

The Impact of Digital Financial Transactions on Women's Bargaining Power: An Empirical Evidence from India

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Abstract

After introducing the Digital India program, India experienced rapid mobile penetration and growth in internet services. Despite having access to digital devices with different payment apps, women face difficulties negotiating with their husbands and other family members. This paper examines the impact of digital financial transactions (DFT) using mobile phones on women's bargaining power in Indian households, based on the National Family Health Survey-5 (2019-21). We applied a conditional mixed process model to correct the selective bias and unobserved heterogeneity. We employed the instrumental variable approach, using a leave-one-out rate, to estimate the causal effect of DFT on women's household bargaining power. Our findings indicate that married women using mobile money show a positive and statistically significant impact on the female bargaining power. The subsample analysis reveals that the impacts vary among families with distinct characteristics, including wealth status, caste, and head of households. Our study is robust, incorporating the instrument variable at the village level, along with different age groups, and dividing the sample into distinct subgroups to highlight the role of women in decision-making within households in the digital age, which aligns with Sustainable Development Goal 5 for gender equality.

Keywords: Digital Financial Transactions, Household Decision-making, Sustainable Development Goal, Women's Bargaining Power.

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1. Introduction

Enhancement of the women's voices often plays a pivotal role in their self-development. Traditionally, women in India have been significantly depicted as having a low status in the household while making decisions (Kabeer, 1997; A. Sen, 1990) due to the low education and low labour force participation (Boserup, 1971; Kabeer, 1997; Manser & Brown, 1980; A. Sen, 1990). Women's childbearing and household chores responsibilities hinder them from boosting their skills, participating in paid work and gaining knowledge to pursue higher education (Deshpande & Kabeer, 2024; Sharma & Shah, 2025). Traditionally, women have to follow the men's dominance, and are directed to take on household responsibilities, taking care of the children and in-laws in the household (Maurer-Fazio et al., 2011; Wang et al., 2019). Across genders, women's expectations for family roles and responsibilities are being shaped by society's patriarchal gender norms (Park & Banchevsky, 2019; Yang & Gao, 2021). Most of the time, these women are avid supporters and practitioners of conventional societal norms and are reluctant to deviate from them.

The primary emphasis of the current paper is to investigate how digital financial transactions³ through Unified Payments Interface (UPI) apps help women's empowerment in decision-making at the household level in India. This paper explores and assesses how mobile money has improved women's decision-making at the household level in India. Despite having access to digital devices with varying payment apps, women face difficulties negotiating with their husbands and other family members within the house. It, therefore, aims to examine whether mobile money is beneficial for reducing the gender digital divide and women's exclusion from participating in household decision-making. To test the idea that mobile money offers women cheaper and more suitable financial services, boosting their economic engagement, freedom of

³ The authors use "DFTs" to refer to digital cashless transactions. In previous literature, the term "payment" has been used to describe both cash and without-cash financial transactions. In a more specific context, "payment" is defined as non-financial transactions. Due to this, "DFT" as term has been used.

preference, and confidence. It provides new insights into how DFT can enhance household decision-making, support policy development amidst the digital era, and contribute to achieving SDG 5. Therefore, we contribute to the body of research on using mobile phones for financial transactions and their impact on women's negotiation power in households regarding different aspects of empowerment. It is not easy to quantify household decision-making directly, but the most effective method is to use closely related indicators. First, we examine the impact of mobile money on purchasing household items, health-related decisions, the decisions to visit family and friends' houses, and the decisions to use husband-earned money. Secondly, to examine the impact of using mobile phones for financial transactions by women on analysing their freedom of movement and independence. Third, the ownership of assets like land and houses by women with access to mobile money is assessed since asset holding is directly related to household-level decision-making.

