

Beyond the Bank Account: Measuring Responsible Financial Inclusion through Usage, Suitability, and Consumer Outcomes

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ABSTRACT

Background

Account ownership has long served as the principal indicator of financial inclusion progress, yet evidence from India and other emerging economies suggests that ownership and welfare are weakly linked when accounts lie dormant, products misfit consumer needs, or grievances go unresolved.

Objective

This paper proposes a Responsible Financial Inclusion Index (RFII) anchored in three pillars: usage, suitability, and consumer outcomes. The conceptual framework draws on Sen's capability approach, the CGAP responsible finance agenda, and the Findex measurement tradition, treating inclusion as the expansion of effective financial freedoms rather than the holding of an account.

Materials and Methods

Applied to Indian district-level data for the period 2017 to 2024 and supplemented by an original household survey of 850 respondents across four states and 32 semi-structured interviews, the index is constructed through principal component analysis and cross-validated using the Alkire-Foster dual-cutoff method. A structural equation model then tests a mediation pathway linking usage, suitability, and outcomes.

Results

Illustrative findings indicate that suitability mediates a substantial share of the usage-outcome relationship, while disclosure comprehension and grievance redressal emerge as the most consequential suitability indicators for financial resilience and subjective well-being.

Conclusion

The paper offers regulators a diagnostic instrument for monitoring inclusion quality across districts and population segments and contributes a measurement framework attuned to consumer protection.

Keywords: Responsible financial inclusion; consumer outcomes; suitability; financial well-being; principal component analysis; capability approach; India.

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1. Introduction

The expansion of formal account ownership has been one of the headline achievements of development policy over the past two decades. Global Findex estimates record an increase in adult account ownership from 51 percent in 2011 to 76 percent in 2021, with India accounting for a substantial share of the gain following the launch of the Pradhan Mantri Jan Dhan Yojana in 2014 (Demirgüç-Kunt, Klapper, Singer, & Ansar, 2022). Account ownership, however, is a thin measure of financial participation. A bank account that lies dormant, that levies fees exceeding the deposits it holds, or that delivers credit

on terms the borrower cannot service does not advance the welfare aims that animated the inclusion agenda in the first place.

The literature has begun to register this disquiet. Sarma (2008, 2012) extended access-based measurement by integrating usage and availability into a composite Index of Financial Inclusion, and Cámara and Tuesta (2014) developed a multidimensional index that distinguishes dimensions and barriers. The CGAP responsible finance framework (CGAP, 2011) and the G20/OECD High-Level Principles on Financial Consumer Protection (G20/OECD, 2022) shifted the conversation toward the quality of financial relationships, emphasising

consumer protection, fair treatment, and grievance redressal. Yet existing indices have not integrated these consumer-side considerations into a single empirically tractable measure that connects participation to welfare.

This paper proposes such a measure. Building on Sen's (1999) capability approach, which conceives development as the expansion of substantive freedoms, the paper conceptualises responsible financial inclusion as a three-stage transformation: from access to usage, from usage to suitability of products held, and from suitability to consumer outcomes that include resilience, savings adequacy, and subjective well-being. A Responsible Financial Inclusion Index (RFII) is constructed to capture this transformation, drawing on Findex 2021 microdata, Reserve Bank of India administrative series, and an original survey of 850 households conducted across four Indian states.

Three contributions follow. The paper formalises the mediational structure that connects usage to outcomes through suitability, a structure prior indices have left implicit; it maps district-level responsibility deficits in India for 2017 to 2024; and it derives policy implications for Indian regulators, recommending a shift from access-targeted monitoring to outcome-anchored supervision.

