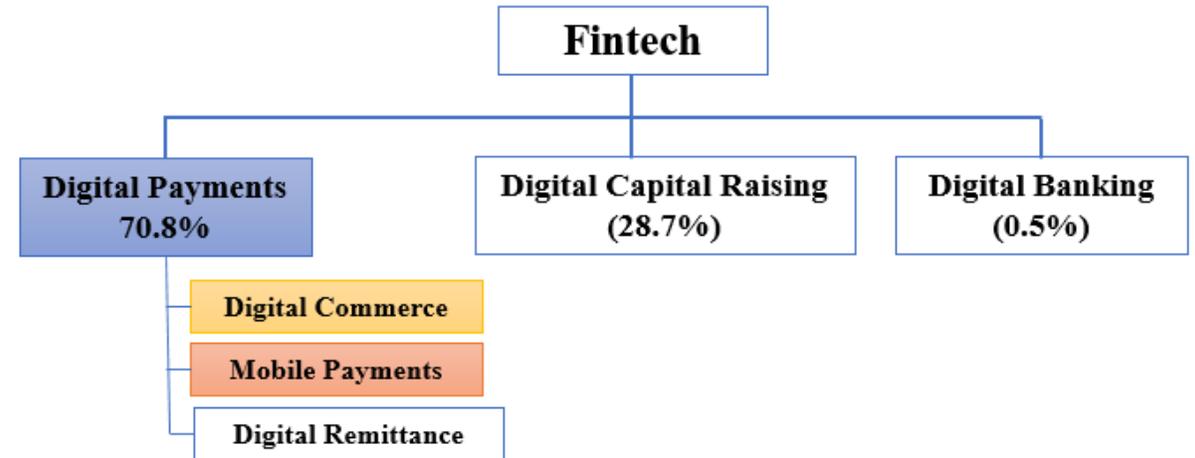
- **Mobile POS Payments**

Transactions at the point of sale are processed via smartphone applications (Crowe et al., 2010; Statista, 2023)

- A dearth of literature, which

- Examined the impact of fintech adoption
- Used direct measures of fintech
- Discovered broader economic and financial implications
- Considered the impact of COVID-19
- Focused on the development level

- Controversial findings on the relationship between fintech and economic growth



is fintech an engine of economic development in both advanced and developing countries?

Research Questions (RQs)

RQ 1:

What is the impact of fintech adoption on economic development?

(Economic Development in terms of economic growth, financial inclusion, household debt levels, business development)

RQ 2:

How does the influence of fintech adoption on economic development vary between advanced and developing economies?

Literature Review

- **Impact of fintech on the economic growth**

- There is a positive and statistically significant impact of fintech on economic growth (Nan, 2019; Alhassan & Koaudio, 2019; Tafirei Mashamba & Gani, 2023; Liu & Chu, 2024).
- Mobile money development plays a positive and statistically significant role in economic growth in sub-Saharan African countries (Alhassan & Koaudio, 2019).
- E-payment channels negatively contribute to economic growth in Nigeria. (Oginni et al., 2013).
- E-commerce through electronic payments (POS + ATM) negatively and significantly impacts economic growth in Western Balkan countries (Toska & Besnik Fetai, 2023).

Literature Review

- **Impact of fintech on the economic growth determinants**

- Fintech has positively influenced **household consumption** (Luo et al., 2022; Li et al., 2019).
- Fintech negatively affects **household consumption** smoothness (Lai et al., 2020).
- The impact of fintech is positive on **investment** in advanced economies and appears to be negative in developing countries (Cevik, 2024).
- Fintech negatively and significantly influences **trade openness** (Mulungula & Nimubona, 2022), and e-commerce positively affects **trade openness** (Yong et al., 2011).

Literature Review

- **Impact of fintech on business development**

- Digital payment systems like mobile wallets, P2P lending, and crowdfunding enhance financial inclusion, improve cash flow, and expand market access for small and micro-entrepreneurs (Dangkeng & Munir, 2025; Nurchayati et al., 2024).
- E-commerce adoption contributes to business growth in SMEs (Tulong et al., 2024).
- Fintech innovations boost efficiency and support financial inclusion, driving new business growth and formalizing informal retail sectors (Vennila & Kumar, 2024).

- **Impact of fintech on financial inclusion**

- Fintech adoption increases people's access to formal financial services (Adhikari et al., 2024; Adelaja et al., 2024; Gopalakrishnan et al., 2024; Shahriar, 2025).
- Fintech adoption boosts financial inclusion by enhancing tech access, raising awareness, improving financial literacy, reducing service costs, and increasing credit inclusiveness (Kampani, 2025).

