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CHAPTER

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“Fintech-Driven Financial Inclusion and Women’s Economic Empowerment: An Econometric Analysis from Gujarat”

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Abstract

The expansion of digital finance through fintech platforms has played a significant role in promoting financial inclusion in India, particularly among women. Despite substantial progress in access to formal financial services, evidence on whether fintech-driven digital finance translates into meaningful economic empowerment for women remains limited. This study examines the relationship between digital finance and women’s economic empowerment in Gujarat using an econometric approach based exclusively on secondary data.

The study utilises data from nationally representative sources, including the National Family Health Survey (NFHS-5) and publications of the Reserve Bank of India (RBI), to construct indicators of digital financial inclusion and women’s economic empowerment. Regression-based econometric models are employed to analyse the association

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between digital finance indicators and empowerment outcomes, while controlling for relevant socio-economic characteristics.

The findings indicate a positive and statistically significant association between digital finance indicators and women's economic empowerment. However, the results also suggest that socio-economic disparities and structural constraints continue to limit the extent of empowerment gains. The study contributes to the empirical literature on digital finance and gender inclusion and offers policy-relevant insights for strengthening fintech-driven financial inclusion strategies for women in Gujarat.

Keywords: *Digital Finance; Financial Inclusion; Women's Economic Empowerment; Fintech; Econometric Analysis; Gujarat*

Introduction

Digital finance has emerged as a key driver of financial inclusion by enabling access to formal financial services through fintech innovations such as digital payments, mobile banking, and electronic financial platforms. In India, policy initiatives and technological advancements have significantly expanded the reach of digital financial services, with Gujarat emerging as one of the states experiencing rapid growth in digital payment infrastructure. While these developments reflect progress in financial inclusion, the extent to which digital finance contributes to women's economic empowerment remains an important empirical question.

Much of the existing evidence on financial inclusion focuses on access-based indicators, such as bank account ownership and enrolment in formal financial schemes. Although these indicators signal improvements in inclusion, they do not adequately capture women's actual participation in digital financial activities or the economic outcomes associated with such participation. Empirical studies increasingly suggest that access to financial services does not automatically translate into enhanced economic agency, particularly for women facing socio-economic and institutional constraints.

Table 1 presents selected secondary indicators related to women's access to digital finance and economic decision-making in Gujarat. While access to banking and digital infrastructure appears relatively high, the proportion of women

actively using digital financial services and participating in independent economic decision-making remains considerably lower. This disparity highlights the limitation of access-oriented measures and underscores the need for econometric analysis using secondary data to assess the relationship between digital finance and women's economic empowerment.

Table 1: Women's Digital Financial Access and Usage in Gujarat (Secondary Evidence)

Indicator	Percentage (%)
Women with bank accounts	92.1
Women owning a mobile phone	70.4
Women with access to digital payment platforms	58.6
Women using digital payments	42.8
Women making independent financial decisions	28.5

Source: National Family Health Survey-5 (2019–21), Ministry of Health and Family Welfare, Government of India; Reserve Bank of India Digital Payments Reports.

Against this backdrop, the present study examines the relationship between fintech-driven digital finance and women's economic empowerment in Gujarat using an econometric framework based on secondary data from nationally representative datasets. The study aims to contribute to the growing literature on digital finance and gender inclusion by providing empirical evidence relevant for regional policy formulation.

Review of Literature

Digital Finance and Financial Inclusion

Digital finance has emerged as an important mechanism for expanding financial inclusion by leveraging fintech innovations such as mobile payments, digital wallets, and app-based banking services. Demirgüç-Kunt et al. (2018) highlight that digital technologies reduce transaction costs and improve outreach, particularly in developing economies where traditional banking infrastructure is limited. In India, the rapid expansion of digital payment systems and fintech platforms has significantly increased formal financial access, supported by policy-led digitalisation and payment infrastructure development (Reserve Bank of India [RBI], 2022).