1.1 Background of Mobile Phone Use

More women in low- and middle-income countries (LMICs) are using mobile internet than ever before, with a total of 1.5 billion (66%) (United Nations Women et al., 2020). In 2023, 120 million more women used mobile devices to access the internet. By 2023, 84% of broadband connections will be mobile, making it the major and frequently sole method of internet access in LMICs. However, a startling 785 million women are still disconnected, with over 60% of them living in Sub-Saharan Africa and South Asia⁴. In South Asia, the proportion of women who use mobile internet has increased from 18% in 2017 to 49% in 2024, with a reduced gender gap in mobile internet use from 67% in 2017 to 32% in 2024⁵. Pradhan Mantri Jan Dhan Yojana has ensured that 55.6 per cent of bank accounts at the basic level are owned by women, but only 25 per cent of UPI users are women⁶. In rural and semi-urban areas, this

⁴ Jeffrie, (2024)

⁵ <https://www.gsma.com/r/gender-gap/>

⁶ ('UPI For Her' Brings 200 million Women Within Reach Of India's Digital Economy', 2025)

disparity is much more pronounced. Women's use of smartphones and mobile Internet has increased, from 30% in 2022 to 37% in 2023, but they still use digital finance in very small amounts (National Payment Corporation of India, 2024). Among women aged 15–49, 69% are aware of how to use their own mobile phones, while 47% live in rural regions⁷. In low- and middle-income nations, the rate of women adopting mobile internet has risen over the past year, and more women than ever before are currently utilizing mobile internet. Women are embracing mobile internet more quickly than men, which has caused the gender gap in adoption to close for the first time since 2020. Approximately 60% of the 785 million women who do not use mobile internet reside in South Asia and Sub-Saharan Africa. Women are currently 15% less likely than men to utilize it (Jeffri, 2024) while the gender difference in overall mobile ownership has remained relatively stable at 8%, the gender gap in smartphone ownership has also marginally decreased to 13% (Boserup, 1971; Kabeer, 1997; Manser & Brown, 1980; A. Sen, 1990). In 2023, this increased to 37% while adoption among men remained relatively unchanged, narrowing the gender gap from 40% to 30%. Notably, most men and women who use mobile internet do so daily. This is most prevalent in India, where 95% of male and 92% of female users utilize mobile internet daily, despite the country's comparatively low adoption rate. This likely demonstrates the significance of mobile internet for Indian men and women once they begin using it, as well as how more frequent use⁸ becomes possible with the availability of affordable data⁹ (Shanahan & Bahia, 2023).

2. Literature Review

The difficulties in achieving the Sustainable Development Goals (SDGs) without gender equality have been recognised and identified by the United Nations, which has been

⁷ National Family Health Survey (NFHS) – 5 (2019-21)- https://dhsprogram.com/Countries/Country-Main.cfm?ctry_id=57

⁸ Shanahan & Bahia (2023)

emphasised in later research (Diebolt & Perrin, 2013; Duflo, 2012). Out of the 17 SDGs adopted by the United Nations in 2015, SDG 5 addresses gender equality and aims to empower women by ensuring equal rights. Nevertheless, gender inequality continues to be a pervasive obstacle to social progress. Women's empowerment and financial independence have been significantly improved by utilizing digital financial inclusion (DFI). Amartya Sen (1992) states, "Women Empowerment is the ability of women to exercise full control over one's actions and is one of the central issues in the development process for many countries in the world today (Sen, 1992) while women are empowered when they "acquire the ability to make choices" or when they "have access to the components of development such as health, education, earning opportunities, rights, and political participation" (Duflo, 2012).

Previous studies have shown that women's empowerment through increased incomes benefits the entire household, improves nutrition for children, reduces poverty, and enables human capital investments (Attanasio & Lechene, 2002; Hoddinott & Haddad, 1995; S. J. Lundberg et al., 1997). Access to finance reduces transaction and information costs, further enhancing saving and investment decisions and increasing economic growth (Beck et al., 2009). This, in turn, improves individuals' ability to make informed choices about saving and investing, ultimately contributing to economic growth. In recent times, payment systems have been employed for various purposes. Existing literature has used multiple indicators to measure women's empowerment, such as ownership of assets, education, health, decision-making in domestic households, allocating resources, and controlling resources¹⁰. A woman's perspective and status in the home are strengthened when she participates in decision-making, and her empowerment is further increased as she participates in more decisions. On the contrary, women are not considered empowered if they do not contribute to making decisions at home. Some studies describe women's empowerment as the capacity to make decisions independently