2. Literature Review

Three strands of scholarship converge on the question of how to measure inclusion. The first is the access-and-usage tradition initiated by Sarma (2008), whose Index of Financial Inclusion combined banking penetration, availability, and usage into a composite weighted score for cross-country comparison. The index was methodologically influential but inherited two limitations: it relied on supply-side data that captured the existence of infrastructure rather than its meaningful uptake, and it weighted dimensions equally, a choice Sarma (2012) defended on parsimony grounds but which subsequent work has contested. Cámara and Tuesta (2014) responded by deploying a two-stage principal component analysis to derive empirical weights, distinguishing dimensions of use, access, and barriers. Their innovation reduced researcher discretion in weighting but retained an access-and-usage orientation that did not address whether the products used were fit for purpose.

The second strand is the consumer-protection literature centred in CGAP, the World Bank, and the OECD. The CGAP responsible finance framework (CGAP, 2011, 2019) articulated three pillars: provider standards, consumer protection regulation, and financial capability. The G20/OECD High-Level Principles on Financial Consumer Protection (G20/OECD, 2022) extended these standards into a

policy template covering disclosure, fair treatment, complaints handling, and the responsibilities of authorised agents. This literature has produced strong normative claims but comparatively few quantitative indices. Where measurement has been attempted, it has typically taken the form of regulatory scorecards rather than household-level constructs that connect suitability to welfare.

The third strand is the welfare-outcomes literature. Karlan, Ratan, and Zinman (2014) reviewed evidence on savings constraints and showed that account access alone does not generate savings absent commitment devices, default rules, or behavioural supports. Lusardi and Mitchell (2014) demonstrated that financial literacy moderates the relationship between product access and outcomes, with the financially literate disproportionately benefiting from sophisticated products. Behavioural work by Bertrand, Mullainathan, and Shafir (2004) and Thaler and Sunstein (2008) has documented how cognitive bandwidth constraints under poverty conditions undermine the rational-consumer assumption on which disclosure regimes rest. These findings imply that suitability cannot be inferred from product characteristics alone; it depends on the interaction between product, consumer cognition, and informational environment.

What is missing in the prior measurement literature is an integrated framework that operationalises the consumer-protection turn as quantitative inputs into an inclusion index and that empirically traces the mediational pathway from usage through suitability to outcomes. The closest precedents are the Reserve Bank of India's Financial Inclusion Index, introduced in 2021, which integrates access, usage, and quality across 97 indicators (Reserve Bank of India, 2021), and the World Bank's Global Findex 2021 survey instrument, which added questions on financial worry, resilience, and the use of digital channels (Demirgüç-Kunt et al., 2022). Neither product traces an explicit mediation pathway, and neither integrates household-level perceptions of disclosure comprehension and grievance redressal with macro indicators of product saturation.

Sen's (1999) capability approach offers the theoretical scaffolding for an integrated framework. If inclusion is the expansion of substantive financial freedoms, then the appropriate measure is neither the holding of an account (a resource) nor the use of an account (a functioning), but the capability set the account makes available, which depends on whether the product fits the user's purposes and whether those purposes are realised. The RFII operationalises this view.

3. Conceptual Framework and Hypotheses

The RFII is structured around three sequentially related pillars, each operationalised through measurable sub-indicators.

The usage pillar captures the intensity and breadth of financial engagement, drawing on four sub-indicators: the 90-day active transaction rate, product portfolio diversity calculated as one minus the Herfindahl index across savings, credit, insurance, pension, and payments products, digital channel adoption measured by self-reported use of UPI or mobile banking in the past month, and account dormancy and closure rates derived from administrative data.

The suitability pillar captures the alignment between products held and consumer needs, drawing on five sub-indicators: a product-need fit score that compares revealed product holdings with stated needs elicited in survey, the total cost-to-income ratio combining fees and interest, a disclosure comprehension score derived from a recall test of key product terms administered after disclosure, the mis-selling incidence proxied by ombudsman complaints per 10,000 accounts at district level, and grievance redressal time and resolution rate from regulatory data.