Literature Review

- **Impact of fintech on household debt levels**
 - Fintech adoption is negatively correlated with over-indebtedness, as improved credit assessments enhance financial stability and reduce default risks, supporting the idea that better risk evaluation can mitigate credit-related risks (Hamit, 2025; Huang et al., 2020; Frost, 2020; Philippon, 2016).
 - Fintech solutions expand household credit access by lowering financial costs and enhancing borrower evaluation, while also reducing default risk (Fuster et al., 2019; de Roure et al., 2021).

Hypotheses

Hypothesis 1:

Fintech adoption has a significant and positive effect on economic growth.

Hypothesis 2:

Fintech adoption positively influences business development.

Hypothesis 3:

Fintech adoption positively influences financial inclusion.

Hypothesis 4:

Fintech adoption negatively affects household indebtedness.

Data and Methodology

- **Data, Sample and Data Sources**

- Data Sources: Statista Website, World Bank databases, IMF database, and ITU database
- Time framework: 2017 -2023 (Annual Data)
- Sample size: 113 countries
 - Developing Countries -70*
 - Developed Countries – 43*
- Data Analysis: Static Panel data analysis
 - *Fixed effect model*
 - *Instrumental Variable Method (2SLS)*

Data and Methodology

- **Model Specification**

$$y_{it} = \beta_0 + \beta_1 \text{fintech}_{it} + \beta_2 X_{it} + n_i + \varepsilon_{it}$$

y_{it} = Real GDP Growth Rate/ Business Development/ Financial Inclusion/ Household Indebtedness

fintech_{it} = Fintech Adoption (Transaction Value as a share of GDP)

Transaction Value of Digital Commerce (as a % of GDP)

Transaction Value of Mobile Payments at Point of Sales as a % of GDP)

X_{it} = Vector of Control Variables

n_i = Time-invariant Country Effect

ε_{it} = Error Term

Data and Methodology - *Definition of Variables*

Table 1: Definitions of Variables

	Variable	Definition
<i>Dependent Variables</i>	Economic Growth	Real GDP Growth Rate (Annual % change)
	Consumption	Household Expenditure on Consumption (% of GDP)
	Investment	Gross Fixed Capital Formation (% of GDP)
	Trade	Trade openness (Exports and Imports of goods and services (% of GDP))
	Business Startups	New business density (new registrations) per 1,000 people (ages 15-64)
	Financial Inclusion	Account Ownership at a formal Financial Institution (% age 15+)
	Household Debit	Private debt, loans and debt securities (% of GDP)
<i>Independent Variables</i>	Digital Commerce	Transaction Value of Digital commerce (% of GDP)
	Mobile Payments	Transaction Value of Mobile Payments at POS (% of GDP)

Control Variables - *Domestic credit, Bank Z-Score, Population growth, Government Effectiveness, COVID-19 (Dummy Variable)*

Data and Methodology

- ## Descriptive Statistics

Table 2: Descriptive Statistics (All Countries)

Variable	Obs.	Mean	Std. Dev.	Min	Max
Real GDP Growth	791	2.493	4.912	-28.759	31.962
Household Consumption Expenditure (log value)	723	24.834	1.916	20.711	30.352
Private Investment (% of GDP)	716	22.58	6.911	2.017	55.218
Trade Openness (% of GDP)	651	84.093	41.216	32.972	162.413
Business Startups (log Value)	518	0.910	1.248	-2.565	3.402
Financial Inclusion (% of Population)	664	64.291	29.166	8.75	100.000
Household Debit (% of GDP)	385	44.619	31.515	.929	122.988
Digital Commerce (% of GDP)	791	2.913	1.736	.003	9.306
Mobile POS Payments (% of GDP)	791	2.313	4.263	.002	22.378
Digital Banking (% of GDP)	375	2.541	6.447	0.000	82.075
Digital Skills Score among population (log value)	600	3.950	0.288	2.569	4.417
Active Mobile Broadband Sub. (log value)	645	4.22	.714	1.082	5.574

Source: Author's Estimations

Results - Fintech and Economic Growth

Table 4: Fintech and Economic Development (All Countries)

