

Does Higher HDI Strengthen the Impact of Government Financial Inclusion Schemes on Consumption Behaviour?

Evidence from Credit, Digital Payments, and Micro-Investments in India, Norway, and Kenya

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ABSTRACT

This research paper investigates whether a higher Human Development Index (HDI) enhances and makes government financial inclusion schemes more effective in changing how people spend and use money, especially through credit, digital payments, and micro-investments. Using a comparative analysis based on secondary data from Norway (very high HDI) and India (medium HDI), drawing on datasets from UNDP, the World Bank, and national payment authorities, the study finds that higher HDI creates structural conditions—education, income, institutional trust—that deepen behavioural adoption of financial services. In developing economies, the share of adults making digital payments rose from 35% (2014) to 57% (2021). India's UPI handles over 21 billion transactions per month by 2025/26, yet the strongest transition from basic payments to credit and investment is more consistent in high-HDI settings. India emerges as a policy-driven outlier, demonstrating that well-designed institutional frameworks can partially compensate for lower HDI levels.

KEYWORDS

Financial Inclusion	HDI	Digital Payments	Credit Access	Micro-Investments	Human Capital	Development Econ.
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1. INTRODUCTION

Financial inclusion means that individuals and businesses have access to useful and affordable financial products and services—payments, savings,

credit, and insurance—accessible to everyone (World Bank). Over the last 20 years, governments and global institutions have strongly promoted financial inclusion as a tool for reducing poverty and supporting economic growth, directly linked to UN SDGs Goal 1 (Reducing

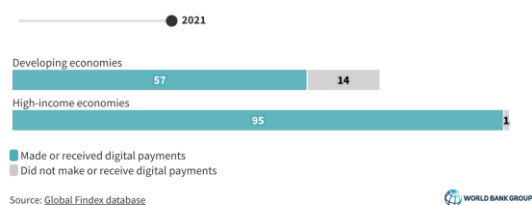
Poverty) and Goal 8 (Decent Work and Economic Growth).

According to the World Bank Global Findex (2021), about 1.4 billion adults worldwide remain unbanked, yet digital payment use has increased rapidly among existing account holders. In developing economies, the share of adults making or receiving digital payments rose from 35% in 2014 to 57% in 2021. Countries have launched major programs: India's Pradhan Mantri Jan Dhan Yojana (PMJDY) opened over 500 million accounts; Kenya's M-Pesa expanded mobile money; Brazil deployed digital transfers under Bolsa Família.

Although many countries have introduced financial inclusion schemes, their impact on consumption behaviour has remained unequal. Some populations move beyond basic accounts into formal credit, digital payments, and small investments. Others leave accounts inactive. This raises the central question: does the level of human development, measured by HDI, influence how strongly these schemes change financial behaviour?

This paper investigates whether higher HDI strengthens the impact of financial inclusion policies on lending and borrowing, digital payments, and micro-investments. The hypothesis is that countries with higher HDI show stronger and deeper behavioural shifts after financial inclusion reforms.

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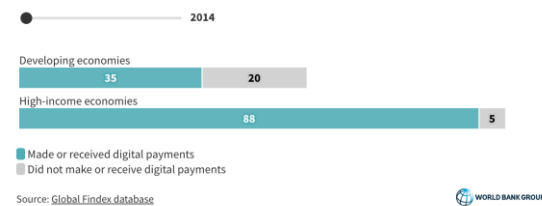


Fig. 1–2: Financial inclusion trends in developing economies

The above charts show the rapid expansion of PMJDY. Since 2014, total bank accounts have increased from 14.72 crore to over 56.16 crore by August 2025, with more than 65% opened in rural and semi-urban areas. Approximately 56% of Jan Dhan accounts belong to women, highlighting progress in gender inclusion.

These trends show how financial inclusion policies can improve access across different social groups. However, the depth of usage—active savings, credit uptake, digital payments—depends on education, awareness, trust, consistent income, and financial literacy. This is where HDI becomes critical.

2. CONCEPTUAL FRAMEWORK

The Human Development Index (HDI) is a measuring tool created by the UNDP to assess development and standard of living. Unlike income-only measures, it combines three dimensions: life expectancy at birth (health), years of schooling (education), and gross national income per capita (income).