The consumer outcomes pillar captures welfare realisations, drawing on five sub-indicators: financial resilience operationalised by the Findex emergency-fund question, over-indebtedness indicated by a debt-service-to-income ratio above 0.5, savings adequacy expressed in months of consumption covered by liquid savings, subjective financial well-being assessed by the ten-item CFPB scale (Consumer Financial Protection Bureau, 2017), and an asset-accumulation trajectory measured by change in household financial assets over the survey period.

The framework yields three testable hypotheses. H1 holds that the relationship between usage and consumer outcomes is partially mediated by suitability, such that the inclusion of suitability indicators reduces the estimated direct effect of usage on outcomes. H2 holds that disclosure comprehension and grievance redressal are the suitability sub-indicators most strongly associated with financial resilience and subjective well-being, given their salience in the behavioural literature. H3 holds that district-level variation in the RFII is not explained by variation in account ownership alone, indicating that responsible inclusion captures information beyond what access metrics convey.

The framework is conservative in its causal claims. The cross-sectional and short-panel structure of the data permits identification of associational and mediational structure but not full causal identification. Endogeneity arising from selection into suitable products is addressed through propensity

score matching and an instrumental-variables strategy described in Section 6.

4. Significance of the Study

The study addresses a policy moment in which Indian financial inclusion has crossed access thresholds yet faces persistent questions about quality. As account ownership approaches saturation in many districts, the marginal welfare gain from further access expansion is likely to diminish, while welfare gains from improving suitability and consumer protection may rise. A measurement instrument that allows regulators to identify where responsibility deficits are concentrated supports a recalibration of supervisory priorities. The study also contributes to the academic literature by formalising a mediational structure that has been implicit in CGAP and OECD policy documents but has not been rendered into a single empirically tractable index. For practitioners in microfinance, banking, and fintech, the RFII offers a diagnostic tool for benchmarking institutional performance against welfare-relevant outcomes rather than volumetric metrics alone.

5. Objectives of the Study

Four objectives guide the analysis. First, to develop a Responsible Financial Inclusion Index that integrates usage, suitability, and consumer outcomes into a single empirically grounded measure. Second, to apply the RFII to Indian district-level data for the period 2017 to 2024 and to identify the spatial distribution of responsibility deficits. Third, to test whether suitability mediates the relationship between usage and consumer outcomes, drawing on a structural equation model. Fourth, to derive policy implications for Indian regulators, with emphasis on disclosure regimes, grievance redressal infrastructure, and the supervisory monitoring of product suitability.

6. Data and Methodology

The study uses a sequential explanatory mixed-methods design (Creswell & Plano Clark, 2017). The quantitative arm combines three data sources. The first is the Global Findex 2021 microdata for India, providing nationally representative measures of account ownership, usage, savings behaviour, and resilience. The second is administrative data from the Reserve Bank of India and the Centre for Monitoring Indian Economy, including district-level statistics on bank branch density, account dormancy, ombudsman complaints, and credit-deposit ratios for 2017 to 2024. The third is an original household survey of 850 respondents stratified across urban and rural locations in four states (Maharashtra, Tamil Nadu, Uttar Pradesh, and Odisha), purposively chosen to span the range of state-level inclusion performance. The survey instrument included the ten-item CFPB financial well-being scale, a disclosure comprehension test administered after standard

product-term presentation, and items on grievance experience.

Index construction proceeds in three steps. First, each of the fifteen sub-indicators is normalised to the unit interval using a min-max transformation, with directional inversion applied to cost, dormancy, over-indebtedness, and complaints variables so that higher values indicate better performance. Second, principal component analysis is applied within each pillar to derive empirical weights, following Cámara and Tuesta (2014). The pillar scores are then aggregated to the RFII using a second-stage PCA. Third, the index is cross-validated using the Alkire-Foster dual-cutoff method (Alkire & Foster, 2011), with a deprivation cutoff of one-third within each pillar and an aggregation cutoff of one-half across pillars; this yields a censored headcount of responsibility deprivation that complements the continuous index. Aggregation follows the geometric formulation:

$$RFII_i = (U_i^\alpha \times S_i^\beta \times O_i^\gamma), \text{ with } \alpha + \beta + \gamma = 1$$

where U, S, and O denote the usage, suitability, and outcome pillar scores for unit i, and α, β, γ are PCA-derived weights. The geometric form penalises imbalance: a unit deficient in any one pillar cannot fully compensate through superior performance on another.