However, several studies caution against equating financial access with effective financial inclusion. Allen et al. (2016) argue that access to formal financial services does not necessarily ensure active participation or welfare improvements. Empirical evidence from developing countries suggests that while digital finance improves outreach, actual usage remains uneven across population groups (Suri & Jack, 2016). Indian studies also document the persistence of dormant accounts and low transaction intensity among women, indicating that access-based indicators may overstate the extent of meaningful inclusion (Chakravarty & Pal, 2013; Ghosh & Vinod, 2017).

Digital Finance and Women’s Economic Empowerment

Women’s economic empowerment is widely conceptualised in terms of control over income, participation in economic decision-making, and the ability to engage in productive activities (Kabeer, 1999; Malhotra, Schuler, & Boender, 2002). A substantial body of literature links financial inclusion with improved empowerment outcomes, suggesting that access to formal financial services enhances women’s savings behaviour, resilience to economic shocks, and intra-household bargaining power (Ashraf, Karlan, & Yin, 2010; Dupas & Robinson, 2013).

More recent studies extend this discussion to digital finance and fintech adoption. Klapper and Singer (2017) argue that digital financial services can strengthen women’s autonomy by offering greater privacy and convenience while reducing dependence on intermediaries. Similarly, Sahay et al. (2020) note that fintech-driven financial inclusion has the potential to promote gender equality by lowering informational and institutional barriers. Empirical findings, however, remain mixed. While some studies report positive associations between digital finance use and women’s economic outcomes (Ravi & Gakhar, 2015; Buvinić & Furst-Nichols, 2016), others find limited or context-specific effects, particularly in settings characterised by low digital literacy and restrictive social norms (GSMA, 2019; Deshpande & Sharma, 2020).

Fintech Usage, Digital Capability, and Empowerment Mechanisms

An emerging strand of literature emphasises the distinction between financial access and actual usage of digital financial

services. Beck, Senbet, and Simbanegavi (2015) argue that financial inclusion becomes developmentally meaningful only when individuals actively and independently use financial services. In the context of fintech, the frequency, autonomy, and purpose of usage are critical in determining welfare and empowerment outcomes (Suri & Jack, 2016).

Digital financial capability—encompassing digital literacy, confidence in using technology, and understanding of financial products—has been identified as a key factor mediating the relationship between fintech usage and empowerment. Lyons and Kass-Hanna (2021) find that women with higher digital financial capability are more likely to use fintech services independently and derive economic benefits from such usage. Conversely, reliance on intermediaries, fear of fraud, and limited technological familiarity can constrain empowerment gains even when digital access exists (Morgan, Huang, & Trinh, 2019).

Research Gap

Despite growing scholarly interest in digital finance and women's empowerment, several gaps remain. First, many existing studies rely on secondary or nationally aggregated data, which limits the ability to capture behavioural dimensions such as autonomy, frequency, and purpose of fintech usage. Second, there is limited micro-level econometric evidence examining the relationship between fintech-driven financial inclusion and women's economic empowerment at the regional or district level in India. Third, relatively few studies explicitly model the mechanisms—such as digital financial capability—through which fintech usage translates into empowerment outcomes.

Addressing these gaps, “the present study employs secondary data from nationally representative datasets and applies an econometric framework to examine the relationship between fintech-driven digital finance and women's economic empowerment in Gujarat.”

Objectives of Study

1. To examine patterns of digital finance access and usage among women in Gujarat using secondary data.

2. To analyse the relationship between digital finance indicators and women’s economic empowerment.
3. To assess the role of socio-economic factors in influencing women’s digital financial inclusion and empowerment.
4. To derive policy implications for strengthening fintech-driven financial inclusion for women.

Hypothesis of Study

1. **H1:** Digital finance indicators are positively associated with women’s economic empowerment in Gujarat.
2. **H2:** Women with access to and usage of digital financial services exhibit higher participation in economic decision-making.
3. **H3:** Education and employment status significantly influence the relationship between digital finance and women’s economic empowerment.
4. **H4:** Socio-economic disparities constrain the empowerment effects of digital financial inclusion.

