

Impact of Digital Financial Transactions on Women's Household Bargaining Power : Evidence from India



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- The percentage of women having bank accounts rose sharply from 35% in 2011 to 80% in 2017, and to about 89% in 2024.
- Over the same period, the percentage of men with bank accounts grew from 63% to 89%.
- Studies have reported that nearly all new accounts opened after 2014 were linked to the PMJDY, with 55% of these accounts held by women (Duvendack et al., 2023).
- The Global Findex data from 2014 to 2024 shows strong growth in digital payment adoption among both men and women aged 15 and above.
- The share of women using digital payments nearly tripled, while men's usage increased from 29.98% to 54.15% over the same period.
- The gender gap in the use of digital payments had come down from 15.79% in 2014 to 11.48% in 2024.

1.1 Account ownership structure

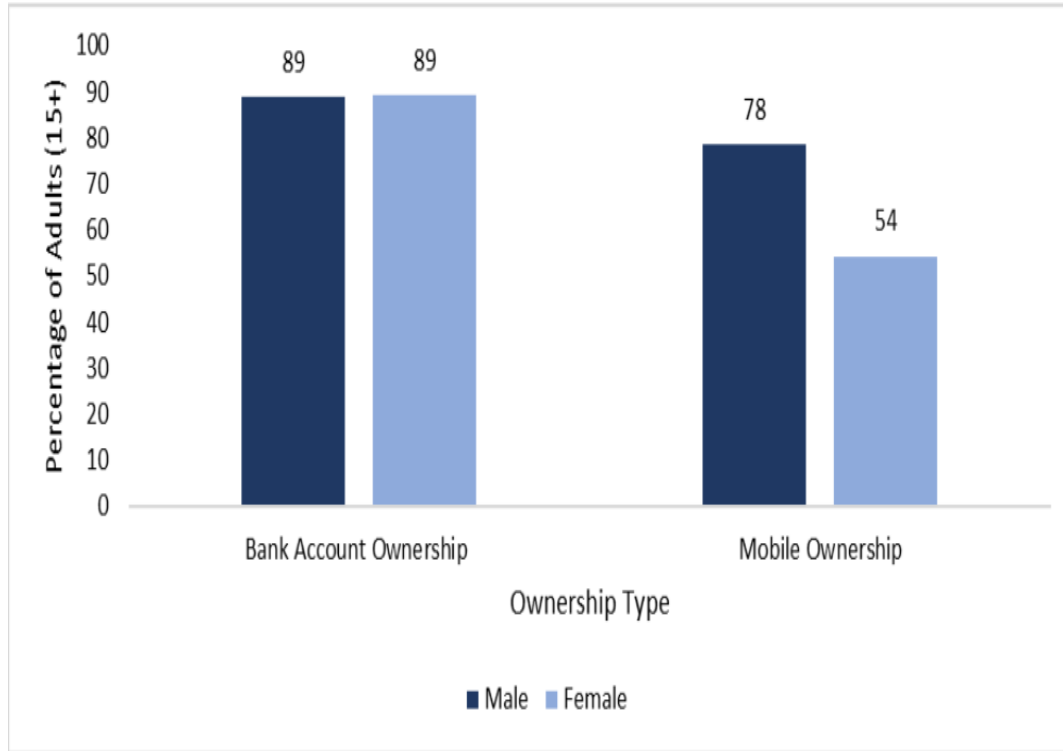


Fig. A

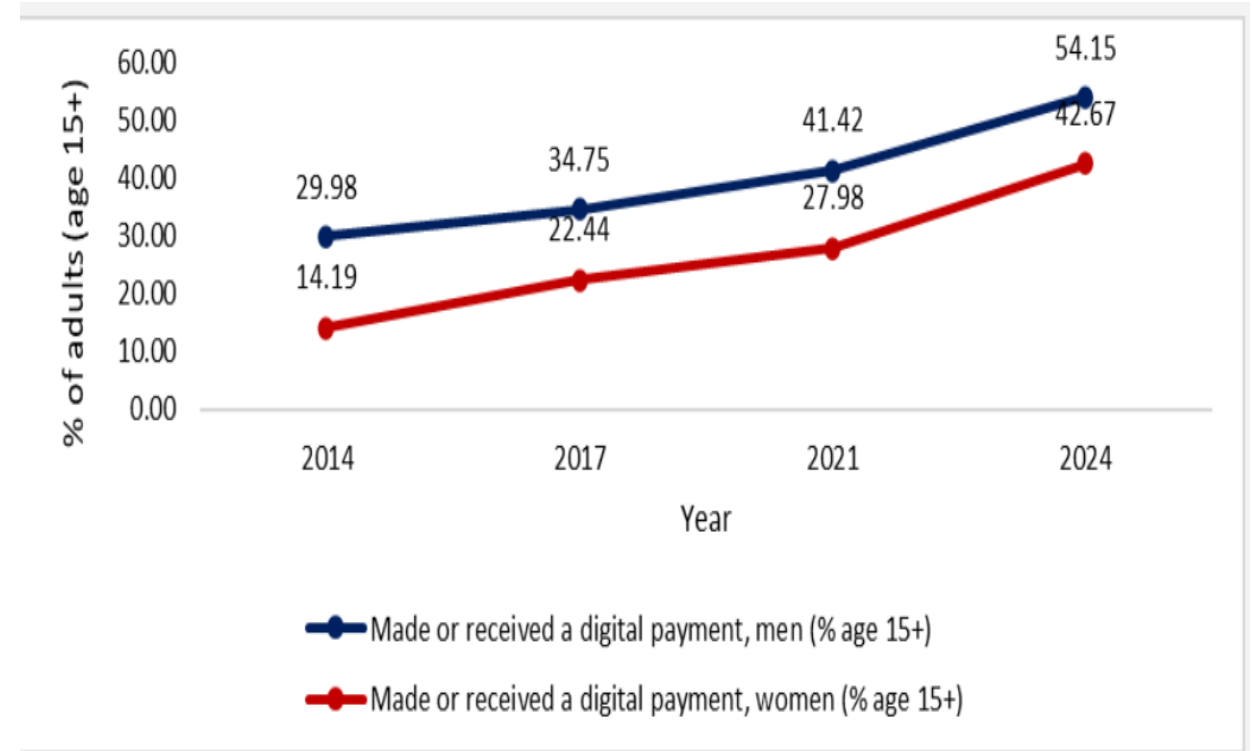


Fig. B

Fig. A : Gender Differences in Bank Accounts and Mobile Ownership in India in 2024 (Percentage of Adults 15+)

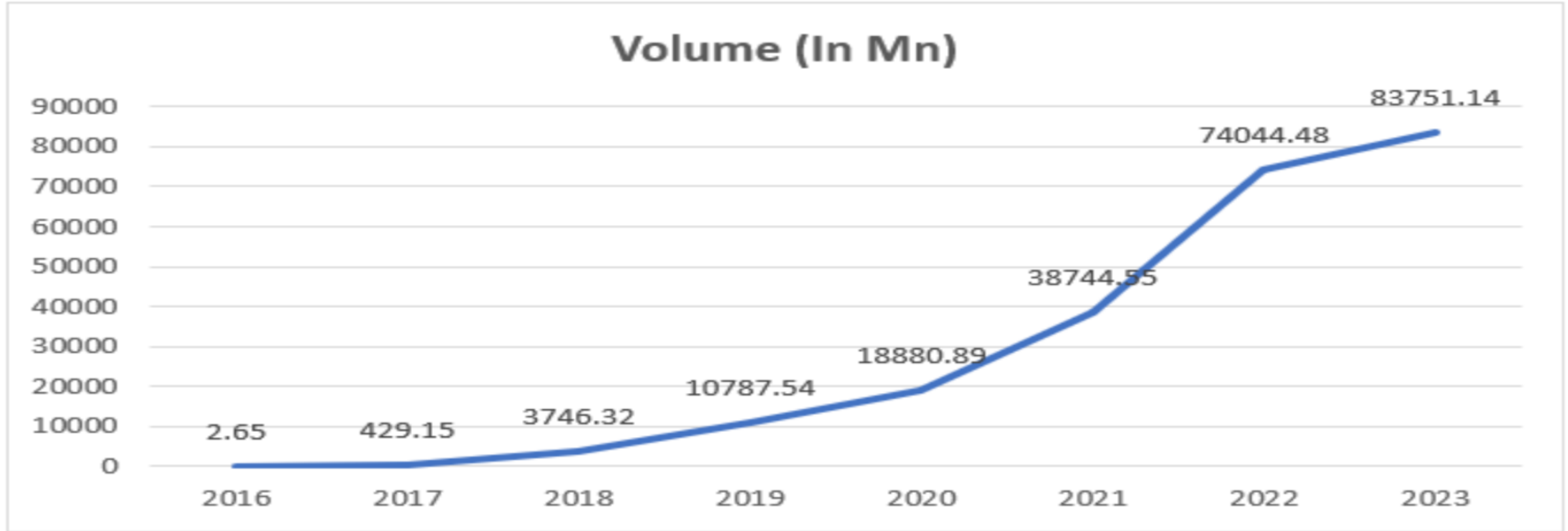
Fig. B : Gender Gap in Digital Payment Adoption (2014–2024)

Source : Global Findex Database



1.2 Highlights of the UPI Journey in India

Fig. C: Digital Payment Adoption (2014-2024)

