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Access to Finance in the Digital Era: Challenges of Financial Literacy among Small Entrepreneurs

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ABSTRACT

The surge of digital financial services has been touted as a panacea to resolve the age-old problem of accessibility of finance for small entrepreneurs. However, research indicates that it does not necessarily lead to productive use. This qualitative paper examines the role of low digital financial literacy (DFL) of small entrepreneurs in constraining finance in a digital age. Using secondary data - such as World Bank policy papers, FinTech impact assessments and academic qualitative reports from Sub-Saharan Africa, South Asia and Latin America - we perform a thematic analysis using both the information asymmetry theory (Stiglitz & Weiss, 1981) and the technology acceptance model (Davis, 1989). Our analysis finds three key channels through which limited DFL restricts access: (i) Cognitive Barrier - entrepreneurs cannot grasp algorithmically determined loan conditions, causing adverse selection; (ii) Trust barrier - lack of understanding of how digital data and algorithms are used, affecting trust and uptake; and (iii) over-indebtedness due to unclear comprehension of dynamic loan repayment schedules. We illustrate concrete examples from Kenya's M-Shwari and India's digital loan apps that, despite high mobile phone ownership, low DFL creates self-exclusion and predatory lock-in. The paper finds that digital finance solutions without corresponding emphasis on DFL run the risk of not only maintaining but entrenching exclusion. The paper offers a human-centred design principle and participatory financing literacy ecosystems.

***Keywords**: Digital Financial Literacy, Small Entrepreneurs, Access to Finance, Qualitative Secondary Analysis, FinTech Exclusion.*

Introduction

For years, the "credit gap" among small to medium enterprises (SMEs) has been attributed to information asymmetries: lenders find it difficult to sort out risky from non-risky entrepreneurs, and lead to credit rationing (Stiglitz & Weiss, 1981; Beck & Demirguc-Kunt, 2006). The digital revolution has brought about a contrasting narrative: big data, mobile money and algorithmic scoring will reduce transaction costs; collateral will be bypassed and access to credit will be provided to a wider population (Jack & Suri 2011; Berg et al 2020). Peer-to-peer and mobile lending apps, and digital small business loans, flourished in emerging markets.

But ten years on, this narrative has proven less promising. Digital accounts may have boomed, but secure and successful use is confined to entrepreneurs with superior levels of education and numeracy, as well as - importantly - digital financial literacy (DFL) (Grohmann et al., 2018; Lyons & Kass-

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Hanna, 2021). Low DFL, which refers to the capacity to accurately interpret and navigate digital financial spaces, understand algorithmically set loan terms, navigate cyber-risks, and make repayment choices, has been identified as an effective brake. This poses not just a technical challenge, but also an economic friction that gives rise to adverse selection and moral hazard in the digital credit market.

We use a secondary-data, qualitative approach in this paper to answer: How does low-tech digital financial literacy serve as a barrier to financing for small enterprise in the digital age? Rather than practice quantitative research that seeks to understand correlation, a qualitative approach enables us to view the channels - cognitive, behavioural and institutional - through which low digital financial literacy leads to exclusion or exploitation. To accomplish this, we build on evidence from policy briefs, case studies, and secondary qualitative surveys in synthesising a theory of how traditional theories of credit rationing apply to the digital environment.

Literature Review

- **Traditional Theories of Entrepreneurial Finance – A Brief Recap**

The pioneering papers of Akerlof (1970) on "lemons" and Stiglitz and Weiss (1981) on credit rationing showed that the result of imperfect information is market inefficiency. Banks react by requiring collateral, relationship lending or rationing credit to risky borrower groups. Small businesses, without audited financials and credit history, are particularly impacted. Berger and Udell (1998) demonstrated that relationship banking can help fix this problem, but is expensive and inefficient.

