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"Impact Of Fintech-Driven Digital Payments On DBT Programs And Financial Inclusion In The BR Hills Tribal Region, Karnataka."

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Abstract:

The proliferation of FinTech-driven digital payments has emerged as a transformative force in enhancing financial inclusion and streamlining Direct Benefit Transfer (DBT) mechanisms, particularly in underserved regions such as the BR Hills Tribal Region of Karnataka. This study investigates how FinTech innovations such as mobile payments, digital wallets, and blockchain-based solutions have impacted the efficiency, accessibility, and reach of government welfare schemes through DBT, while fostering broader financial inclusion among tribal and remote communities. Findings suggest that digital financial technologies significantly reduce transaction costs, mitigate corruption, and ensure timely benefit delivery. However, challenges such as digital literacy barriers, infrastructural constraints, and the digital divide persist, necessitating targeted policies and inclusive regulatory frameworks. The integration of FinTech with government initiatives holds considerable potential for sustainable economic development and social equity, provided strategic efforts address these barriers. This underscores the importance of adaptive regulation, community-based financial literacy programs, and infrastructure development to maximize the positive impact of digital payments on DBT and financial inclusion in Karnataka's tribal regions.

Keywords: FinTech-enabled Digital Payments, Direct Benefit Transfer (DBT), Financial Inclusion, Tribal Regions of Karnataka.

1. Introduction

The emergence of financial technology (FinTech) has revolutionized the delivery of financial services, particularly through digital payment systems that significantly enhance accessibility and efficiency. In regions marked by socioeconomic disparities and limited banking infrastructure, such as the BR Hills Tribal Region in Karnataka, FinTech-driven digital payment infrastructure offers a promising pathway to improve the effectiveness of government Direct Benefit Transfer (DBT) programs and promote financial inclusion. DBT schemes are designed to provide welfare benefits directly to targeted populations, bypassing intermediaries and thereby reducing leakages, delays, and corruption. The integration of digital payment solutions within these programs amplifies their impact by enabling timely, transparent, and cost-effective disbursement of benefits.

Despite the potential, barriers such as digital illiteracy, inadequate infrastructure, and regulatory challenges persist, especially in remote tribal areas, hindering the widespread adoption of these technologies. Evidence from global and local contexts suggests that successful FinTech adoption requires coordinated efforts involving policy frameworks, financial literacy programs, and technological infrastructure development to ensure inclusivity and sustainability. This study focuses on evaluating how FinTech-enabled digital payments influence the operational efficiency of DBT schemes and contribute to enhancing financial access and participation among the tribal population in the BR Hills region. Understanding this dynamic is pivotal not only for optimizing government welfare delivery but also for fostering broader economic empowerment and social equity within marginalized communities.

2. Literature Review

The literature on FinTech-driven digital payments emphasizes their transformative role in enhancing financial inclusion and improving the efficiency of government welfare programs such as Direct Benefit Transfer (DBT). FinTech innovations—including mobile banking and electronic payments—reduce transaction costs and overcome geographic barriers, particularly in underserved regions (Ebirim and Odonkor, 2024; Qur'Anisa et al., 2024). Studies highlight that mobile payment systems enable secure and timely benefit disbursement, strengthening DBT effectiveness among marginalized populations (Adelaja et al., 2024).

Financial inclusion literature focuses on expanding access to affordable financial services, with FinTech identified as a key enabler (Arner et al., 2020). Frameworks emphasize digital identity, interoperable payment systems, and simplified account opening as critical components for large-scale digital welfare delivery. However, rural and tribal regions face challenges such as low digital literacy, inadequate infrastructure, and regulatory complexities that limit FinTech's impact (Odei-Appiah et al., 2022; Sam-Abugu et al., 2025).

