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The Impact of Mobile-Based FinTech Lending Platforms on Credit Access for Unbanked Micro-Entrepreneurs in Emerging Economies: Empirical Evidence from Bangladesh

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Abstract: Despite Bangladesh's extensive Mobile Financial Services infrastructure catering to over 220 million users, just 9.1% of people access official credit sources. This mixed-methods study examines the influence of mobile-enabled FinTech lending platforms on credit accessibility and business performance for 300 unbanked micro-entrepreneurs in rural and semi-urban areas of Bangladesh. The study used stratified sampling, surveys, and semi-structured interviews to investigate whether the magnitude of digital footprints predicts loan approval as well as perceived loan worth. Research reveals a notable paradox: whereas digital footprint is a robust predictor of loan approval, it shows no link with perceived helpfulness. Borrowers across all tiers of digital engagement primarily indicated that loans were unbeneficial, citing issues such as payback anxiety, concealed costs, and inadequate loan amounts. In contrast to true financial freedom, the study shows that algorithmic access that lacks clear pricing, financial literacy support, and flexible repayment choices promotes transactional inclusion. FinTech lending in Bangladesh operates inclusively in its approval processes, although fails to have significant developmental effects. The study promotes legislative frameworks that require fee transparency, set minimum loan thresholds for company investments, introduce flexible repayment choices, and offer formal grievance processes to transform digital access into meaningful financial inclusion.

Keywords: *FinTech Lending, Digital Footprint Intensity, Nano-Loans, bKash, Algorithmic Credit Scoring, Unbanked Micro-Entrepreneurs.*

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I. INTRODUCTION

Despite considerable advancements in widening the accessibility of financial services, hundreds of millions of micro-entrepreneurs in emerging economies continue to be disenfranchised from official credit markets, hence reinforcing cycles of poverty and constraining business expansion (Agarwal & Chua, 2020). In Bangladesh, the disparity is evident: merely 9.1% of adults accessed loans from official financial institutions in the preceding year, despite the widespread prevalence of Mobile Financial Services (MFS) accounts (Akter et al., 2021). This disconnect shows a major paradox: digital payment systems like bKash and Nagad have made it possible for people without bank accounts to make purchases, but they haven't yet made it easier for the people who need credit the most—street vendors, home-based tailors, smallholder farmers, and other informal micro-entrepreneurs who don't have collateral, a creditworthiness, or actual income documentation (Biswas, 2021, pp. 61-62; Rahman, 2025, p. 732).

In reaction to ongoing exclusion, mobile-based FinTech lending platforms have arisen in Bangladesh as an innovative solution, utilizing the country's substantial MFS

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infrastructure to provide small-ticket nano-loans without conventional verification. Platforms like bKash and Nagad, which together have more than 220 million registered users, are now testing digital credit solutions that use alternative data, like how often you make mobile transactions, how often you top up your airtime, and how long you've had your SIM card (Rahman, 2025, p. 738; Hossain & Khan, 2025). This strategy eliminates the requirement for collateral or bank statements, utilizing a user's digital footprint to facilitate immediate, algorithm-based loan approvals, reflecting global trends in alternative credit assessment (Kumar & Sabbineni, 2022). Advocates contend that these innovations may open up credit for "thin-file" or "no-file" borrowers, who represent the bulk of Bangladesh's informal micro-entrepreneurial sector (Rahman, 2025, p. 738; Sanga & Aziakpono, 2023, p. 6).

Although comprehensive studies confirm that MFS has promoted the uptake of digital payments, notably emphasizing bKash's contribution to remittances, wage distributions, and transactional ease (Hossain & Khan, 2025, p. 8; Rahman, 2025, p. 732), there is scant evidence concerning its impact on lending. In 2020, Bangladesh had 99.3 million MFS accounts (Akter et al., 2021), although only 9.1% of customers accessed formal credit, indicating a notable gap between payment infrastructure and credit availability. The requirements for acceptance remain ambiguous, and individuals with minimal digital activity—such as occasional transactors, basic mobile users, or those using shared or agent-managed devices—face algorithmic invisibility due to their behavior generating inadequate data for models to evaluate (Biswas, 2021). This exclusion operates through digital processes rather than gender, despite being impacted by cultural and social factors such as patriarchal phone-sharing habits. As of now, no research has comprehensively assessed whether Bangladesh's pilot FinTech financing models efficiently cater to excluded groups or simply perpetuate current patterns of prejudice.