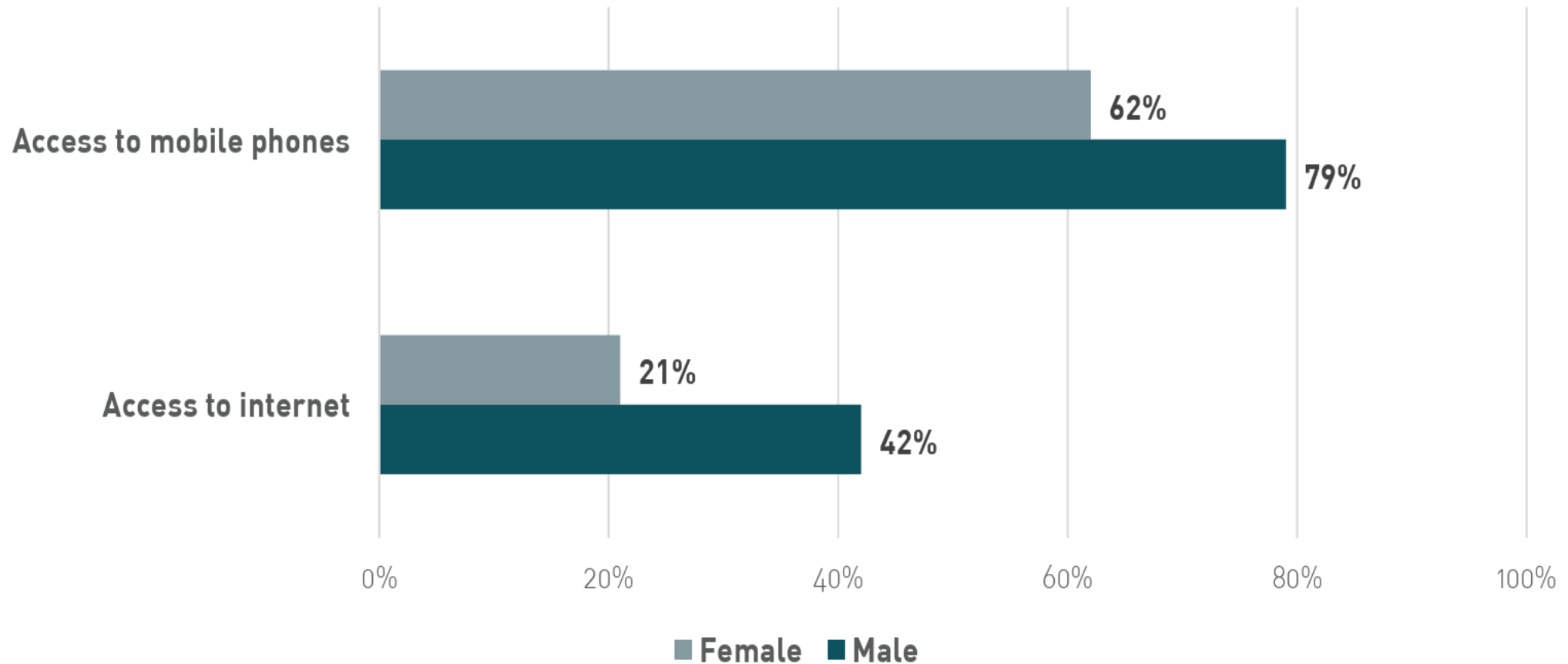


Source: National Informatics Centre, Government of India



1.3 Mobile Phone and Internet Access

Figure E: Access to the internet and mobile phones (by gender)



Source: GSMA Mobile Gender Gap Report (2020)



2. Literature Review

- Out of the 17 Sustainable Development Goals (SDGs) adopted by the United Nations in 2015, seven of these goals aim to empower women by ensuring equal rights.
- Women's empowerment through increased income benefits the entire household, improves nutrition for children, reduces poverty, and enables investments in human capital (Attanasio & Lechene, 2002; Hoddinott & Haddad, 1995; Lundberg et al., 1997).
- Today, in the wake of the third Internet-based technological revolution, high-speed developments in the digital economy hold the potential to profoundly impact social effectiveness and impartiality (Kapoor, 2014).
- Digital finance provides more financial services to vulnerable groups because of its huge advantage of inclusiveness, which shows the positive impact of mobile money on the economic well-being of vulnerable women (Suri and Jack, 2016).
- Burke et al. (2020) find that the rapid expansion of mobile money increased women's economic resilience and women's say in household decision-making.



- Women typically invest more time and effort in household chores and children's responsibilities within marital relationships. In contrast, men are more involved in the labour market, influenced by physiological differences between genders (Becker, 1976).
- Having access to savings accounts can provide women with increased privacy and control over their income (Buvinic & Jaluka, 2018).
- The empirical results from India suggest that increasing female control over benefits payments could help women overcome social constraints to labour force participation (Pitt and Khandker, 1998).
- Mobile phones can indirectly enhance women's influence in the household by contributing to factors like greater financial independence, improved job opportunities, increased personal freedom, and broadened social connections (Horst and Miller, 2005; Masika and Bailur, 2015).
- Digitalization contributes to the development of self-esteem among women and expands their social networks, which can have positive long-term effects (Hust & Miller, 2005).
- It has helped women manage their money, giving them more financial independence and providing economic empowerment.



- This paper examines and evaluates the impact of mobile money, or digital financial transactions, on women's bargaining power at the household level in India.
- It focuses on women's decision-making at the household level and the different dimensions of women's empowerment.
- The primary emphasis of this paper is to investigate how digital financial transactions through Unified Payments Interface (UPI) apps contribute to women's empowerment in household decision-making in India.
 - We investigate the impact of mobile money on purchasing household items, health-related decisions, decisions to visit family and friends' houses, and decisions to use money earned by the husband.
 - We investigate the impact of using mobile phones for financial transactions by women on their freedom of movement, independence, and asset holdings.