In the 2023–24 Human Development Report, Norway had an HDI of 0.960, among the highest globally, while India scored 0.685 (medium development) and Niger approximately 0.40. Norway's HDI compared to India's suggests much stronger human capital formation, influencing policy responsiveness.

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HDI ranking and value (2023)

Rank	Country	HDI value
1	Iceland	0.972
2	Norway	0.970
2	Switzerland	0.970
4	Denmark	0.962
5	Germany	0.959
5	Sweden	0.959
7	Australia	0.958
8	Hong Kong, China (SAR)	0.955
8	Netherlands	0.955
17	United States	0.938
130	India	0.685

HDI: Human Development Index
Source: UNDP Human Development Report 2025

Fig. 3: HDI country rankings

Consumption behaviour in this paper refers to how individuals use financial services: formal credit from banks; digital payments (NEFT, RTGS, UPI); and micro-investments such as mutual funds or mobile savings platforms. Education and financial literacy

affect decision-making and risk-taking—people with better knowledge are more likely to borrow responsibly, use digital tools, and invest regularly.

Table 1: Education Level & Digital Financial Usage (Global Findex 2021)

Education Level	Digital Payment Usage
Primary or Less	44%
Secondary	63%
Tertiary	79%

The strong positive relationship between education and digital payment adoption supports the view that HDI components—especially schooling—strengthen behavioural responses to financial inclusion reforms.

Higher HDI increases impact through: better financial literacy from education, higher income enabling saving and investment, better health supporting stable productivity, and digital access supporting technology adoption. Human Capital Theory (Becker, 1993) and Amartya Sen's Capability Approach (Sen, 1999) both support HDI as a structural factor strengthening financial inclusion outcomes.

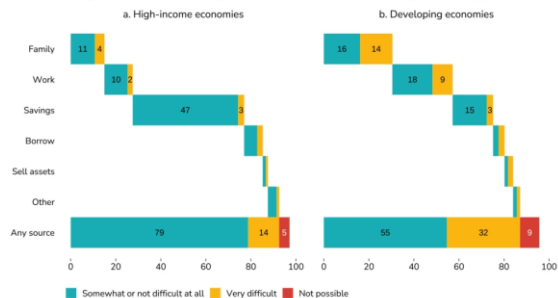
Table 2: HDI vs. Digital Payment Usage by Country

Country	HDI	Digital Payment %
Norway	0.96	95%
Singapore	0.94	92%
India	0.64	57%
Kenya	0.58	65% (mobile heavy)
Bangladesh	0.66	45%
Niger	0.40	15%

Sources: UNDP Human Development Report 2023/24; World Bank Global Findex 2021

In developing economies, work and social networks are the most popular sources of emergency money, but they are not as reliable as savings

Adults identifying the source of, and assessing how difficult it would be to access, emergency money (%), 2021



Source: Global Findex Database 2021. Note: The length of the bar in each row is the share of adults that reported using the specified source of money. A small share of adults did not know or refused to disclose their main source of emergency money.

Fig. 4: Education level vs. digital financial usage

3. METHODOLOGY

This study uses secondary data to compare countries' HDI and its relationship with financial policy effectiveness. Three countries were selected: Norway (very high HDI), India (medium HDI), and Kenya (medium-to-lower HDI), representing divergent development levels and financial inclusion strategies.

Data sources include: UNDP (2024) for HDI scores; World Bank Global Findex Database (Demirgüç-Kunt et al., 2022) for account ownership and digital behaviour; IMF Financial Access Survey (2023) for credit penetration; NPCI (2024) for UPI transactions; and RBI annual reports for India-specific data.

The study employs descriptive statistics, trend analysis, and basic correlation between HDI levels and financial behaviour indicators. A simplified regression framework was applied:

$$Impact = \beta_0 + \beta_1 (Financial\ Inclusion) + \beta_2 (HDI) + \beta_3 (Interaction\ Term)$$

The interaction term tests whether HDI strengthens the effect of financial inclusion on consumption behaviour. Changes before and after major reforms—UPI in India, mobile money expansion in Kenya—are also examined.