¹⁰ See (Afridi, 2010; Anderson & Eswaran, 2009; Doss, 2013)

(Brunson et al., 2009; Desai & Johnson, 2005). Therefore, for comparison, we examine a more rigid definition of bargaining power: a woman is the only decision-maker, while others view joint decision-making as a measure of empowerment (Bhagowalia, 2012; Fapohunda & Orobato, 2013). Women's bargaining power has shown a significant and positive impact on the health and education of children (Lépine & Strobl, 2013), improved well-being (Beegle et al., 2001; Gahramanov et al., 2021), and reduced domestic abuse (Bobonis et al., 2013). According to recent research, women's financial inclusion has improved as a result of mobile money's rapid growth, which has made financial transactions more convenient and independent by enabling them to access financial services without obtaining consent from husbands or other family members (GSMA 2015¹¹; World Bank, 2018)¹². Additionally, it helps more women shift from basic farming to starting their businesses (Suri & Jack, 2016). Many researchers have highlighted the relationship between growth and finance, emphasising that financial inclusion has provided poor households with opportunities such as access to credit, informed investment decisions, savings, and protection against unforeseen circumstances (Beck et al., 2009).

The manuscript is structured into the following sections. The Introduction provides an overview of digital financial services, highlights the significance of the study, and outlines the research problems being addressed. Section 2 presents the literature review, Section 3 outlines the theoretical framework, and Section 4 discusses the data and methodology. Sections 5 and 6 describe the key variables and the econometric model, respectively. Sections 7, 8, and 9 present results, heterogeneity analysis and robustness analysis. Sections 10 to 13 cover the discussion, conclusion, policy implications, and study limitations, respectively.

¹¹Refer to (Global System for Mobile Communications Association (GSMA), 2015).

¹² (Demirgüç-Kunt et al., 2017)

3. Theoretical Framework

Household decision-making bargaining models show how resources are divided between males and females in families and the results of various allocation procedures (Bloemen, 2010; Chiappori, 1992; Haddad et al., 1997; Manser & Brown, 1980; Quisumbing, 2003; Thomas, 1990). Previous research on resource distribution in homes frequently assumed that the family makes decisions as a single unit and that everyone's preferences can be readily combined (Becker, 1981; S. Lundberg & Pollak, 1994). The approach, also known as the unitary model, combines the earnings or resources of a single person or couple to make all household decisions collectively. It is explained as a single unit of consumption or production (Bertrand et al., 2015; Haddad et al., 1997). Despite that, the unitary model has faced growing criticism from social scientists. To illustrate that spouses' personal preferences and financial resources are crucial in family decision-making, they employ bargaining models (Bloemen, 2010; Chiappori, 1992; Manser & Brown, 1980). Following the abandonment of the unitary family model, new domestic decision-making and bargaining power models have arisen, such as collective, non-cooperative, and cooperative models. Cooperative games allow players to make legally binding contracts with one another (Seiz, 1995). Co-operative bargaining model information helps understand how couples convey the outcomes of their discussions. Quite the opposite (Bertrand et al., 2015; Doss, 2013; Doss, 1996; S. Lundberg & Pollak, 1994; Quisumbing, 2003; Seiz, 1995). Non-cooperative bargaining models do not assume the results are best for all parties. In the collective bargaining model, one can be better off, or the well-being of one household member can only be achieved by reducing the well-being of another participant (Quisumbing, 2003). Models of collective households are explained by Pareto efficiency because they ensure that collaboration and engagement outcomes are efficient. It outlines how women's employment and work-related choices impact household decisions and their influence over those decisions. Given the power dynamics between males and females within a household, it

is essential to comprehend how each person's preferences and behavioural habits influence their decisions and choices.

4. Data

4.1 Research Design

Our variables are sourced from the National Family Health Survey (NFHS-5), 2019-21. It collects data about people and their health in India and covers health, nutrition, and respondents' socio-demographic variables. The NFHS-5 interviewed approximately 6.37 lakh sample homes, encompassing 7,24,115 women and 1,01,839 men, from 707 country districts throughout 28 states and 8 Union Territories (UTs). Each state is separated into various districts, which are further separated into wards in urban areas and census enumeration blocks in rural regions. Our study included all married women aged 15-49 years in a household and interviewed 724,115 women living in 664,972 households across all states and Union territories of India. Of the 724,115 women, 39,394 were selected for analysis (Figure 1).