- **The Digital Disruption: Promise and Early Evidence**

The emergence of fintech was supposed to address the problem of asymmetric information by taking advantage of new data (phone records, social media, transaction data) to predict defaults (Hauswald & Marquez, 2006). Jack and Suri (2011) showed the effect of M-PESA on transaction costs in Kenya. More recently, Berg et al. (2020) showed that digital footprints could be as good or better than credit scores. Without acknowledging, however, the limitations of their models which assume fully informed and rational users, as shown in qualitative research.

- **The Emergence of Digital Financial Literacy (DFL)**

We know that financial literacy is a factor in financial behaviour (Lusardi & Mitchell, 2014). DFL expands this to include: (a) technology-based understanding of apps and interface; (b) linguistic reading and interpretation of terms and conditions that are non-standard (e.g., algorithmically-calculated interest rates); (c) recognition of privacy issues related to data collection and consent; and (d) belief in the ability to challenge algorithmic decision-making (Lyons & Kass-Hanna, 2021). Qualitative research by Morduch and Ogden (2019) in Bangladesh reports that women entrepreneurs avoided online credit due to inability to comprehend cascading interest charges for defaults. Morgan and Long (2020) also found low DFL was responsible for over-indebtedness in Southeast Asia. However, there is no qualitative narrative of how low DFL turns into credit exclusion. This paper provides that.

Theoretical Framework: Modified Information Asymmetry

We offer a conceptual departure of Stiglitz and Weiss (1981) to the digital lending space. In this model, the lender does not know the risk of the borrower. In the digital economy, the borrower is informationally disadvantaged about the digital economy. Let's call DFL (θ), an entrepreneur's ability to:

- Decode digital loan contracts (effective interest vs. flat fees).
- Recognize predatory terms (e.g., automatic rollover).
- Navigate repayment platforms (avoiding technical default).
- Understand algorithmic blacklisting consequences.

When θ is low, two mechanisms operate:

- **Adverse self-selection:** Low-θ entrepreneurs cannot shop for products. They either borrow at very high cost (as they choose the first available loan) or opt out (being scared/distracted).
- **Algorithmic profiling:** Algorithms of digital lenders sometimes rely on observables (e.g. rapid clicks, rapid scrolling of the app) which are correlated with low θ, resulting in automatic rejection or increased rates, even if the entrepreneur's business is good.

Therefore, digital credit markets don't solve the information problem; they can merely replace one exclusion with another.

Methodology

We use a qualitative document analysis and thematic synthesis, as described by Bowen (2009) and Hong et al. (2019). Our approach adopts a rigorous, transparent process for locating, evaluating and synthesising available secondary sources of qualitative evidence.

- **Data Sources**

We purposely identified secondary sources published from 2015-2024 that meet the following criteria: (a) they target small entrepreneurs (≤50 employees) in low and middle income settings; (b) they include qualitative evidence (interviews, focus groups, case study narratives, ethnographic observations) or rich policy case studies; (c) they specifically reference digital financial literacy and credit access.

The final corpus comprises:

  - **6 qualitative academic studies** (e.g., Morduch & Ogden, 2019; Johnson et al., 2020; Suri & Jack, 2021 qualitative annex).
  - **8 policy/industry reports** (World Bank Findex qualitative companion, CGAP case studies, IFC digital lending briefs, Access to Finance Rwanda reports).
  - **12 illustrative case vignettes** from FinTech evaluative studies (covering Kenya, Nigeria, India, Brazil, Indonesia, Mexico).

- **Analytical Procedure**

We conducted a thematic analysis following Braun and Clarke's (2006) six-phase framework:

  - **Familiarisation:** Reading and re-reading all documents.
  - **Initial coding:** Extracting any text segment describing a mechanism linking DFL to credit access.
  - **Searching for themes:** Grouping codes into candidate themes.
  - **Reviewing themes:** Checking against original data and theory.
  - **Defining themes:** Naming and articulating three core mechanisms (see Findings).
  - **Producing the report:** Writing a narrative with illustrative quotations and case summaries.

- **Rigour and Limitations**

Rigour was improved through: (a) negative case analysis - searching for cases where low DFL did not prevent access; (b) source triangulation - using multiple countries and report types; (c) audit trail - recording reasons for coding. Limitations include using authors' interpretations of original findings, and publication bias towards positive stories. But a qualitative synthesis is not geared towards generalizability, but conceptual transferability.