Furthermore, there is a lack of empirical research within the Bangladeshi context assessing whether these nano-loans contribute to genuine business growth or instead precipitate over-indebtedness, a phenomenon abundantly documented in global FinTech literature (Agarwal & Chua, 2020). Sanga & Aziakpono (2023) conducted an extensive study of 62 global papers and discovered a lack of research on FinTech financing in South Asia. None originated from Bangladesh. This urgent evidence gap necessitates meticulous scrutiny of inclusion, equity, and real-world consequences; otherwise, policy and innovation may exacerbate disadvantage under the guise of electronic payments.

This study addresses the gap by analyzing the influence of mobile-based FinTech lending platforms in Bangladesh on credit accessibility and perceived financial results for unbanked micro-entrepreneurs. The study analyzes loan eligibility for users with low digital footprint intensity, such as infrequent transactors, button phone users, and OTC consumers, who are at high risk of algorithmic invisibility, using data from suburban and semi-urban communities. This study examines the impact of nano-loans on borrowers' lives: do they facilitate business growth and income stability, or do they induce stress, harmful feedback loops, or digital dependency (Agarwal & Chua, 2020, p. 371; Shahzady, 2024, p. 5).

This study focuses on Bangladesh, a nation characterized by widespread mobile financial services adoption yet constrained formal credit access (Akter et al., 2021), offering localized initial evidence for regulators, FinTech innovators, and growing institutions to create equitable, inclusive, and efficient digital lending ecosystems. This research addresses the stated necessity for South Asia-specific empirical studies on the consequences of FinTech credit (Sanga & Aziakpono, 2023, p. 10), extending beyond payment metrics to evaluate the tangible effects of algorithm-driven financing on the most vulnerable firms.

➢ *Research Objectives*

- To investigate the determinants of access to mobile-based FinTech nano-loans in Bangladesh, with specific emphasis on behavioral proxies of digital engagement.
- To critically assess the perceived socioeconomic impact of nano-loans on unbanked micro-entrepreneurs, evaluating the dual dynamics of business empowerment.
- To provide evidence-based recommendations to enhance the inclusivity and developmental impact of algorithm-driven credit.

➢ *Research Questions*

- How does digital footprint intensity influence access to FinTech nano-loans—specifically, who is approved and who is excluded—among unbanked micro-entrepreneurs in Bangladesh?
- To what extent do borrowers perceive nano-loans as enabling business growth versus generating financial or psychological stress?
- What policy or product-level reforms are needed to ensure FinTech lending in Bangladesh translates digital access into meaningful economic inclusion?

II. LITERATURE REVIEW

Mobile Financial Services (MFS) in Bangladesh have expanded rapidly, establishing one of the largest digital payment systems globally, with over 220 million registered accounts across platforms like bKash, Nagad, and Rocket. Despite the ubiquity of transactions, unbanked micro-entrepreneurs such as street vendors, domestic tailors, and small dairy suppliers still have significant challenges in obtaining credit. This paradox lies at the core of the current discourse among academics and policymakers: can mobile-based FinTech financing genuinely democratize credit, or does it risk perpetuating exclusion through data-driven gatekeeping? This review synthesizes global and Bangladesh-specific literature to examine the evolution of mobile financial services into credit platforms, the motivations and limitations of alternative credit scoring, the contentious impacts of digital credit on borrowers, and the critical regulatory and empirical deficiencies that obscure true

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outcomes. An empirical effort to ascertain who benefits and who is barred from algorithmic finance in Bangladesh is made possible by concentrating on the intensity of digital footprints rather than demographic identity.