4. DATA ANALYSIS & FINDINGS

4.1 India (Medium HDI: 0.685)

India is a critical example of a medium-HDI country with large-scale financial inclusion reforms. Under PMJDY, more than 500 million bank accounts have been opened since 2014. UPI processed more than 10

billion transactions per month in 2024, rising to over 21 billion by early 2026.

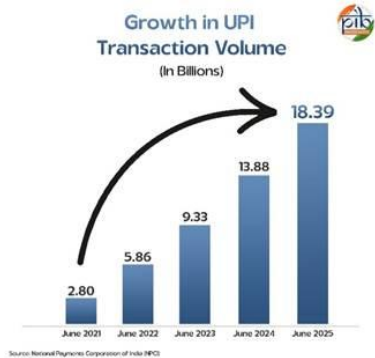


Fig. 5–6: UPI transaction growth 2017–2025

The line and bar graphs show exponential UPI growth, especially post-COVID-19. SIP (Systematic Investment Plan) accounts crossed 80 million in 2024 (AMFI, 2024), reflecting micro-investment participation. However, World Bank Global Findex (2021) data shows many rural accounts remain inactive, and digital payment usage is concentrated in urban, educated populations—pointing to HDI constraints.

4.2 Norway (Very High HDI: 0.970)

Norway exemplifies the high-HDI benchmark. Over 96% of adults use digital payment methods regularly (World Bank, 2022). Cash use is extremely low and actively discouraged—many shops no longer accept it. Formal credit penetration is high, with most adults accessing bank credit. Participation in pension funds and retail investments indicates financial deepening rather than mere access.

4.3 Kenya (Lower-Medium HDI: 0.58)

Kenya's M-Pesa demonstrates that financial inclusion can expand rapidly even in lower-income settings, with large numbers of adults using mobile applications for regular transactions. However, formal credit penetration and micro-investment participation remain limited compared to high-HDI countries. The

transition from mobile transfers toward formal long-term investment behaviour is weak—showing that access alone does not guarantee structural change.

4.4 Comparative Analysis

Table 3: Comparative Financial Behaviour Indicators

Country	HDI	Digital Pay	Formal Credit	Micro-Inv.
Norway	0.96	Very High (95%+)	High	Strong
India	0.64	Rapid Growth	Moderate	Growing
Kenya	0.58	High Mobile	Limited	Low

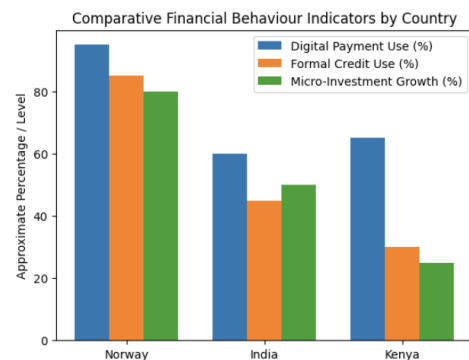


Fig. 7: Comparative financial behaviour indicators by country

Norway (very high HDI) shows consistently higher levels across all three dimensions. The pattern suggests that stronger human development may enhance the depth of financial behaviour beyond basic access. Lower-HDI countries show strong adoption of basic tools but weaker financial deepening.

5. DISCUSSION

The data analysis indicates that higher HDI can strengthen the impact of financial inclusion programmes, but the relationship is not automatic or uniform—it depends on several other factors. Education enables understanding of interest rates, EMI, digital tools, and investment risks. The World Bank (2022) notes that higher education levels correlate with greater digital financial usage. Income creates surplus funds available for saving and investment.

Digital literacy is another driver: countries with strong education systems and digital infrastructure show faster adoption of online banking and cashless payments (Global Findex 2021). Institutional trust matters equally—when people believe banks and regulators are stable, they are more likely to borrow formally rather than relying on informal lenders.

However, HDI is not the only factor. Policy design and implementation quality matter equally. India's UPI succeeded due to robust technological design and strong public-private cooperation. Infrastructure—internet access, mobile penetration—also shaped adoption rates.