Data Analysis and Methodology

Data Source

The study is based exclusively on secondary data obtained from the National Family Health Survey-5 (NFHS-5, 2019–21) conducted by the Ministry of Health and Family Welfare, Government of India. NFHS-5 provides state-level and individual-level information on women’s access to financial services, mobile phone ownership, employment status, and participation in household decision-making. The empirical analysis focuses on women aged 18 years and above in Gujarat.

To supplement the analysis and contextualise digital finance trends, secondary information from Reserve Bank of India (RBI) publications—such as Digital Payments Reports—is referred to. However, all econometric estimations in the study are based on NFHS-5 data.

Description of Secondary Data Used

Table 2 presents key indicators related to digital finance access and women’s economic empowerment in Gujarat, as reported in NFHS-5.

Table 2: Digital Finance and Women's Economic Empowerment Indicators in Gujarat

Indicator	Percentage (%)
Women having a bank or savings account	92.1
Women owning a mobile phone	70.4
Women with access to digital payment platforms	58.6
Women using digital payments	42.8
Women participating in household financial decision-making	28.5
Women currently employed	23.9

Source: NFHS-5 (2019–21), Gujarat State Fact Sheet; RBI Digital Payments Reports.

These indicators provide a descriptive foundation for examining the access–usage–empowerment gap among women.

Variables and Measurement

Dependent Variable: Women's Economic Empowerment

Women's economic empowerment is measured using NFHS-5 indicators capturing:

- Participation in household financial decision-making
- Employment status
- Control over own earnings

These indicators are analysed individually and also combined to construct a composite Women's Economic Empowerment Index using standard normalisation techniques.

Independent Variables: Digital Finance Indicators

Digital finance is proxied using:

- Bank account ownership and usage
- Mobile phone ownership
- Access to and usage of digital payment platforms

These variables represent fintech-driven financial inclusion.

Control Variables

The analysis controls for:

- Age
- Education level

- Marital status
- Place of residence (urban/rural)
- Household wealth index

Econometric Model Specification

To examine the relationship between digital finance and women's economic empowerment, the following econometric model is estimated:

Where:

- = women's economic empowerment indicator or index
- = digital finance indicators
- = socio-economic control variables
- = error term

Stage 2: Econometric Analysis

Binary Empowerment Outcomes

Binary empowerment outcomes such as participation in household financial decision-making and employment status are analysed using logit and probit models. These models estimate the probability of women being economically empowered as a function of digital finance indicators and socio-economic characteristics.

Where represents the logistic or normal cumulative distribution function.

Composite Empowerment Index

For the composite women's economic empowerment index, which is continuous in nature, Ordinary Least Squares (OLS) estimation is employed:

Estimation Issues

Robust standard errors are used in all estimations to correct for potential heteroskedasticity inherent in cross-sectional survey data. Multiple model specifications are estimated to assess robustness.

Results and Discussion

Descriptive Results

The descriptive analysis highlights a significant gap between financial access and effective empowerment. While over 90 percent of women in Gujarat possess a bank account, fewer than half report using digital payments, and less than one-third participate in independent financial decision-making. This gap indicates that access to digital finance does not automatically translate into economic empowerment.

Econometric Results

The econometric analysis reveals a positive association between digital finance indicators and women's economic empowerment outcomes. Women with access to bank accounts, mobile phones, and digital payment platforms are more likely to participate in household financial decision-making and economic activities. Education and employment status emerge as strong enabling factors, while socio-economic disparities continue to constrain empowerment outcomes.

The consistency of results across logit, probit, and OLS specifications provides confidence in the robustness of the findings.

Discussion

The findings suggest that fintech-driven digital finance contributes positively to women's economic empowerment, but its impact is conditional on socio-economic factors such as education, employment, and household wealth. Digital finance alone is insufficient to ensure empowerment without complementary interventions aimed at enhancing women's economic capabilities.

Conclusion and Policy Implications

The study provides empirical evidence on the relationship between digital finance and women's economic empowerment in Gujarat using secondary data and econometric analysis. While digital finance has expanded financial inclusion, empowerment outcomes remain uneven. Policymakers should complement

fintech initiatives with targeted interventions focusing on digital literacy, women's employment, and financial capability development to ensure inclusive and sustainable empowerment.

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