4. Data and Variables

- This study used the National Family Health Survey-5 (NFHS-5, 2019-21), which includes women of diverse marital statuses, all within the age group of 15-49 years
- Out of the 724,115 women, 39,999 were selected for analysis
- **Variables Description-**

Dependent Variable: Women's Overall Bargaining Power index is formulated by Principal Component Analysis, and ranges between 1-5

Where:

- 1= Poor bargaining power
- 2= Fair bargaining power
- 3= Average bargaining power
- 4= Good bargaining power
- 5= Highest Bargaining Power

Independent Variable: Use of Mobile Phone for Financial Transactions

Control Variables: Age, Caste, Religion, Respondent Education, Family size, Wealth Index, Mass media Exposure, State, & others

4.1 Trends of selected variables

Fig. 1 : Digital Transactions and allowed to go to the health facility

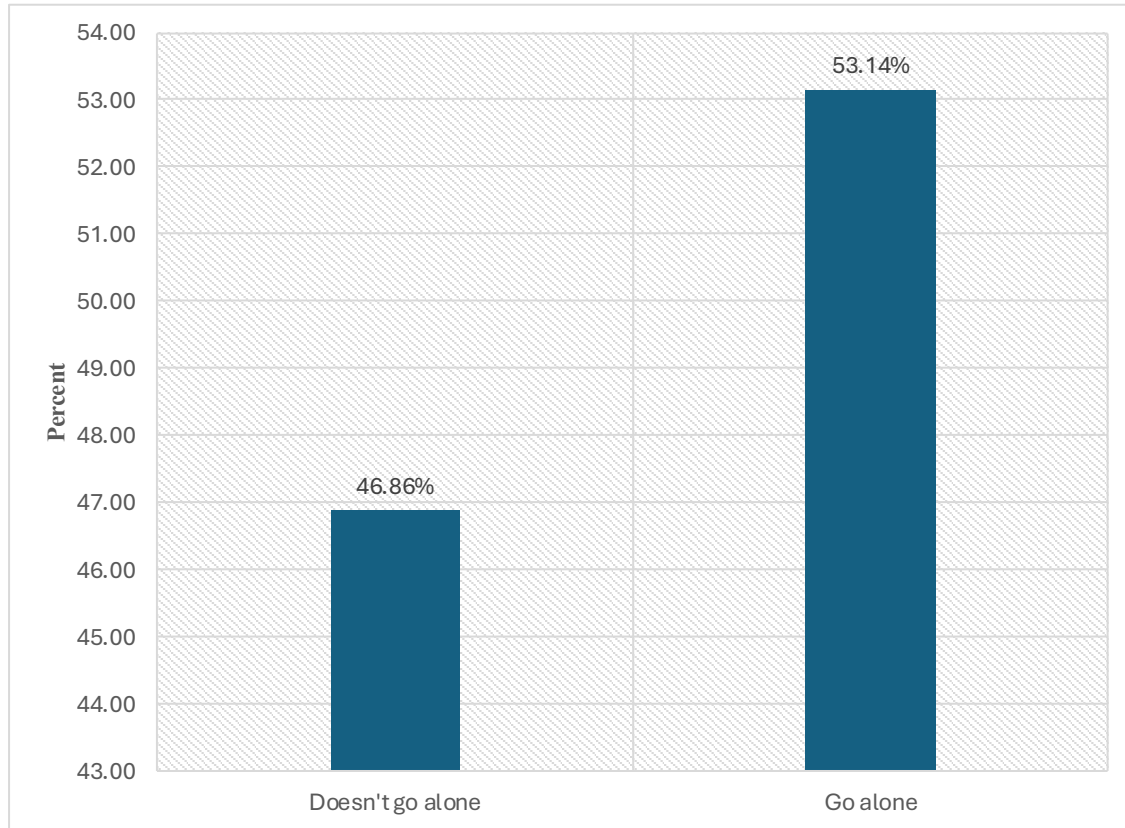
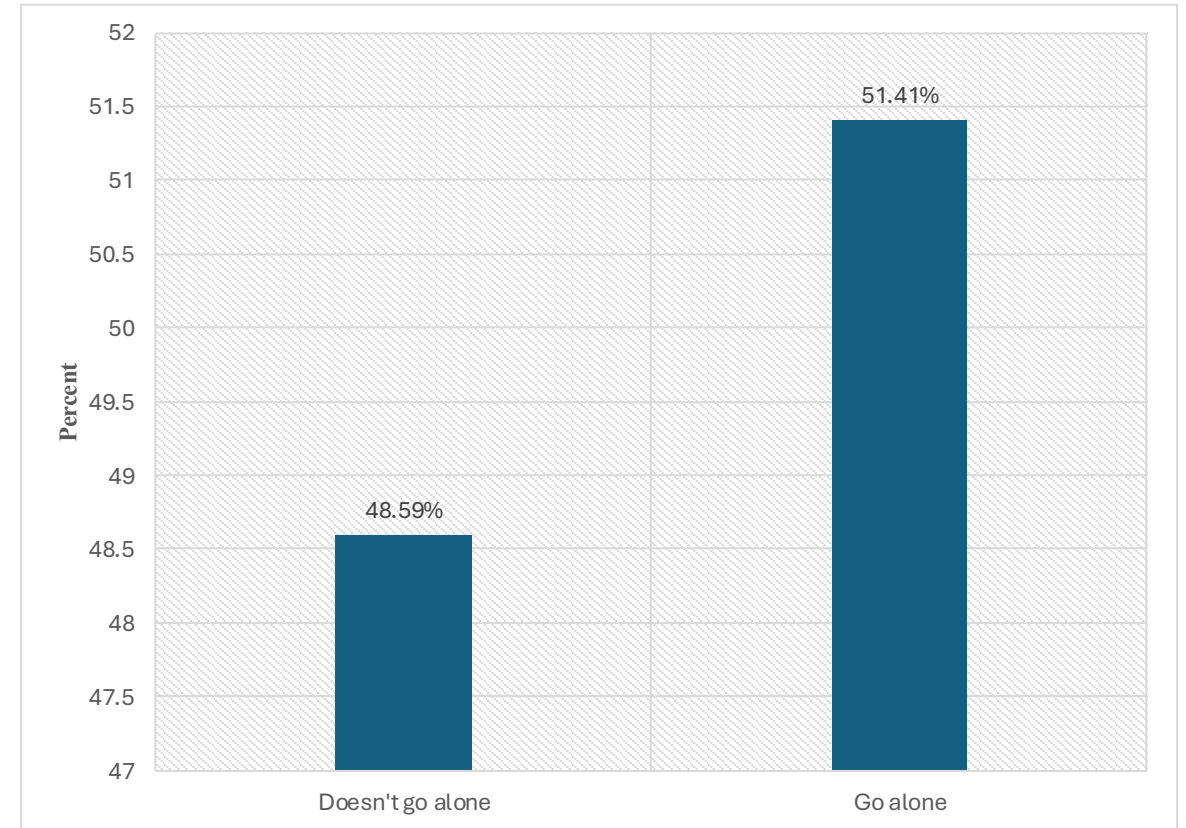