Econometric analysis proceeds in three stages. First, ordinary least squares regressions estimate the determinants of district-level RFII scores, controlling for state fixed effects, urbanisation, literacy, and per capita income. Second, an ordered logit model estimates the association between RFII tertiles and three outcome categories: low, moderate, and high financial well-being on the CFPB scale. Third, a structural equation model tests the usage-suitability-outcomes mediation pathway. The SEM includes latent constructs for each pillar measured by their respective sub-indicators and estimates the direct, indirect, and total effects of usage on outcomes, with bootstrap standard errors based on 5,000 resamples (Preacher & Hayes, 2008).

Endogeneity in the suitability-outcomes relationship is addressed through two strategies. Propensity score matching pairs respondents on age, education, income, prior banking experience, and state of residence, and estimates the average treatment effect on the treated for high-suitability respondents. An instrumental-variables strategy uses district-level density of accredited financial advisors and ombudsman office accessibility as instruments for individual suitability scores; relevance is tested via the Kleibergen-Paap F-statistic. Robustness is examined via alternative weightings, sub-sample replication for rural and urban respondents, and a placebo test substituting an irrelevant outcome.

The qualitative arm comprises 32 semi-structured interviews with bank customers, mis-selling complainants, and branch staff, conducted in Hindi, Marathi, Tamil, and Odia and translated for analysis. Thematic analysis follows Braun and Clarke (2006), with inter-coder reliability assessed by Cohen's κ on a 20 percent sub-sample; the achieved κ of 0.78 [ILLUSTRATIVE — replace with author's value] exceeded the conventional threshold of 0.70.

Table 1. Variable definitions and data sources

Pillar	Sub-indicator	Direction	Source
Usage	90-day active transaction rate	+	RBI/CMIE
Usage	Product portfolio diversity (1 – HHI)	+	Survey
Usage	Digital channel adoption (UPI/mobile)	+	Findex/Survey
Usage	Dormancy/closure rate	–	RBI
Suitability	Product-need fit score	+	Survey
Suitability	Total cost-to-income ratio	–	Survey
Suitability	Disclosure comprehension score	+	Survey
Suitability	Ombudsman complaints / 10,000 accounts	–	RBI
Suitability	Grievance redressal time & rate	+	RBI
Outcomes	Financial resilience (emergency fund)	+	Findex/Survey
Outcomes	Over-indebtedness (DSI > 0.5)	–	Survey
Outcomes	Savings adequacy	+	Survey

Pillar	Sub-indicator	Direction	Source
	(months of consumption)		
Outcomes	CFPB financial well-being scale (10-item)	+	Survey
Outcomes	Asset accumulation trajectory	+	Survey/CMIE

Note. Direction indicates whether higher values correspond to better (+) or worse (-) responsible inclusion. Negative-direction indicators are inverted prior to normalisation. HHI = Herfindahl-Hirschman Index. DSI = debt-service-to-income ratio.

7. Results

Pillar weights derived from the first-stage PCA show that, within usage, transaction frequency and digital channel adoption together account for 64 percent [ILLUSTRATIVE] of pillar variance, with portfolio diversity contributing 22 percent [ILLUSTRATIVE]. Within suitability, disclosure comprehension and grievance redressal time emerge as the dominant components, jointly explaining 58 percent [ILLUSTRATIVE] of variance. Within outcomes, financial resilience and the CFPB well-being scale are the principal components.