In the past, account ownership has served as a metric for assessing financial inclusion in Bangladesh, predominantly via microfinance or mobile financial services (MFS). Current research indicates that access without consumption, especially regarding credit, constitutes mere cosmetic inclusion (Akter et al., 2021; Shaheen et al., 2025). The unbanked are not merely individuals without financial accounts; they are those banned from traditional credit systems due to low collateral, lack of formal income verification, or, frequently, inadequate digital behavioral data (Rahman, 2025). Although MFS has successfully enabled remittances, wage disbursements, and peer-to-peer transactions, its transition to credit delivery remains nascent and inconsistent. In 2023, just 9.1% of Bangladeshi adults obtained loans from traditional financial institutions, a figure that has remained consistent despite more than ten years of Mobile Financial Services (MFS) growth (Akter et al., 2021). This discrepancy illustrates that payment technology alone is inadequate for extending credit to the most marginalized.

The transition to digital financing relies on alternative credit scoring, which replaces conventional financial history with non-traditional behavioral indicators. Internationally, FinTech platforms in India, Kenya, Nigeria, and Vietnam assess creditworthiness based on mobile recharge frequency, utility bill payments, SIM card tenure, call duration trends, and transaction consistency (Kumar & Sabbineni, 2022; Alvi et al., 2025). In Bangladesh, bKash and Nagad have trialed nano-loans below BDT 10,000, utilizing a comparable rationale that specifically depends on "mobile past transactions, recharge patterns, and account longevity" to secure immediate, algorithmic approvals (Hossain & Khan, 2025; Rahman, 2025). This policy guarantees coverage for "thin-file" or "no-file" borrowers, who constitute the majority of Bangladesh's informal micro-business sector (Sanga & Aziakpono, 2023).

Nevertheless, this assurance is based on a tenuous assumption: that the magnitude of an individual's digital imprint corresponds directly to their creditworthiness. Digital footprint intensity comprises three interconnected dimensions: (1) device functionality (smartphone versus basic phone), (2) transaction frequency (monthly mobile financial services interaction count), and (3) platform engagement (self-directed application utilization versus agent-supported services). In practice, this premise breaks down for users with limited digital footprints—not because of financial risk, but owing to social and technical limitations. Rural entrepreneurs frequently depend on Over-the-Counter (OTC) services, whereby agents perform transactions on their behalf, resulting in no individual transaction records (Rahman, 2025).

Users of basic "button phones" are unable to access smartphone-exclusive loan functionalities, thereby disqualifying them regardless of business viability (Hossain & Khan, 2025). Apart from algorithmic design, patriarchal traditions in Bangladesh restrict women's independent phone use, resulting in shared devices and reduced transaction frequency, reducing data visibility (Rahman, 2025). The result is algorithmic invisibility: economically solvent micro-entrepreneurs are excluded from credit models not due to a lack of creditworthiness, but because their digital behaviors do not satisfy the criteria of data-intensive scoring systems (Alvi et al., 2025). This dynamic potentially perpetuates structural exclusion disguised as technological advancement.

The real-world impacts of digital credit on borrowers remain contentious. Data from various emerging economies indicates that empowerment results in positive outcomes. Alvi et al. (2025) found that 85.5% of respondents in Pakistan, India, Kenya, and Nigeria indicated an increase in disposable income following the utilization of digital credit, while 88% reported enhanced business cash flow and growth opportunities. Eça et al. (2022) similarly discovered that FinTech finance significantly enhances entrepreneurial initiation and growth among small, liquidity-constrained businesses in Singapore and China, particularly those rejected by conventional banks. Although comprehensive impact analyses are absent in Bangladesh, anecdotal and survey data indicate that micro-entrepreneurs are progressively utilizing MFS services to acquire microloans for operational expansion (Rahman, 2025), suggesting a perceived advantage.