Fig. 2 : Digital Transactions and Women's Mobility Outside of the village

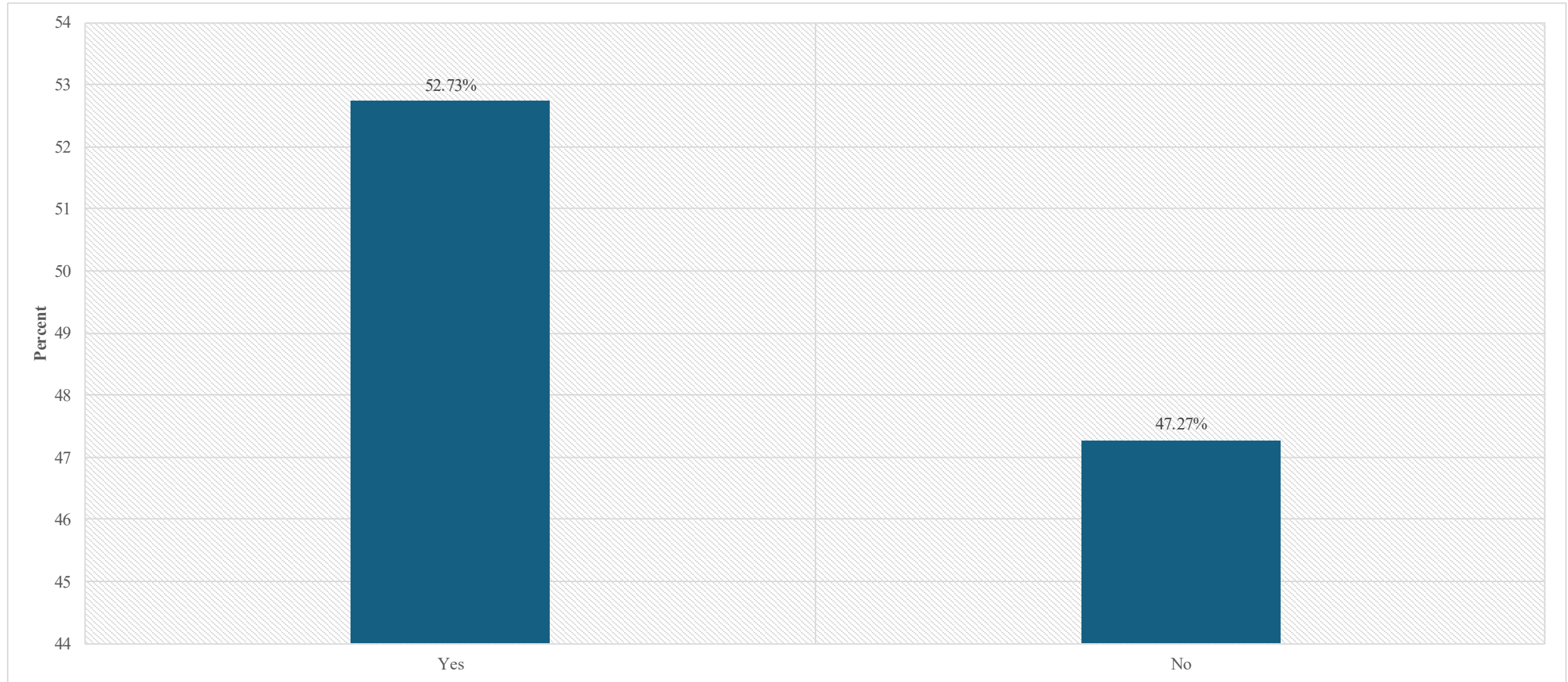


Source: Author's Calculation from NFHS-5

Source : Author's Calculation from NFHS-5



Fig. 3 : Digital Transactions and decisions on their own money on how to use



Source: Author's Calculation from NFHS-5



5. Methodology

- Our study uses a Conditional Mixed Process Model (CMP) → full-information maximum likelihood estimator that jointly estimates systems of equations with mixed dependent variable types while accounting for endogeneity and correlated errors.
- To overcome the potential endogeneity and selection bias, we propose running the above generalised equation; however, there is a peculiar nature of the structured equation that makes the conventional equation unsuitable.
- Therefore, at present, the most suitable model for implementing this type of mixed structure across various models is the Conditional Mixed Process Model (CMP) developed by Roodman (2011). Due to reverse causality in the equation, we constructed our instrument in the following way:



Our baseline ordered probit model denotes the following equation:

$$Y_{ihdr} = \alpha + \delta DFT_{hdr} + \beta X_{ihdr} + \zeta X_d + \eta_d + d_\tau + \varepsilon_{ihdr} \quad (1)$$

Where:

Y_{ihdr} = Women's bargaining power at different levels (1 \rightarrow lowest bargaining power & 5 \rightarrow highest bargaining power)

DFT_{ihdr} = Digital Financial Transactions by women

X_{ihdr} = Matrix of the women's and household observed characteristics

X_d = District level controls

d_τ = State region fixed effect

ε_{ihdr} = Randomly distributed error terms