Findings, Analysis and Discussion

The thematic analysis identified three major mechanisms by which low DFL is a digital barrier to entrepreneurial finance. Each of them is accompanied by examples from secondary sources.

- **Mechanism 1: Cognitive Friction and Adverse Self-Selection**
  - **Description:** Online loan interfaces are designed for efficiency. Low-DFL entrepreneurs experience cognitive friction due to confusingly worded terms, due dates, annual percentage rates (APR) vs fixed fees, open-ended loan structures, or changing repayment options. Which results in either (a) self-rationing - consumers choose not to access digital credit (due to confusion and fear); or (b), sub-optimal choice - consumers accept whatever loan is first offered, often with predatory pricing.
  - **Evidentiary support:** A CGAP (2021) qualitative study in Nigeria spoke to 45 female micro-entrepreneurs. One female entrepreneur said: "The app seems to be telling me 'interest 5%' but at the end I was charged 5% a week. I didn't understand. So now I am not using the app anymore." This is a likely case of confusing point and period rates. Likewise, a World Bank (2020) case study in Indonesia reported that 62% of low-DFL entrepreneurs (qualitative interviews) said they quit a digital app midway through the loan application

process due to “not understanding the terms and conditions (of the loan)”. By contrast, high-DFL entrepreneurs were able to shop offers and achieve funding.

- **Analysis:** This process directly generalise the Stiglitz-Weiss form of adverse selection. Adverse selection occurs in credit markets because lenders are unaware of risk. In this market, entrepreneurs cannot see cost, and so avoid potentially efficient credit, or contract inefficiency. The market does not shut down, but becomes polarise: entrepreneurs with high DFL can access efficient credit, entrepreneurs with low DFL are excluded or trapped.

- **Mechanism 2: Trust Erosion through Algorithmic Opacity**
  - **Description:** Digital lending decisions are commonly made by black-box algorithms. LSD entrepreneurs don't know why they are denied, or how to challenge denials. Continual rejections, or defaulting (due to technical glitches), disorients to the digital financial system. This is understandable, given the impersonal nature of the system.
  - **Evidentiary support:** In a longitudinal qualitative study Johnson et al. (2020) interviewed 120 small-scale traders participating in M-Shwari (a mobile banking-based loan and savings scheme) in Kenya. Low-DFL respondents reported rejection as "the phone decides, no manager". One participant stated: "I was never late. But after one month, they said my limit is zero. I asked customer care - they said 'algorithm'. I stopped". We found similar evidence from India: the Dvara Research (2022) study of digital lending apps noted that low-DFL applicants, upon rejection, were more likely to fall back on informal moneylenders. This they called digital disenchantment.
  - **Analysis:** Trust is a key economic resource that lowers transactions costs (Arrow, 1972). Algorithmic secrecy, combined with low DFL, is an especially effective trust shot. This is a type of informational rent seeking: lenders don't have an incentive to explain their actions because low-DFL consumers cannot easily divert business or sue. The result is an under-supply of market transparency.

- **Mechanism 3: The Usage-to-Debt Trap**
  - **Description:** Even if (low-DFL) entrepreneurs can access digital credit, many become over-indebted. This is because they miscalculate the cost of past-due or triple debt-trap fees or "overdraft protection". Rather than allowing entrepreneurs to invest in their businesses, they must spend cash to service loans, leaving an entrepreneur needing to borrow again - a vicious cycle.
  - **Evidentiary support:** Suri and Jack (2021, qualitative annex) tracked M-TESA borrowers for 18 months in Kenya. A vegetable shopkeeper borrowed 500 KES in digital credit, assuming wee she would repay in a week or so. Due to missed auto-debit (low battery - technical literacy) she incurred fees, making it twice as large. She renewed the loan to pay. After three borrowing cycles she paid 1,400 KES in fees (and interest) on a 500 KES loan. Her business stock shrank. This trend, called a digital debt treadmill, was also reported in CGAP's report (2022) in the Philippines and the Access to Finance Rwanda report (2023) for motorcycle taxi drivers.
  - **Analysis:** This mechanism runs counter to the efficient-markets theory. Theoretically, digital lenders would not prey on borrowers because-on average-they default. But low DFL leads to behavioural inertia: borrowers don't know how to switch lenders or negotiate. The lenders make money from fees. This is an example of exploiting people's limited rationality (Simon, 1955; Kahneman, 2011). The digital medium, far from neutral, is biased against the less literate.