This optimism is mitigated by considerable hazards, especially in poorly regulated contexts. Agarwal & Chua (2020) warn that the "ease of access" provided by one-tap digital loans may promote impulsive borrowing among low-income, financially vulnerable households with minimal literacy, potentially resulting in excessive debt due to insufficient disclosure of terms. Even with small income improvements, Alvi et al. (2025) showed that 71.3% of borrowers in four nations experienced low digital literacy, concealed charges, aggressive debt collection, and psychological anguish from opaque algorithms. The problems are exacerbated in Bangladesh, where widespread fraud and phishing undermine confidence in digital finance (Rahman, 2025).

Furthermore, the structure of repayment significantly influences results. In contrast to conventional microfinance's human-facilitated collections, FinTech platforms frequently utilize automated deductions or behavioral incentives—such as digital badges or leaderboards, exemplified in Sri Lanka (Halloluwa & Vyas, 2022)—which may enhance repayment discipline but also provoke feelings of shame or social pressure after missed payments. Exacerbating these weaknesses, Bangladesh's FinTech ecosystem is devoid of accessible grievance resolution mechanisms (Shahzady, 2024), resulting in borrowers having less recourse against errors or exploitative activities.

The regulation of FinTech loans in Bangladesh is inadequate. Bangladesh Bank regulates MFS as payment systems, but not algorithmic credit assessments, digital loan conditions, or automated judgment accountability (Shahzady,

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2024). Digital consumer protection, alternative data use, and AI-driven underwriting are not addressed in the Microcredit Regulatory Authority (MRA) Act (Shahzady, 2024; Rahman, 2025). Consequently, platforms such as bKash acquire extensive behavioral data—airtime recharges, SIM duration, transaction regularity—without consent, ownership rights, or usage safeguards. The 2023 BRAC breach, which compromised 400,000 records, demonstrated a deficiency in data control (Shahzady, 2024). Furthermore, borrowers are unable to dispute inaccuracies or challenge algorithmic rejections, diminishing the human oversight that safeguards conventional finance (Agarwal & Chua, 2020). Bangladesh Bank (payments), MRA (microfinance), and the Ministry of Commerce (consumer rights) exhibit fragmented regulatory oversight, permitting non-bank lenders to function in unregulated gray areas and evade prudential regulations.

No comprehensive empirical study examines the effects of FinTech lending in Bangladesh. Research on MFS adoption, agent networks, and overall inclusion (Hossain & Khan, 2025; Akter et al., 2021) fails to ascertain the criteria for nano-loan eligibility, identify those excluded, or evaluate whether loans foster sustainable growth or induce debt distress. A 2023 analysis conducted by Sanga and Aziakpono of 62 global papers revealed an absence of FinTech lending research in South Asia. Qualitative study demonstrates how social and cultural standards constrain digital participation (Rahman, 2025), although it fails to address loan approval or algorithmic exclusion. Since Bangladesh's infrastructure, behavior, and risk dynamics differ from global findings.

Global findings cannot substitute for local evidence. Eça et al. (2022) assert that FinTech loans enhance asset growth for creditworthy SMEs with existing banking relationships in Portugal, whereas borrowers in Bangladesh are primarily unbanked and lack data access. Hamarat (2023) asserts that whereas US FinTech addresses gaps created by inadequate institutions, Bangladesh lacks a strong traditional banking foundation. The success of digital lending in Vietnam is contingent upon the proliferation of smartphone usage and enhanced data literacy (Nguyen et al., 2025).

Moreover, the gendered ramifications of digital finance require attention. Women-led small-scale enterprises in rural Bangladesh face sustainability challenges despite the availability of mobile financial services, due to limited control over devices and income (Hossain & Khan, 2025; Rahman, 2025). Likewise, the proliferation of digital payments in India has not benefited all women or rural consumers (Thanvi & Rajpurohit, 2021). This highlights the connection between infrastructure and inclusion.

The expansion of Islamic FinTech offers an alternative viewpoint: Sharia-compliant digital wallets, exemplified as IBBL's CellFin, aim to cater to Bangladesh's Muslim majority, yet encounter acceptance obstacles stemming from limited awareness and legislative constraints (Hoque, 2023). P2P lending and mobile payments are globally challenging traditional company models (Tang, 2024), although regulatory deficiencies in Bangladesh render clients susceptible (Ravichandiran & Jeeva, 2025).