[Insert Figure 1]

4.2. Key Variables used in the analysis

4.2.1 Outcome Variable

4.2.2 Decision-making at the intra-household level

The outcome variable for this study is married women who participated in decision making, aged 15–49 years, who made specific decisions on a) Decisions regarding women's health care, b) Decisions about household purchases, c) Decisions about visits to family or friends, and d) Decisions about how to spend the husbands' earnings. Each of these four questions has responses such as i) respondent alone, ii) jointly with husband, iii) husband alone, iv) someone else, and v) others. Following Jose et al. (2023), we have coded the variables as '1' if they are taking the decision 'women alone' and 'women jointly with husband,' and zero otherwise.

Earlier research defined bargaining power as a woman's involvement in family decision-making, whether alone or with her partner (Bhagowalia, 2012).

5.1.2 Mobility of Women

Women are seen as having freedom of movement if a) they can visit the market, b) they are allowed to visit health facilities, and c) they are allowed to go outside their village or community. The respondents answer questions like i) 'Not at all,' ii) 'With someone else,' and iii) 'Go alone.' The items were coded for answers like 'Not at all' and 'with someone else as '0' and 'Go alone' as '1', respectively

5.1.3 Decision on ownership of assets

It shows that all women in a household own a house and land. The question is: a) Do you own houses alone or jointly? b) The second question is whether you own land alone or jointly. The response is like i) 'Does not own,' ii) 'Alone only,' iii) 'Jointly only,' and iv) 'Both alone and jointly.' Therefore, the study coded its response values as "Does not own" and "jointly only" as '0' and "Alone only" and "Both alone and Jointly" as "1"(Gahramanov et al., 2021).

5.1.4 Women Bargaining Power Index

Following the work of Tanika Chakraborty, Prabal K. De, Lisa C. Smith¹³, and colleagues, we employ principal component analysis (PCA) to combine many variables into a single index. Expanding on the work of many studies, we employ PCA to quantify bargaining power(Fafchamps et al., 2009; Jensen & Oster, 2009; Salawu et al., 2020; Su & Azam, 2023). This strategy decreases dimensionality while allowing weights to be assigned to many decision-making components. As a result, the bargaining power index is created using principal component analysis with the binary responses of the aforementioned three indicators. The index is normalized with a zero mean and one standard deviation. It demonstrates that the higher the number, the greater the bargaining power, on a scale of 1 to 5. With the help of a

¹³ See (Chakraborty & De, 2011)

scree plot¹⁴, we obtain the three components, which are above the elbow part of the plot, explaining the variance of the variables. A scree plot illustrates the proportion of variance accounted for by each principal component by plotting eigenvalues against the corresponding principal component numbers. We retain the three components with eigenvalues greater than one for the index formation.

5.2 Independent Variable

The independent variables include all married women who own mobile phones and use them for DFT. The primary independent variable is the adoption of mobile money for financial transactions. The respondents include '0' for those who do not use DFT on a mobile phone and '1' for those who use mobile phones for digital financial transactions.

5.3 Demographic Variables

The other control variables related to the socio-demographic profile are divided into individual characteristics, household characteristics, and regional levels.

5.4 Summary Statistics of Variables

The demographic variables include the respondents' age, sector, education attainment, caste, religion, wealth index, family size, state exposure to mass media, such as reading newspapers, watching television, and listening to the radio, as well as other variables.

6. Econometric Model

Initially, we considered the Ordered Probit Model (o-probit) for empirical analysis based on the above categories. The Ordered Probit Model is based on the index of intra-household decision-making, freedom of mobility, and asset index, which is ordered from 1 to 5 on a scale where a lower value signifies a lower status and a higher value represents a higher status. Principal component analysis is applied to make a bargaining power index using the indicator of the decision-making index discussed above. The study conducted a regression on women's

¹⁴ Refer figure 2 to see the scree plot.

decision-making and digital transactions for each dependent variable¹⁵. The dependent variable contains the five values of the response category, i.e., poor to high bargaining power in the household. 1=Poor bargaining power, 2=Fair bargaining power 3=Average bargaining power 4=Good bargaining power and 5=High bargaining power. Accordingly, the ordered probit model is utilized.