Variables	Business Development		Financial Inclusion		Household Indebtedness	
	(1)	(2)	(4)	(5)	(7)	(8)
	FEM	FEM	FEM	FEM	FEM	FEM
Digital Commerce	0.008 (0.023)		1.108** (0.487)		0.255 (0.626)	
Mobile POS Payments		0.007 (0.007)		-0.038 (0.100)		-0.183 (0.158)
Domestic Credit	-0.001 (0.001)	-0.001 (0.001)	0.016 (0.034)	0.022 (0.036)	0.346*** (0.078)	0.339*** (0.079)
Bank Z-Score	-0.006 (0.006)	-0.006 (0.006)	-0.124 (0.111)	-0.090 (0.111)	0.184 (0.206)	0.214 (0.193)
Population Growth	0.022* (0.012)	0.021* (0.012)	-0.559 (0.597)	-0.759 (0.606)	-0.968 (0.788)	-1.032 (0.828)
Government Effectiveness	-0.030 (0.128)	-0.023 (0.125)	0.409 (1.996)	0.469 (1.873)	0.569 (3.671)	0.565 (3.681)
COVID	-0.008 (0.033)	-0.014 (0.034)	0.582 (0.492)	1.840*** (0.492)	1.528** (0.755)	2.091*** (0.561)
Constant	1.059*** (0.134)	1.064*** (0.125)	64.187*** (2.881)	65.922*** (2.994)	15.567* (7.878)	16.337** (7.883)
Observations	315	315	423	423	300	300
R-squared	0.014	0.020	0.138	0.114	0.429	0.434
Number of C_ID	67	67	91	91	63	63
Clustered by	Country	Country	Country	Country	Country	Country

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Author Computation Using STATA 15. FEM denotes the Fixed Effect Model.

Results - Fintech and Economic Development (Comparative Analysis)

Table 5: Fintech, Economic Growth, and Business Development

Variables	Economic Growth				Business Development			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	FEM	FEM	FEM	FEM	FEM	FEM	FEM	FEM
	Developing	Developing	Developed	Developed	Developing	Developing	Developed	Developed
Digital Commerce	2.094*** (0.518)		2.846*** (0.910)		0.009 (0.038)		0.009 (0.033)	
Mobile POS Payments		0.193* (0.102)		1.221*** (0.372)		0.009 (0.008)		0.114*** (0.029)
COVID	-5.222*** (0.689)	-3.600*** (0.586)	-5.355*** (1.138)	-4.041*** (0.901)	-0.070 (0.054)	-0.091 (0.064)	0.046 (0.053)	-0.052 (0.053)
Constant	14.569** (5.713)	16.514*** (5.759)	3.301 (11.092)	11.399 (10.463)	1.202*** (0.282)	1.115*** (0.292)	1.057*** (0.298)	1.187*** (0.274)
Observations	288	288	198	198	181	181	134	134
R-squared	0.262	0.227	0.200	0.151	0.028	0.043	0.072	0.199
Number of C_ID	62	62	41	41	39	39	28	28
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered by	Country	Country	Country	Country	Country	Country	Country	Country

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Author Computation Using STATA 15. FEM denotes the Fixed Effect Model.

Results - Fintech and Economic Development (Comparative Analysis)

Table 6: Fintech, Financial Inclusion, and Household Indebtedness

Variables	Financial Inclusion				Household Indebtedness			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	FEM	FEM	FEM	FEM	FEM	FEM	FEM	FEM
	Developing	Developing	Developed	Developed	Developing	Developing	Developed	Developed
Digital Commerce	0.651 (0.758)		1.313** (0.586)		-1.206** (0.513)		1.253 (1.028)	
Mobile POS Payments		-0.166 (0.105)		0.166 (0.268)		-0.100 (0.195)		-0.424 (0.285)
COVID	0.830 (0.794)	1.994** (0.865)	0.216 (0.571)	1.291** (0.630)	2.563** (0.938)	1.443** (0.568)	0.836 (1.016)	2.525** (1.041)
Constant	52.419*** (5.651)	54.403*** (6.115)	87.070*** (6.331)	90.190*** (6.502)	18.597** (7.746)	13.793* (7.749)	22.229* (12.473)	25.267** (12.385)
Observations	247	247	176	176	126	126	174	174
R-squared	0.139	0.142	0.215	0.156	0.525	0.471	0.479	0.458
Number of C_ID	54	54	37	37	27	27	36	36
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered by	Country	Country	Country	Country	Country	Country	Country	Country

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Author Computation Using STATA 15. FEM denotes the Fixed Effect Model.

Results – Endogeneity and Robustness

Addressing Endogeneity

- The 2SLS estimation technique is employed. The first stage is specified as follows:

$$y_{it} = \pi_0 + \pi_1 IV_1_{it} + \pi_2 IV_2_{it} + \pi_3 X_{it} + n_i + \varepsilon_{it}$$

IV_1 = Digital Skills Score

IV_2 = Active Mobile Broadband Subscriptions

Robustness Test

- The model's explanatory variables were replaced with their lagged values of 1st order to assess its robustness. The model equation is,

$$y_{it} = \beta_0 + \beta_1 DCOM_{it-1} + \beta_2 MOB_{it-1} + \beta_3 X_{it-1} + n_i + \varepsilon_{it}$$

- An alternative model was employed with $DCOM_POP_{it}$ and MOB_POP_{it} .

$$y_{it} = \beta_0 + \beta_1 DCOM_POP_{it} + \beta_1 MOB_POP_{it} + \beta_2 X_{it} + n_i + \varepsilon_{it}$$

$DCOM_POP_{it}$ = Digital Commerce Users as a percentage of population

MOB_POP_{it} = Mobile payment POS users as a percentage of population

Conclusion and Discussion

❑ Fintech adoption substantially influences economic growth.