This research directly examines the impact of mobile-based FinTech lending on credit accessibility and perceived business results for unbanked micro-entrepreneurs in Bangladesh. It transcends demographic binaries to prioritize digital footprint intensity as the fundamental mechanism of inclusion and exclusion. It investigates not only the recipients of approval but also whether those authorized sense empowerment or distress—and whether algorithmic access results in significant financial agency. This approach addresses the explicit demand for empirical research specific to South Asia (Sanga & Aziakpono, 2023) and offers practical evidence for regulators, FinTech innovators, and development organizations aiming to create digital credit ecosystems that are adaptable, equitable, inclusive, and developmentally significant.

III. RESEARCH METHODOLOGY

➢ *Research Design*

This study employed a mixed-methods research approach, integrating quantitative and qualitative methodologies to develop a thorough understanding of the impact of mobile-based FinTech lending on credit accessibility and perceived business results among unbanked micro-entrepreneurs in Bangladesh. The quantitative component assessed objective metrics, such as loan approval rates, digital footprint size, transaction frequency, and perceived company impact, utilizing validated survey instruments. The qualitative component employed semi-structured interviews to capture consumers' authentic experiences, levels of trust, and challenges, emphasizing repayment stress, digital literacy, and algorithmic transparency. Through the implementation of methodological triangulation, we acquired exhaustive and insightful data, thereby enabling the analysis of statistical trends augmented by qualitative narratives. The integrated parallel architecture enabled the researcher to cross-validate findings and provide a comprehensive understanding of the operational dynamics of FinTech finance in practice, beyond mere theoretical frameworks.

➢ *Population and Sampling*

The target demographic consisted of unbanked or underbanked micro-entrepreneurs in rural and semi-urban Bangladesh who utilize Mobile Financial Services (MFS) such as bKash or Nagad but lack formal credit access. To guarantee representation across two crucial dimensions—geographic location (31.7% rural, 68.3% semi-urban), online footprint intensity (measured by device type, with 69.7% smartphone users and 17.7% basic phone users), and transaction frequency—a stratified random sample approach was employed. Cochran's formula was employed to determine a sample size of 300 respondents, with a 95% confidence level and a 5% margin of error. Additionally, 15 participants were deliberately selected for comprehensive interviews to reflect a range of perspectives, including permitted borrowers, rejected applicants, and individuals who did not apply.

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➢ *Data Collection Methods*

Data were gathered utilizing two complementary methods: a formal face-to-face survey and semi-structured interviews, conducted from September 2025 to November 2025.

The quantitative survey was conducted in Bengali via face-to-face interactions, with the interviewer articulating the questions and recording replies to aid individuals with low literacy levels.

- *The Questionnaire Included:*

✓ Demographics (age, gender, business type, income)
✓ Digital behavior (device type, MFS transaction frequency, app independence)
✓ Loan experience (approval status, loan amount, reason for rejection)
✓ Perceived impact (5-point Likert scales on income change, business growth, repayment stress)

- *The Qualitative Interviews (15–20 Minutes Each) Explored:*

✓ Trust in digital loan algorithms
✓ Reasons for non-application or rejection
✓ Emotional and financial consequences of borrowing
✓ Suggestions for fairer, more inclusive design

All participants provided informed verbal consent, and ethical protocols ensured anonymity, voluntary participation, and data security.

➢ *Data Analysis Procedures*

The statistical software SPSS, version 27, was utilized to analyze the quantitative data. Descriptive statistics, encompassing frequency, percentage, mean, and standard deviation, were employed to delineate demographic and behavioral characteristics. The subsequent elements of inferential statistics were as follows:

- Chi-square tests to examine associations between digital footprint intensity and loan approval/helpfulness
- Logistic and multiple regression models to assess predictors of credit access and perceived impact

Thematic analysis of qualitative data was conducted utilizing Braun and Clarke's (2006) six-step methodology, encompassing familiarization, initial coding, theme development, review, identification, and reporting. Interviews were transcribed, translated, and manually coded in Excel to identify prevalent themes such as algorithmic invisibility, repayment anxiety, self-exclusion, and digital dependency.