District-level RFII scores range from 0.31 to 0.74 [ILLUSTRATIVE] across the 612 districts for which complete data are available, with a mean of 0.52 [ILLUSTRATIVE] and a standard deviation of 0.11 [ILLUSTRATIVE]. The bivariate correlation between district RFII and the share of adult account ownership is 0.42 [ILLUSTRATIVE], statistically distinguishable from one ($p < 0.001$) and providing initial support for H3: responsible inclusion captures information not contained in access metrics. Districts in southern and western India exhibit higher RFII scores on average, while districts in the central and eastern belt show concentrated responsibility deficits despite recent account-ownership gains.

Ordinary least squares results indicate that district urbanisation ($\beta = 0.18$, $SE = 0.04$, $p < 0.001$ [ILLUSTRATIVE]) and adult literacy ($\beta = 0.26$, $SE = 0.05$, $p < 0.001$ [ILLUSTRATIVE]) are the strongest correlates of RFII, while bank branch density per se is statistically insignificant once usage and suitability are controlled for. Per capita income enters with the expected positive sign but a smaller standardised coefficient ($\beta = 0.11$, $SE = 0.05$, $p = 0.024$ [ILLUSTRATIVE]) than literacy. Ordered logit results show that respondents in the top RFII tertile are 2.8 times [ILLUSTRATIVE] more likely

than those in the bottom tertile to report high financial well-being on the CFPB scale ($OR = 2.81$, 95% CI [2.11, 3.74], $p < 0.001$ [ILLUSTRATIVE]).

The structural equation model provides the central test of H1 and H2. The direct effect of usage on outcomes, estimated without the suitability mediator, is 0.34 ($SE = 0.04$, $p < 0.001$ [ILLUSTRATIVE]). When suitability is introduced as a mediator, the direct effect attenuates to 0.20 ($SE = 0.04$, $p < 0.001$ [ILLUSTRATIVE]) and the indirect effect through suitability is 0.14, 95% bootstrap CI [0.10, 0.18] [ILLUSTRATIVE], corresponding to a mediation ratio of approximately 0.41. Within suitability, the path loadings of disclosure comprehension (0.71 [ILLUSTRATIVE]) and grievance redressal (0.66 [ILLUSTRATIVE]) on the latent suitability construct exceed those of cost-to-income (0.48 [ILLUSTRATIVE]) and product-need fit (0.51 [ILLUSTRATIVE]), supporting H2.

Robustness checks confirm the central pattern. The mediation ratio under equal weighting is 0.38 [ILLUSTRATIVE]; under expert-Delphi weighting, 0.43 [ILLUSTRATIVE]. The Alkire-Foster headcount classifies 27 percent [ILLUSTRATIVE] of respondents as responsibility-deprived, with rural respondents over-represented at 36 percent [ILLUSTRATIVE]. The placebo test produces a near-zero coefficient on the irrelevant outcome ($\beta = 0.02$, $p = 0.71$ [ILLUSTRATIVE]), suggesting that the index does not mechanically correlate with arbitrary subjective scales. Qualitative interview themes corroborate the quantitative finding that opaque disclosure and slow grievance handling drive perceived inclusion failure even among respondents with active accounts.

Table 2. OLS regression: determinants of district RFII (illustrative)

Predictor	β (SE)	95% CI	p
Urbanisation rate	0.18 (0.04)	[0.10, 0.26]	< .001***
Adult literacy	0.26 (0.05)	[0.16, 0.36]	< .001***
Per-capita income (log)	0.11 (0.05)	[0.01, 0.21]	.024*
Bank branch density (per 1,000)	0.03 (0.04)	[-0.05, 0.11]	.454
State fixed effects	Yes	—	—
n / R ²	612 / 0.61	—	—

*Note. [ILLUSTRATIVE — replace with author's estimates]. Standard errors clustered at state level. * $p < .05$, ** $p < .01$, *** $p < .001$.*

8. Discussion

The findings indicate a measurable gap between account ownership and welfare-relevant inclusion in India, and they identify the channels through which the gap operates. Suitability, particularly its informational and grievance dimensions, mediates a substantial portion of the path from usage to outcomes. This pattern is consistent with the behavioural-economics literature that emphasises cognitive bandwidth and informational asymmetries (Bertrand, Mullainathan, & Shafir, 2004) and with Lusardi and Mitchell's (2014) finding that financial capability moderates product benefit. It also corroborates the CGAP responsible finance argument that consumer-protection infrastructure is a determinant of inclusion quality rather than a peripheral concern (CGAP, 2019).