5.1 India as an Outlier

India presents a significant exception to the HDI-behaviour correlation. Despite an HDI of 0.685, India has shown one of the fastest adoptions of digital finance globally. The JAM trinity (Jan Dhan–Aadhaar–Mobile) ensured direct benefit transfers at scale, linking welfare payments to bank accounts to increase usage. Aadhaar-based e-KYC reduced onboarding costs; RuPay cards, zero-balance accounts, and overdraft facilities lowered entry barriers. BHIM, zero MDR for UPI, Pradhan Mantri Mudra Yojana (PMMY), and Stand-Up India further expanded micro-credit access.

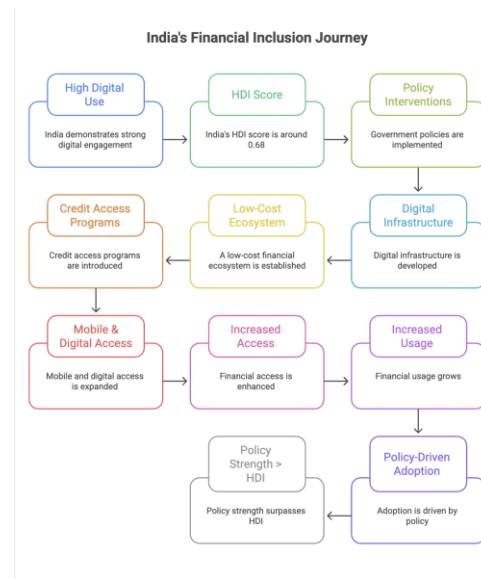
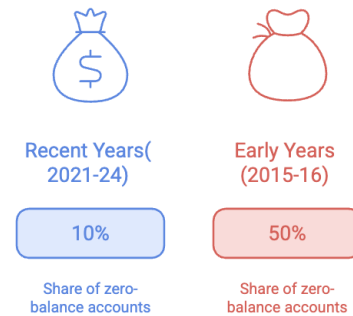
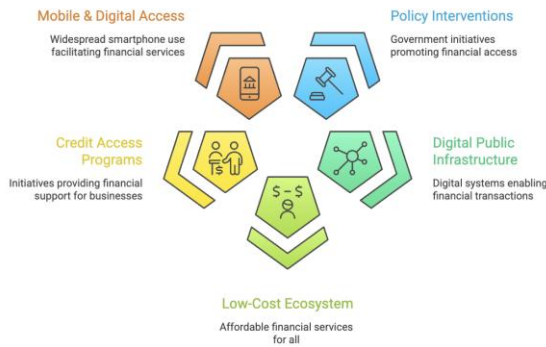


Fig. 8–9: India's policy-driven financial inclusion expansion

Zero-Balance Accounts



Foundations of Financial Inclusion



Distribution of PMJDY Accounts by Location

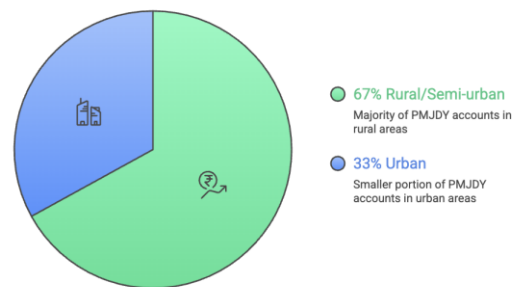
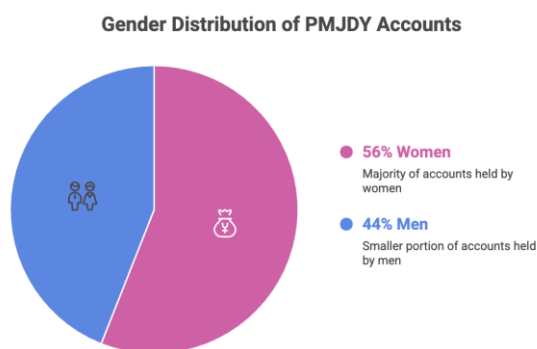


Fig. 10–11: PMJDY account distribution and usage patterns



Digital Payment Usage vs Account Ownership in India (2020-2022)