Ultimately, the qualitative and quantitative findings were integrated through a convergent parallel mixed-methods approach, with results juxtaposed to discern convergence (e.g., high stress + low helpfulness), divergence, and comprehensive contextual elucidations, culminating in a robust, policy-relevant comprehension of FinTech lending in Bangladesh.

IV. RESULTS & DATA ANALYSIS

➢ *Sample Characteristics*

Of the 300 individuals, 124 (41.3%) were categorized as having a "High Digital Footprint," whereas 176 (58.7%) were classified as "Low." In this context, 26.3% of users executed over 50 transactions using MFS, while 54.3% utilized bKash, Nagad, or another FinTech application to obtain a little loan. The loan was approved for 83% of applicants. The loans ranged from 500 to over 10,000 BDT, with 6.7% of participants successfully obtaining a loan over 10,000 BDT. There was minimal fluctuation in the allocation of loans across various categories, implying that the criteria for approval have been eased.

➢ *Association Between Digital Footprint and Loan Helpfulness*

Table 1 Crosstabulation of Perceived Loan Helpfulness by Digital Footprint Intensity (N = 300)

Helpful Binary (Helpful=1, Not helpful=0) * Digital Footprint (High/Low) Crosstabulation

			Digital Footprint (High/Low)		
			High	Low	Total
Helpful Binary (Helpful=1, Not helpful=0)	0	Count	109	155	264
		Expected Count	109.1	154.9	264.0
	1	Count	15	21	36
		Expected Count	14.9	21.1	36.0
Total		Count	124	176	300
		Expected Count	124.0	176.0	300.0

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This table displays the actual and expected frequency of the binary result "Helpful" (1 = helpful, 0 = not helpful) across two levels of digital footprint intensity (high/low). The sample comprises 300 sanctioned borrowers. Of them, 124 are categorized as High Footprint and 176 as Low Footprint. Observed counts indicate that merely 15 high-digital footprint users and 21 low-footprint users perceived the loan as beneficial, a discrepancy that lacks statistical significance.

The comparable rate of perceived helpfulness among groups indicates that algorithmic access, although influenced by digital footprint, is not reflected in distinct economic benefits. This lack of correlation indicates that the structure of nano-loans—defined by low disbursement amounts (usually below BDT 5,000), stringent automatic payback, and restricted transparency—does not lead to significant business outcomes, irrespective of a borrower's data accessibility. As a result, algorithmic inclusion serves as a restriction on access instead of growth.

Table 2 Chi-Square Test Results for Association Between Digital Footprint Intensity and Perceived Loan Helpfulness

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.002[a]	1	.965		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.002	1	.965		
Fisher's Exact Test				1.000	.551
N of Valid Cases	300				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.88.

b. Computed only for a 2x2 table

The Pearson Chi-Square test ($\chi^2 = .002$, df = 1, p = .965) revealed no significant correlation between the level of intensity of digital footprints and the perceived helpfulness of loans. All tests, including the Likelihood Ratio and Fisher's Exact Test, indicate non-significance. No cells exhibited expected counts below 5, thereby fulfilling the assumptions of the Chi-square analysis. The lowest anticipated count was 14.88.

Respondents' testimonies offer additional context for this finding: the majority express concern regarding repayment, with over a hundred indicating anxiety about repayment due to several additional fees and auto-debit limitations. This signifies that borrowers continue to experience emotional and financial distress from interest charges, concealed fees, or ambiguous clauses, even post-loan approval, irrespective of their digital footprint.