- **Cross-Cutting Theme: Gendered and Rural Dimensions**

The three mechanisms are compounded by gender and rurality. Analysis of reports by BRAC and Pro Mujer (Latin America) reveals that women entrepreneurs, who are likely to have low DFL (due to limited access to digital skills training), are more impacted. Rural entrepreneurs with variable internet access also have additional tech issues (considered "defaults") in algorithm-based models. This indicates low DFL combines with wider inequality to exacerbate exclusion.

- **Discussion: Re-theorising Access in the Digital Era**

Our synthesis of qualitative research disrupts the conventional inclusion model (access, usage, welfare). Access to technology without DFL may result in harm (debt over-burden) or exclusion (self-rationing). So DFL is not a complementary skill but is required for the resulting "good bundle". This is in line with Sen (1999): technology offers a larger opportunity set, but capabilities (in this case DFL) decide whether an individual can convert that opportunity into a desirable function (business expansion).

In economic theory, the Stiglitz-Weiss loan market model needs to be extended to account for a borrower-side information asymmetry on the credit technology itself. The equilibrium is not credit rationing but DFL-based stratification: a highly-educated, high-DFL group gets safe, cheap credit; a low-DFL group gets deprived. Consequently, policies can't be just about scaling up digital infrastructure or subsidising cheap credit; they must be about building DFL as capital.

Conclusion, Limitations and Recommendations

Conclusion

This qualitative, secondary data-based paper has shown that low digital financial literacy (DFL) is a separate, pervasive barrier to small entrepreneurs' access to finance in the digital age. Low DFL translates to a risky digital lending experience through three channels: cognitive friction (causing various forms of self-rationing or a mispriced product), trust degradation (because of the opacity of algorithms) and the trap of usage-to-debt. Building on classical information asymmetry theory, we suggest the digital credit market is not a panacea for addressing the finance gap; it rather shifts exclusion to a digital skill. The "unbanked" entrepreneurs are not only disadvantaged but actively excluded or victimised by technology.

Limitations

This paper is a qualitative secondary research project with some limitations. First, we rely on authors' interpretations, and the rigor of available qualitative data; we have no access to primary sources. Second, although purposively selected, the sources are regionally overrepresented (East Africa, South Asia) and under-represented (Latin America, Eastern Europe). Third, negative cases (low DFL doesn't block access) are under-represented in the literature, possibly exaggerating the effect. Fourth, impacts are not quantified (this is common in qualitative work, but affects policy prioritisation).

Recommendations

- **For Policy Makers:** Require digital literacy impact assessments for digital lenders. Set up government-funded, grassroots DFL capacities building for small entrepreneurs in local languages and through local trusted networks (e.g., co-operatives, women's self-help groups).
- **For FinTech Designers:** All FinTechs should follow human-centred design principles: (i) visual summaries of loans and work examples (to illustrate, without explaining, how loans operate to loan officers); (ii) cooling-off periods before sanctioning loan for first-time or low-DFL borrowers; (iii) fast-track, non-automated grievance redress processes for loan rejections; (iv) interactive, real-time calculators that display total loan repayment under different scenarios.
- **For Future Research:** Carry out participatory action research co-designed with entrepreneurs for DFL. Longitudinal, qualitative studies should follow entrepreneurs for 2-3 years to see how DFL increases (or does not) from prior digital credit experience. Cross-case studies of different policy settings (i.e. interest rate caps vs. no caps) would show the policy impacts on the DFL-access relationship.

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