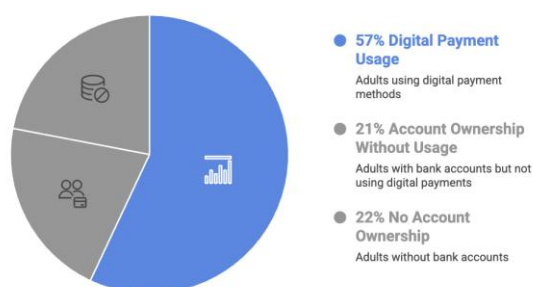


Fig. 12–13: Urban vs. rural usage intensity and digital adoption

Around 67% of PMJDY accounts are held in rural and semi-urban areas, showing strong outreach. Yet transaction intensity remains higher in urban regions—access does not always translate into active usage. India should be viewed as a policy-driven outlier: strong institutional frameworks can compensate for lower HDI, at least for access and initial usage.

5.2 Policy vs. HDI

The Indian case highlights that financial behaviour is shaped not only by HDI but also by the strength of policy design. While HDI improves financial literacy and capacity, targeted policies such as UPI and DBT can directly influence usage patterns. Policy interventions can complement—or even substitute—for lower levels of human development in driving financial inclusion outcomes.

5.3 Forced vs. Voluntary Adoption

In high-HDI countries, financial adoption is largely voluntary and driven by income, education, and consumer choice. In India, financial inclusion has been partly driven by 'forced adoption' through mechanisms such as direct benefit transfers and Aadhaar-linked

services, encouraging regular account usage even among low-income groups. This creates a different pathway of financial behaviour compared to high-HDI economies.

5.4 Dual-Speed India

India displays a dual-speed pattern: urban and educated populations adopt digital payments, credit, and investments actively, while rural and lower-income groups show lower usage levels. While policy can expand access quickly, depth of financial behaviour still depends on education, income, and awareness—reinforcing the continued relevance of HDI in shaping long-term financial outcomes.

6. POLICY IMPLICATIONS

The evidence supports the hypothesis that financial inclusion policies work better when human development levels are high. However, low-HDI countries should not solely rely on fintech expansion. They should first work on basic human capital and institutional efficiency.

Investment in financial literacy—programmes in schools and communities covering savings, credit, and digital tools—is critical. The World Bank (2022) shows that better education increases not just account ownership but active usage. Robust digital infrastructure (reliable internet, mobile connectivity, secure payment systems) builds trust and expands reach. Governments should prioritise broadband access in rural areas and reduce the cost of digital services (ITU, 2023).

Policies should combine welfare programmes with financial literacy to promote savings behaviour. Linking social benefits to formal bank accounts, as in India's DBT scheme, increases account usage—but training and awareness are also needed to encourage responsible borrowing and investment. IMF (2020) reports show that inclusive finance works best when supported by strong institutions and consumer protection.

Key Finding: Better HDI strengthens financial behaviour, but strong policy design and good digital infrastructure can enable countries like India to achieve high levels of financial inclusion even at moderate HDI levels.

7. LIMITATIONS

This study has several important limitations. First, the analysis shows a relationship between HDI and financial behaviour but does not establish causation—political conditions, banking regulation, or cultural attitudes may also influence results. Second, secondary data from World Bank Global Findex and UNDP reports may have time gaps or differences in reporting methods. Third, financial inclusion reforms take many years to show full impact; short-term data may not capture long-term behavioural change.

8. CONCLUSION

This paper examined whether higher HDI enhances the impact of government financial inclusion schemes on consumption behaviour. Evidence suggests that countries with higher HDI support deeper, more stable, and sustained behavioural changes. High-HDI countries show regular digital payment adoption, accessible formal credit, and strong participation in investment products. Medium or lower-HDI countries see quick access expansion but slower deepening.

However, the relationship is not simple or universal. India demonstrates that strong policy interventions—PMJDY, UPI, Aadhaar, and direct benefit transfers—can achieve rapid financial inclusion at moderate HDI levels, showing that policy design, technological infrastructure, and institutional support can partially substitute for lower human development.

The study concludes that HDI acts as a strong enabling factor but is not a sufficient condition on its own. Policy quality, infrastructure, and institutional trust play equally important roles. Future research should apply detailed econometric models to measure this interaction more precisely. Policymakers should focus on both financial innovation and human development to achieve long-term financial deepening and inclusive growth.

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