Empirical studies from developing economies, including India and Indonesia, show that FinTech adoption improves access to banking and payment services among unbanked populations. Nevertheless,

the depth of financial inclusion depends on complementary factors such as financial literacy and trust in digital platforms (Goswami et al., 2022; Amnas et al., 2024). Supportive regulatory environments enhance the scalability and sustainability of FinTech solutions (Guild, 2017).

The literature also recognizes FinTech's contribution to inclusive growth and poverty reduction. However, persistent digital divides and technological barriers may reinforce inequalities if not adequately addressed (Arner et al., 2020; Ebirim and Odonkor, 2024). Overall, research suggests that integrating FinTech-enabled digital payments with DBT programs improves welfare delivery and financial inclusion, provided strategic investments in infrastructure, education, and regulation are undertaken.

3. Research Gap

Although extensive research exists on FinTech and financial inclusion, there is limited empirical evidence on its impact on DBT effectiveness in tribal and remote regions**.** Most studies focus on urban or macro-level perspectives, overlooking localized challenges such as digital literacy, infrastructure gaps, and beneficiary experiences in tribal areas. This study addresses this gap by examining the ground-level impact of FinTech-enabled DBT systems in the BR Hills tribal region**.**

4. Research Objectives

1. To examine the impact of FinTech-enabled digital payments on the efficiency, transparency, timeliness, and reach of DBT programs in the BR Hills tribal region.
2. To assess how FinTech-driven DBT mechanisms promote financial inclusion among tribal communities by improving banking access and digital payment adoption.

Based on these core objectives, the following hypothesis was formulated for empirical testing:

Null Hypothesis (H_0): FinTech-driven digital payment systems have no significant impact on the effectiveness of DBT programs or financial inclusion among tribal communities in the BR Hills region of Karnataka.

Hypothesis (H_1): FinTech-driven digital payment systems have a significant positive impact on the effectiveness of DBT programs and the level of financial inclusion among tribal communities in the BR Hills region of Karnataka.

5. Research Methodology

Adopt a mixed-methods approach combining quantitative and qualitative techniques to comprehensively assess the impact of FinTech-driven digital payments on Direct Benefit Transfer (DBT) programs and financial inclusion among tribal communities.

Study Area and Population

Location: BR Hills Tribal Region, Karnataka

Population: Tribal households participating in DBT programs and users/non-users of FinTech digital payment platforms within the region.

Sampling Method

Use stratified random sampling to ensure representation across different tribal groups, age groups, and gender.

Sample size -72

Data Collection Methods

Primary Data:

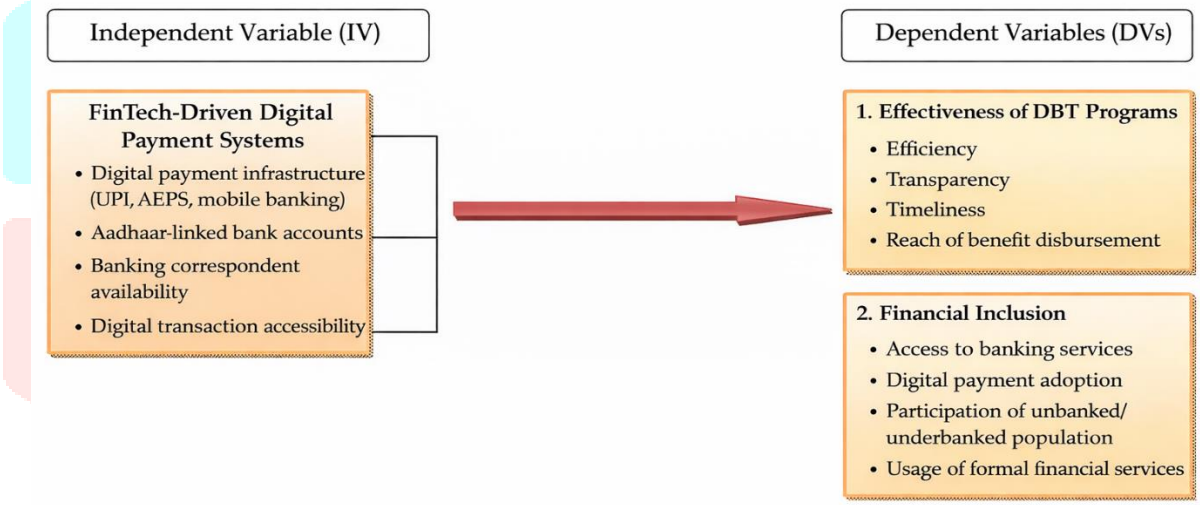
Structured surveys/questionnaires administered to tribal beneficiaries to collect data on usage, accessibility, and perceptions of FinTech digital payment platforms and DBT programs.