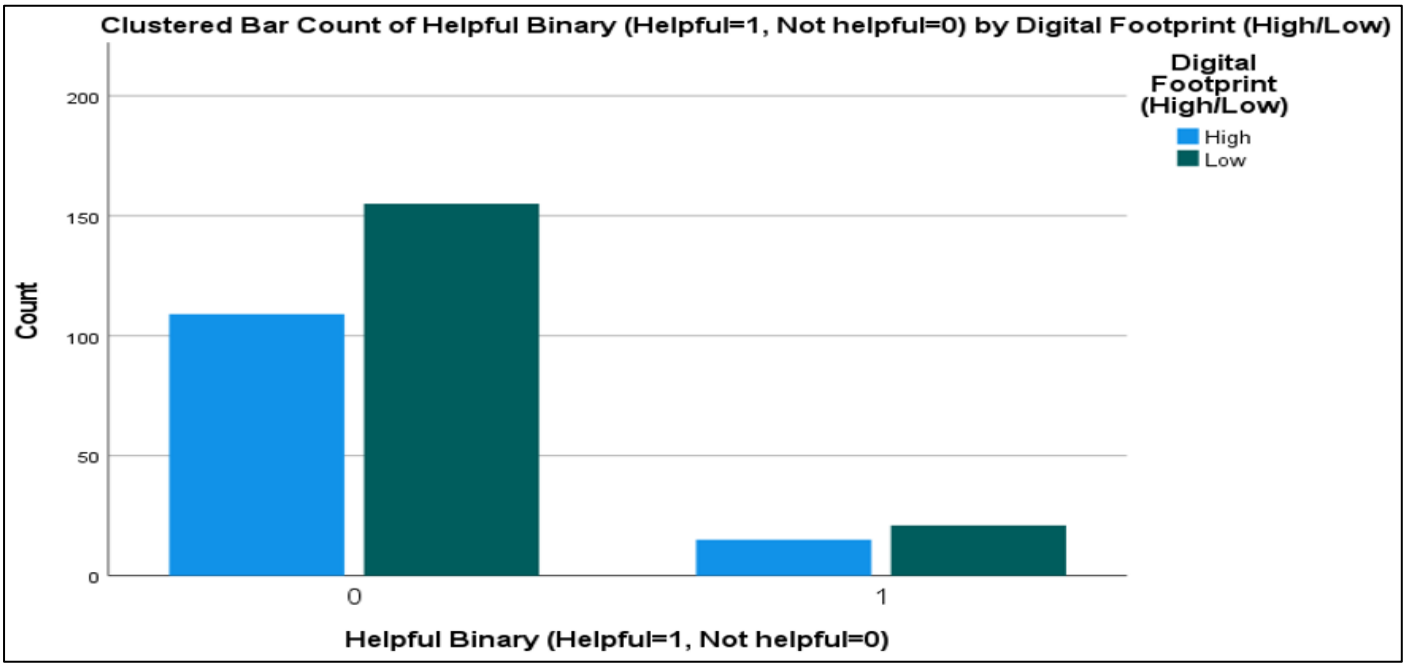

Fig 1 Clustered Bar Chart Showing Distribution of Perceived Loan Helpfulness by Digital Footprint Intensity (N = 300)

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This graph presents the crosstabulated results from Table 1, indicating the total number of respondents who assessed the utility of their nano-loan as either "Not Helpful" (0) or "Helpful" (1), categorized by digital footprint intensity as High and Low, respectively. With 109 high-footprint users and 155 low-footprint users rating the loan as ineffective, the preponderance of consumers in both cohorts did not indicate any benefit. The finding that just 15 users with a substantial footprint and 21 users with a little footprint deemed it useful is so negligible that it corroborates the non-significant connection indicated by the Chi-square test.

In essence, FinTech lending may be inclusive in *approval*, but not in *experience*. The absence of a link between digital footprint and helpfulness suggests that algorithmic access alone is not sufficient — without financial literacy, transparent pricing, and post-loan support, even well-designed credit products can become sources of distress rather than empowerment.

- *Qualitative Analysis*

Borrowers frequently experienced emotional detachment due to the obligation of repaying their loans. Several individuals asserted that anxiety was directly associated with obtaining loans, rather than with opportunity. A retailer stated that they have not applied since obtaining a BDT 3,000 loan, as the auto-debit caused them daily anxiety. "*It provided me with financial gain, yet deprived me of my tranquility*," stated another tailor, "*Currently, I avoid it*." This exemplifies a broader trend: whereas nano-loans may afford individuals access to funds, the anxiety associated with repayment diminishes the perceived financial benefit, leading to increased skepticism rather than interest.