$$DFT_{ihdr} = \gamma_0 + \gamma_1 LOU_{-(d)} + \gamma_2 X_{ihdr} + \gamma_3 \delta_d + \eta_\tau + \varepsilon_{ihdr} \quad (2)$$

Where:

DFT_{ihdr} = digital financial transactions made by women in the households of district d in the state region r

$LOU_{-(d)}$ = instrument variable leave own out rate (LOU) of the use of the internet in the district d by excluding the concerned household in the district d

- The relevance of the instrument variable is correlated to the digital financial transaction reported in equation (2), and the second is the exclusion restriction, justifying the estimation of the predicted DFT on the women's bargaining power

$$Y_{ihdr} = \pi_0 + \pi_1 + \widehat{DFT}_{ihdr} + \pi_2 X_{ihdr} + \pi_3 X_d + \eta_\tau + \varepsilon_{ihdr} \quad (3)$$

Where:

\widehat{DFT}_{ihdr} = predicted DFT for the districts, used to estimate the impact of DFT on women's bargaining power



6. Results

Table 1: Impact of DFT on the women's bargaining power through instrumental variable estimates

	(1)	(2)	(3)	(4)
Mobile Phone for Financial Transactions	0.972*** (0.104)	0.855*** (0.099)	0.825*** (0.096)	0.602*** (0.082)
Leave own out rate (LOU)	1.246*** (0.077)	0.956*** (0.090)	0.684*** (0.095)	0.706*** (0.111)
Naïve Effect	0.121*** (0.014)	0.094*** (0.015)	0.085*** (.014)	0.099*** (.015)
Margins effect (dy/dx)	0.359*** (0.033)	0.315*** (0.033)	0.305*** (0.032)	0.216*** (0.028)
Observations	39,394	39,394	39,394	39,394
atanrho_12 (Endogeneity test)	-0.569*** (0.083)	-0.482*** (.069)	-0.463*** (.066)	-0.299*** (.048)
Individual Characteristics	No	Yes	No	Yes
Household Characteristics	No	No	Yes	Yes
State region fixed effect	No	No	No	Yes
District Characteristics	No	No	No	Yes

Notes:

***p<0.01,

**p<0.05,

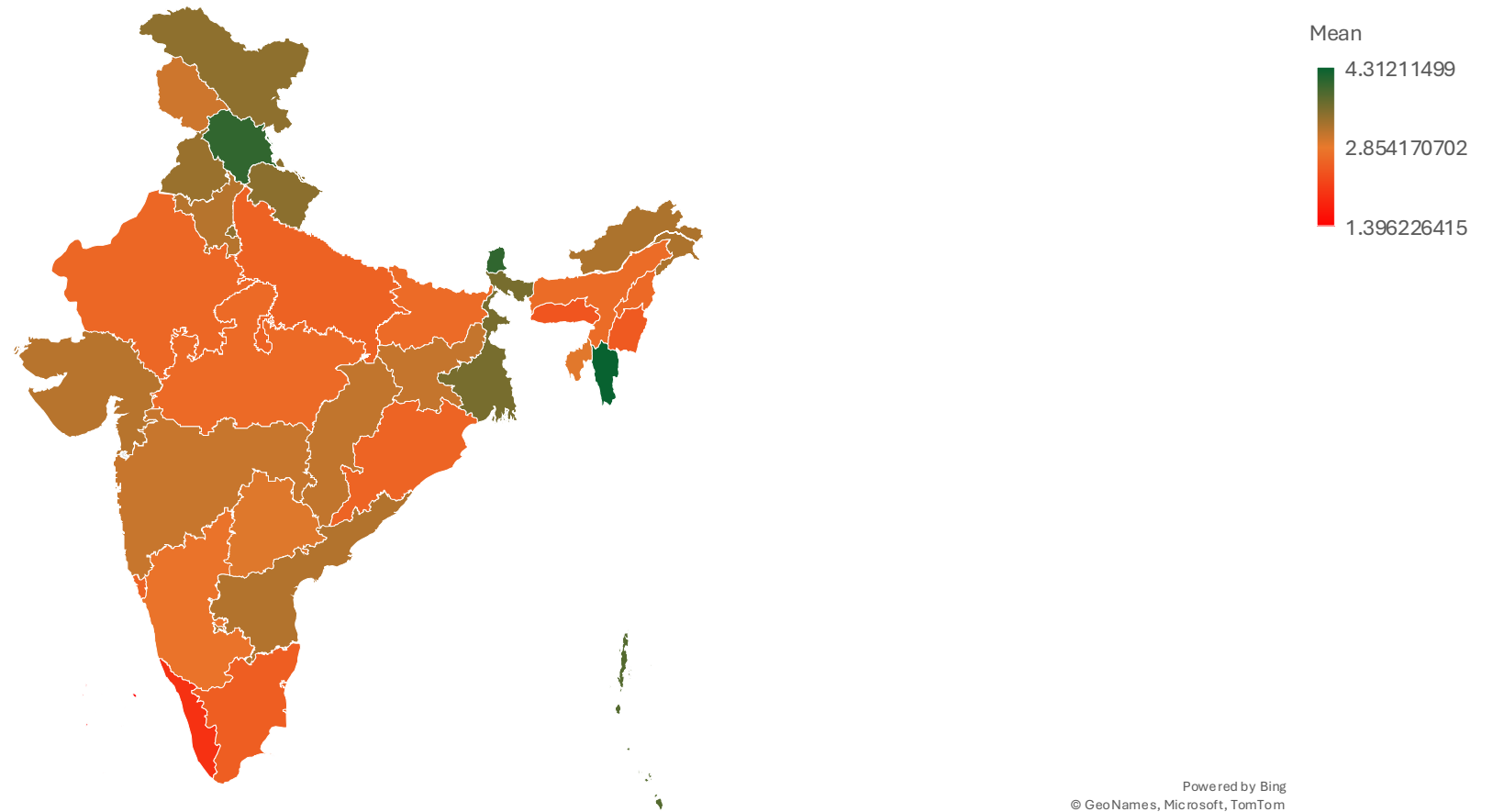
*p<0.1



Table 2: Mechanism Analysis: Do Respondents' Bargaining Power Affect through Education, Mass media exposure, Use of money alone, and Literacy level

Panel A	WB (Education)	WB (Mass Media)
Mobile Phone for Financial Transaction	0.594*** (0.087)	0.604*** (0.081)
Education*Digital Transaction	0.094*** (0.024)	
Mass Media*Digital Transaction		0.039** (0.020)
Observations	39,394	39,394
Individual Characteristics	Yes	Yes
Household Characteristics	Yes	Yes
State region fixed effect	Yes	Yes
District Characteristics	Yes	Yes
Panel B	WB (Use of Money Alone)	WB (Literacy)
Mobile Phone for Financial Transaction (DFT)	0.255*** (0.097)	0.221* (0.130)
DFT*Use of money alone	0.459** (0.036)	
DFT*Literacy		0.150*** (0.028)
Observation	39,394	39,394
Individual Characteristics	Yes	Yes
Household Characteristics	Yes	Yes
State region fixed effect	Yes	Yes
District Characteristics	Yes	Yes

Fig. 4 : Digital Financial Transactions and Women's Bargaining Power across Indian states



Source: Author's calculation from NFHS-5



Table 3: Impact of digital transactions on women bargaining power of Wealthier and non-wealthier