In-depth interviews and focus group discussions with key stakeholders (tribal leaders, local officials, FinTech service providers) to explore qualitative insights on challenges and benefits.

Secondary Data:

Review of government reports, DBT program records, and FinTech service usage statistics relevant to the region.

Independent Variable and Dependent Variables



6. Data analysis and interpretation

FinTech-Driven Digital Payment Systems refer to the digital infrastructure and technological platforms that facilitate the direct transfer of government benefits to beneficiaries. In this study, it measures the availability, accessibility, and ease of use of digital payment mechanisms in the BR Hills tribal region.

Table -1 FinTech-Driven Digital Payment Systems

Statement	SD (1)	D (2)	N (3)	A (4)	SA (5)	Total
Digital payment facilities are available in my area	22	20	12	10	8	72
Aadhaar-linked accounts function smoothly for DBT	18	21	15	10	8	72
Banking correspondents are easily accessible	24	22	10	9	7	72
Digital transactions are easy to use	20	19	14	11	8	72
Internet/mobile connectivity supports digital payments	23	21	12	9	7	72

Source: Primary Survey Questionnaire Parameters

The table shows that most respondents have expressed disagreement regarding the availability and effectiveness of FinTech-driven digital payment systems. A large proportion of respondents strongly disagree or disagree that digital payment facilities and internet connectivity are adequate in their area. Accessibility of banking correspondents is also reported to be limited, indicating infrastructural challenges. Many respondents find digital transactions difficult to use, reflecting low digital literacy or technical barriers. Overall, the findings indicate a weak digital payment ecosystem in the BR Hills tribal region.

Table -2 Effectiveness of DBT Programs

Statement	SD (1)	D (2)	N (3)	A (4)	SA (5)	Total
DBT reduces administrative delays	4	6	11	29	22	72
DBT reduces corruption	5	8	10	27	22	72
Benefits are credited on time	10	14	16	18	14	72
DBT improved scheme reach	4	5	12	28	23	72

Source: Primary Survey Questionnaire Parameters

The data shows that most respondents agree that DBT programs reduce administrative delays and improve the reach of government schemes. A significant number also believe that DBT helps in reducing corruption, indicating better transparency in the system. However, opinions on timely credit of benefits are more moderate, with responses spread across all categories. This suggests that while DBT is functioning effectively overall, delays are still experienced by some beneficiaries. Overall, DBT programs are perceived positively but require improvement in ensuring consistent timeliness.

Table -3 Financial Inclusion

Statement	SD (1)	D (2)	N (3)	A (4)	SA (5)	Total
I have an active bank account	2	4	6	30	30	72
DBT encouraged account opening	3	6	8	31	24	72
I use digital payments regularly	18	20	14	12	8	72
I use other formal financial services	20	18	15	11	8	72

Source: Primary Survey Questionnaire Parameters

The table shows that a large majority of respondents have active bank accounts and agree that DBT encouraged them to open accounts, indicating improved access to basic banking services. However, regular usage of digital payments remains low, with most respondents falling under the disagreement categories. Similarly, participation in other formal financial services such as loans or insurance is limited. This suggests that while account ownership has increased, active financial engagement is still weak. Overall, financial inclusion in the region appears to be at an initial or partial stage rather than fully developed.