- *Digital commerce and Mobile POS payments have a significant favorable influence on fostering economic growth.*
- *The magnitude of the impact of digital commerce transactions is larger than other fintech instruments*

❑ Fintech can positively influence economic growth through household consumption and trade openness.

❑ Fintech,

- *Increased Transaction Efficiency and Cost Reduction*
- *Stimulus to Business Growth and Entrepreneurship (Manyika et al., 2016).*
- *Positive Spillover Effects on Consumer Spending (Hasan et al., 2012).*

❑ There may be different fintech instruments that can influence private investment.

- Digital capital raising

- Digital lending

Conclusion and Discussion

Digital commerce and mobile POS payments significantly boost economic growth globally.

❑ Significant impact of fintech adoption on economic growth in developing countries

Market Access - offering access to global markets for businesses in developing countries.

Reduced Transaction Cost - reducing costs by enabling businesses to operate online, leading to higher profit margins and increased efficiency.

Job Creation - creating employment opportunities in developing countries (technology, logistics, and customer service).

Financial Inclusion - promoting financial inclusion by providing access to banking and payment services for individuals

Conclusion and Discussion

However, their impact is stronger in advanced economies due to several key factors:

- **Higher Digital and Financial Infrastructure**
- **The higher proportion of formal businesses** - *leverage digital financial services more effectively*
- **Greater Trust and Adoption of Digital Payments**
- **Well-established regulatory frameworks, stronger legal protections, and better enforcement of financial regulation** - *enhance the effectiveness of digital financial services in driving economic growth (Levine, 1999).*

Conclusion and Discussion

❑ The positive and significant impact of digital commerce on financial inclusion in developed countries

- **D-commerce platforms integrate seamlessly with digital banking and mobile payments**
- **The availability of secure and efficient payment gateways** - *facilitates financial access for individuals and businesses*
- **Increased Access to Financial Services through Digital Payments** - *encourages more people to open bank accounts and use e-financial services*
- **"Buy Now, Pay Later" (BNPL) and digital credit services** - *connect consumers to the financial system.*
- **Reduction in Transaction Costs and Barriers to Banking** - *Traditional banking services can be costly and inconvenient*
- **Higher financial literacy levels and stronger consumer trust in digital financial systems**
- **Government and Policy Support for Digital Finance** - *Encouraging cashless transactions through policy incentives and supporting fintech innovation, making digital banking and online payment services more accessible (IMF, 2023).*

❑ Significant positive influence of mobile POS payments on business development in advanced economies

Higher usage of mobile phones - where business and consumers widely adopt cashless transactions, mobile POS systems enhance financial flexibility, support micro-enterprises (Philippon, 2016)

Integrated mobile payments with the banking system and credit markets - allow entrepreneurs to build credit histories and access financial services.

Conclusion and Discussion

- ❑ **The negative significant impact of digital commerce on household debt (as a percentage of GDP) in developing countries**
 - **Digital commerce platforms offer alternative financing options (e.g., BNPL, digital loans) - *the limited penetration of these services may result in lower borrowing levels.***
 - **Consumer debt aversion exists due to historical financial instability, limited credit access, and low consumer confidence in financial systems.**
 - **A shift toward savings and mindful consumption - *Even though digital platforms offer easier access to credit and lending, low-income households in developing countries tend to avoid excessive borrowing, keeping household debt at relatively lower levels as a percentage of GDP (Beck, T., & Brown, M., 2020).***
 - **Shift Toward Savings and Cautious Consumption - *As e-commerce platforms provide easier access to products, they may also encourage more mindful consumer spending, helping to keep household debt levels in check (Demirgüç-Kunt, A., & Klapper, L., 2018)***

Contribution

- Addressed the gaps in empirical analysis on the impact of fintech on economic growth
 - Using direct measures of fintech (digital Commerce and Digital Banking for the first time)
 - Analyzing the effects of fintech adoption on business startups
 - Considering the effect of COVID-19
 - Conducting a comparative analysis (for Development Level)
- Analyzed through which economic determinant, fintech can influence economic growth.
- Present directions to policymakers on how to adopt fintech in different economic contexts to achieve economic, business, and financial development.

Limitations and Directions for Future Research

Limitations

Data Availability – Due to the lack of data on other fintech instruments, the study has focused only on digital payments.

Directions for future research

Incorporating proxies such as digital capital raising, digital lending, and neo-banking into the measurement framework, examine the influence of fintech on socio-economic indicators.

Thank You !



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