	Low Wealth Status (1)	High Wealth Status (2)
DFT	0.119 (0.166)	0.690*** (0.123)
Naïve effect	0.007 (0.024)	0.170*** (0.019)
Margin Effect	0.0439 (0.061)	0.242*** (0.040)
DFT(Endogeneity)		
Leave own out rate on DFT	0.673*** (0.142)	0.656*** (0.142)
atanhrho_12	-0.060*** (0.085)	-0.323*** (0.080)
Observation	20,480	18,914

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$



Table 4: Impact of digital transactions on women bargaining power of higher and lower castes

	Lower Caste (1)	Higher Caste (2)
DFT	0.473*** (0.154)	0.679*** (0.089)
Naïve effect	0.030 (0.028)	0.133*** (0.018)
Margin Effect	0.172*** (0.055)	0.241*** (0.030)
DFT(Endogeneity)		
Leave own out rate on DFT	0.831*** (0.144)	0.608*** (0.135)
atanrho_12	-0.257*** (0.086)	-0.329*** (0.055)
Observation	13,461	25,933

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$



Table 5: Impact of digital transactions on women bargaining power of male-headed and female-headed households

Panel A	Male head (1)	Female Head (2)
DFT	0.591*** (0.093)	0.681*** (.159)
Naïve effect	0.101*** (0.017)	0.076** (0.040)
Margin Effect	0.212*** (0.032)	0.239*** (0.054)
Panel B		
DFT (Endogeneity)		
Leave own out rate on DFT	0.779*** (0.113)	0.316 (0.213)
atanhrho_12	-0.290*** (0.054)	-0.364*** (0.104)
Observation	33,150	6,244

Notes: ***p<0.01, **p<0.05, *p<0.1



8. Robustness check

Table : 6 Robustness check by using the leave-one-out rate at village level

Panel A: With no village characteristics	(1)
Digital Financial Transaction	0.525*** (0.068)
Panel B: First stage regression at village level	
Leave own out rate at Village level	0.405*** (0.033)
atanhrho_12	-0.267*** (0.041)
Observation	39,394
Panel C: With village-level characteristics	
Digital Financial Transaction	0.426*** (0.069)
Panel D: First stage regression at village level	
Leave own out rate	0.348*** (0.036)
atanhrho_12	-0.199*** (0.040)
Observations	39,394

Notes: ***p<0.01, **p<0.05, *p<0.1



Table : 7 Robustness check by using the different age groups

AGE GROUP

Age group (15-29)

DFT	0.730*** (0.107)
Panel A: First Stage regression	
Leave own out rate on DFT	0.761*** (0.154)
atanrho_12	-0.334*** (0.067)
Observations	39,394

Age group (30-49)

DFT	0.470*** (0.113)
Panel B: First Stage regression	
Leave own out rate on DFT	0.680*** (0.131)
atanrho_12	-0.252*** (0.064)
Observations	39,394

Notes: ***p<0.01, **p<0.05, *p<0.1



Table 8. Robustness check by using the sample division at different levels

With sample divide at 20 percent	7,858
DFT	0.508*** (0.159)
Naïve effect	0.062** (0.034)
Panel A: First Stage regression: DFT(Endogeneity)	
Leave own out rate on DFT	0.504*** (0.185)
atanhrho_12	-0.263*** (0.096)
Observations	39,394
With sample divide at 80 percent	31,515
DFT	0.596*** (0.085)
Naïve effect	0.102*** (0.017)
Panel B: First Stage regression: DFT(Endogeneity)	
Leave own out rate on DFT	0.749*** (0.117)
atanhrho_12	-0.293*** (0.050)
Observations	39,394

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$



9. Conclusion

- The widespread growth of mobile phones in developing nations has extensive socioeconomic implications
- This paper shows how mobile phones affect Indian households and demonstrates their positive impact on women's status across various aspects
- At the household level, being an active mobile money user increases women's likelihood of participating in daily household activities, enhancing their mobility, and increasing decision-making power
- The results provide robust evidence that digital financial transactions enhance women's bargaining power through multiple reinforcing mechanisms, including education, access to information, financial autonomy, and literacy.
- The results indicate that mobile money can be a valuable tool for enhancing women's control over their finances, with a more significant impact for women in households from affluent families, higher castes, and female-headed households.
- In conclusion, mobile phones play a significant role in enhancing women's overall bargaining power in India, which refers to their ability to negotiate and influence decisions within the household and society.



10. Policy implication

- The Indian government should implement various initiatives to promote female education as part of the National Policy for Women's Empowerment.
- There should be initiatives to promote increased usage or ownership of mobile phones among women.
- Providing women with free or subsidised mobile phones could be more cost-effective, as well as funding specific education programs for girls, to achieve similar improvements in women's status.
- Policies should prioritize universal access to affordable smartphones, reliable internet connectivity, and user-friendly digital payment systems, especially in rural and economically disadvantaged regions.
- Digital finance policies must be complemented by investments in female education, digital literacy, and targeted financial awareness programs.
- Targeted outreach programs, such as women-centric banking products, doorstep digital services, and community-based digital facilitators, are crucial for ensuring the inclusion of women who are otherwise excluded due to social norms, mobility constraints, or a lack of trust.



Thank You

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