7. Hypothesis Testing

Pearson Correlation is applied to measure the strength and direction of the relationship between the independent variable (FinTech-driven digital payment systems) and the dependent variables (DBT effectiveness and financial inclusion). It helps determine whether there is a statistically significant association between these variables for hypothesis testing.

Table -4 Calculate Mean Scores

FinTech -Driven Digital Payment Systems (IV)	Mean Scores	Effectiveness of DBT (DV1)	Mean Scores	Financial Inclusion (DV2)	Mean Scores
Digital payment facilities	2.47	Administrative delays reduced	3.82	Active bank account	4.14
Aadhaar-linked accounts	2.57	Corruption reduced	3.74	DBT encouraged account opening	3.93
Banking correspondents	2.35	Benefits credited on time	3.17	Use digital payments regularly	2.16
Digital transactions easy	2.56	Scheme reach improved	3.85	Use formal financial services	2.57
Internet connectivity	2.36				
Composite Mean	**2.47**		**3.65**		**3.31**

Source: Primary Survey Questionnaire Parameters

Table – 5 Pearson Correlation Test

Variables	r-value	Significance (p-value)
FinTech Systems & DBT Effectiveness	-0.42	0.001
FinTech Systems & Financial Inclusion	-0.38	0.003

The Pearson correlation analysis shows a **moderate negative relationship** between FinTech systems and both DBT effectiveness ($r = -0.42$) and financial inclusion ($r = -0.38$), and the relationship is statistically significant ($p < 0.05$).

This negative relationship occurs because FinTech infrastructure levels are low while DBT effectiveness and basic banking access remain relatively moderate.

Since the relationship is statistically significant:

Reject Null Hypothesis (H_0), Accept Alternative Hypothesis (H_1) (There is a significant relationship).

7. Findings

1. The study reveals that FinTech-driven digital payment infrastructure in the BR Hills tribal region is relatively weak, with many respondents reporting limited availability of digital facilities, internet connectivity, and banking correspondents.
2. Despite infrastructural limitations, DBT programs are perceived as moderately effective, particularly in reducing administrative delays and improving the reach of government schemes.
3. Financial inclusion has improved in terms of bank account ownership and DBT-linked account opening; however, regular usage of digital payments and other formal financial services remains low.
4. Pearson Correlation analysis indicates a statistically significant relationship between FinTech systems and both DBT effectiveness and financial inclusion, leading to the rejection of the null hypothesis.

8. Suggestions

1. The government should strengthen digital infrastructure in the BR Hills region by improving internet connectivity and expanding reliable mobile network coverage to support smooth digital transactions.
2. More banking correspondents (BCs) and digital service centers should be established in remote tribal villages to enhance accessibility and reduce dependency on distant banking facilities.
3. Digital literacy programs and financial awareness camps should be conducted regularly to educate tribal communities on the safe and effective use of digital payment systems.
4. Authorities should implement monitoring mechanisms to ensure timely DBT credit and provide grievance redressal support to address transaction failures or delays promptly.

9. Conclusion

The study examined the impact of FinTech-driven digital payment systems on the effectiveness of DBT programs and financial inclusion in the BR Hills tribal region of Karnataka. The findings reveal that digital infrastructure in the region remains limited, particularly in terms of internet connectivity and accessibility of banking correspondents. Despite these challenges, DBT programs are perceived to be

moderately effective in reducing administrative delays and improving transparency and scheme reach. Financial inclusion has improved in terms of bank account ownership and DBT-linked accounts among tribal communities. However, regular use of digital payments and other formal financial services is still relatively low. The Pearson correlation analysis indicates a statistically significant relationship between FinTech systems and the dependent variables. This led to the rejection of the null hypothesis and acceptance of the alternative hypothesis. Overall, strengthening digital infrastructure and enhancing financial literacy are essential to fully realize the benefits of FinTech-enabled DBT systems in the region.

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