The result that branch density is insignificant once usage and suitability enter the model is theoretically intuitive but operationally significant. It implies that the marginal welfare return on additional physical infrastructure is now low, and that supervisory attention should shift toward the design and disclosure of products and the responsiveness of grievance systems. This is consistent with the Reserve Bank of India's revised Financial Inclusion Index, which weights usage and quality more heavily than access (Reserve Bank of India, 2021), but the present study adds household-level evidence on the specific suitability indicators that matter most.

The findings should be qualified by considerations of identification. While the instrumental-variables and matching strategies address selection on observables, unobserved heterogeneity in consumer preferences may bias the suitability coefficient upward. The IV results suggest the bias is modest [ILLUSTRATIVE: Hausman test, $\chi^2 = 1.83$, $p = 0.18$], but causal identification awaits randomised or quasi-experimental work.

The qualitative findings add texture absent from the quantitative results. Several respondents reported active accounts that they nevertheless described as failing them, with the failure attributed to surprise charges, denied insurance claims, and grievance redressal cycles that exceeded their planning horizons. These accounts illustrate the interpretive content of low suitability scores and warn against treating the RFII purely as a benchmarking exercise.

9. Policy Implications

Three policy implications follow. First, regulators should integrate suitability indicators into routine supervisory dashboards. The Reserve Bank of India's Financial Inclusion Index could be extended to

incorporate household-level disclosure comprehension and grievance metrics drawn from a recurring household survey instrument analogous to the Findex. Second, disclosure regimes should move beyond document-based standards toward outcomes-based assessment, with periodic comprehension testing of products marketed to retail consumers. The Securities and Exchange Board of India's emphasis on risk disclosure can be extended into the banking and insurance domains under a coordinated inter-regulatory framework. Third, grievance redressal infrastructure deserves treatment as inclusion infrastructure. The integrated ombudsman scheme introduced by the RBI in 2021 represents progress, but the analysis indicates that perceived responsiveness, not procedural availability alone, drives outcomes. Time-to-resolution targets and public reporting at the institution level would strengthen accountability. Beyond regulatory action, financial service providers themselves have an interest in suitability as a determinant of long-term customer relationships, and the RFII offers an institutional self-assessment tool that complements existing volumetric performance metrics.

10. Limitations and Future Research

Three limitations qualify the findings. First, the cross-sectional household survey constrains causal identification; future work would benefit from panel data permitting fixed-effects estimation. Second, the Findex emergency-fund question is sensitive to question framing and may understate informal resilience mechanisms important in low-income settings. Third, the survey covers four states and 850 households; while stratification supports inference, full national representativeness awaits a larger sampling frame. Future research could extend the RFII to other emerging economies for comparative analysis, embed the index in randomised trials of disclosure interventions, and examine how digital-only products restructure the suitability-outcomes relationship as fintech penetration deepens.

11. Conclusion

Financial inclusion is unfinished business in India even as account ownership approaches saturation, and the unfinished work is in significant part a problem of measurement. By integrating usage, suitability, and consumer outcomes into a single empirically grounded index and by tracing the mediational pathway that connects them, the Responsible Financial Inclusion Index offers regulators and researchers a measure attuned to what financial relationships do for the welfare of those who hold them. The illustrative findings reported here indicate that suitability is not a peripheral consideration but a central channel through which usage translates into outcomes, and that disclosure

comprehension and grievance redressal are the suitability dimensions most consequential for resilience and well-being. Operationalising responsible inclusion as a policy goal requires measurement instruments that can detect what access-based indicators cannot. The RFI is a candidate for that role.

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