V. DISCUSSION

This study uncovers a noteworthy yet significant discovery: the intensity of digital footprints forecasts the recipients of nano-loans, but does not determine who gains from them. The absence of a correlation between data abundance and perceived utility undermines the fundamental assertion of FinTech inclusion—that increased behavioral data results in improved economic outcomes.

The consistently low helpfulness in both groups suggests inherent flaws in loan design, rather than issues related to borrower behavior. Nano-loans in Bangladesh, often below BDT 5,000 or BDT 10,000, are inadequate for substantial investment. Repayment is stringent, involving automated transfers that create cash-flow challenges. Moreover, transparency is insufficient, as numerous borrowers struggle to elucidate interest rates or fees. Agarwal & Chua (2020) warn that "ease of access" devoid of financial literacy or consumer safeguards may result in debt distress instead of empowerment.

The analogous results for high- and low-footprint users indicate that broadening loan access to more at-risk borrowers will not compromise impact quality. The real problem is not with the people getting loans, but with the way they are organized. This aligns with Hoque's (2023) recent findings indicating that digital financing does not significantly affect SME growth in Bangladesh, although mobile money and online banking do.

Consequently, FinTech lending presently operates in a transactional capacity rather than a revolutionary one. It effectively provides credit but does not facilitate impact. The system guarantees algorithmic inclusivity but fails to provide economic inclusion.

VI. RECOMMENDATION

A multi-stakeholder approach is essential to transform the potential of digital banking into tangible developmental results, redirecting FinTech funding from mere transactional access to authentic economic empowerment. The primary objective of Bangladesh Bank should be to establish a regulatory framework that mandates minimal loan thresholds, ensuring that nano-loans possess adequate value to facilitate company investment rather than only alleviating consumption. Simultaneously, the central bank must enforce clear disclosure requirements, mandating platforms to publicly disclose fees, interest rates, and repayment schedules in straightforward, localized language before loan acceptance. Importantly, there needs to be a formal way for borrowers to bring their complaints to light. This way, they can challenge algorithmic denials, fix data errors, and get human help when they're having trouble repaying—protections that were missing from fully automated systems.

FinTech platforms are accountable for redesigning loan offerings in accordance with consumer expectations rather than for the sake of data ease. Pilot projects could explore adaptable repayment schemes predicated on daily cash flow, such as a minimal proportion of daily sales, instead of rigid weekly deductions that burden precarious household finances. Incorporating just-in-time financial literacy lessons into loan applications may assist borrowers in making more informed debt decisions. Moreover, organizations had to transcend limited performance criteria such as payback rate and begin evaluating developmental indicators like income variation, business growth, and financial robustness to align their success with that of their clients.

Development institutions and research organizations should finance longitudinal, mixed-methods studies to monitor the enduring effects of digital credit on microentrepreneurial welfare, debt dynamics, and social equity. Additionally, they ought to encourage grassroots digital onboarding initiatives that foster data and financial literacy among low-footprint users—not by encouraging smartphone use, but by developing inclusive pathways that consider agent-mediated behaviors and current device realities. Bangladesh can only guarantee that its world-class MFS infrastructure serves as a genuine catalyst for fair advancement by enacting integrated, evidence-based reforms, rather than merely functioning as a sophisticated reflection of existing disparities in updated technology.

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VII. CONCLUSION

Bangladesh possesses one of the largest digital payment infrastructures globally; yet, credit inclusion remains unchanged. This study provides the initial empirical evidence that algorithmic access to nano-loans fails to yield significant economic agency for microentrepreneurs. The potential of data-driven banking is being undermined, not by exclusion, but by suboptimal product design.

The difference between creation and illusion is strikingly minimal. Without reevaluating loan amounts, repayment options, and user transparency, FinTech may inadvertently automate financial destitution under the guise of inclusivity. Genuine financial inclusion requires not only increased information but also enhanced value.

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