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} denotes the women's bargaining power at different levels, i.e., 1 denotes the lowest bargaining power, and 5 denotes the highest bargaining power by women residing in the household h , in the district d of the state region r . DFT represents the Digital Financial Transactions by women in the households of h in the district d in the state region r , while X_{iHDR} is a matrix of the women's and household observed characteristics. X_d is the district level controls and d_τ is the state region fixed effect and ε_{iHDR} is the randomly distributed error terms. The ordered probit model presumes that the odds ratios are consistent across all levels of the outcome variable. The Conditional Mixed Process Model (CMP) is a 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 proposed to run 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:

¹⁵ We also conducted probit regressions for each dependent variable individually to examine how predictors affect different aspects of women's bargaining power in a household [Details are given Appendix II]

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

Whereas DFT is the digital financial transaction by women in the household of district d in the state region r. $LOU_{-(d)}$ is the instrument variable district level leave own out rate (LOU) of the use of internet in the district d by excluding the concerned household in the district d. We estimate equation (2) using the CMP model from a sample of 934 districts. There are two identifying assumptions here. First, the relevance of the instrument variable is correlated to the digital financial transaction reported in equation (2), and second is the exclusion restriction, justifying the estimation of the predicted DFT on the women's bargaining power

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

\widehat{DFT}_{ihdr} is the predicted DFT for the districts, used to estimate the impact of DFT on women's bargaining power. The instrument LOU affects women's bargaining power only through digital financial transactions. It is challenging to observe the direct impact of the LOU on women's bargaining power. Due to the non-linear functionality of the generalised ordered logit model, the above equations (1) - (3) yield biased and inconsistent estimates, which may be attributed to issues of selection bias and unobserved heterogeneity. The conditional exclusion restriction has been controlled by including the education of the women in the household. As more women are educated, it becomes easier for them to do the transactions. Therefore, we can analyse that the use of the internet by women, excluding the concerned household, is not directly affecting the women's bargaining power. It is affecting women's bargaining power through digital financial transactions. There are other district-level programs, household-level programs, and shocks that might directly affect women's decision-making. Therefore, it is difficult to completely waive off the exclusion restriction. Due to the varying state-level policies, we control for district-level controls and state-region-level fixed effects. All the regressions have been assigned weights. Standard errors are clustered at the district level, where adjacent

districts with similar socio-economic traits are grouped. This helps prevent spatial correlation among neighbouring districts.¹⁶

7. Result

The CMP framework performs joint modelling of two or more equations, permits mixing of these models in multi-equation systems, allows the individual models to be altered by observations, and permits cross-equation correlation of the error terms. The CMP model is developed for the complexity of the multi-level and multi-equation system.

[Insert Table 2]

After controlling for endogeneity, digital transactions have a significant impact on increasing women's bargaining power. The positive coefficient implies that participation in digital transactions increases women's bargaining power. The CMP coefficient (0.602) is much larger than the naïve ordered probit estimate (≈ 0.099), indicating that ignoring endogeneity severely underestimates the true effect.

Endogeneity is a key challenge in this study because women acquire bargaining power from multiple sources. Many individuals and communities are significant factors in determining women's decision-making power and influencing their empowerment. In matrilineal ethnic groups, women generally possess more bargaining power because the norms often limit the husband's authority over his wife (Lowes, 2017). The baseline model might be biased due to potential reverse causality and the omission of certain variables. To avoid the endogeneity problem, we have employed an instrumental variable method. We used the leave-one-out rate, the percentage of households at the district level that use the internet and reported digital financial transactions as the main source of women's bargaining power, where the concerned household is excluded from calculating the average (Su & Azam, 2023); Kumar & Nahlen,

¹⁶The state-region level is determined by the National Sample Survey Organization (NSSO)-2018. It groups nearby districts with similar characteristics into regions. In the 76th NSS round, India was divided into 88 regions.

2023). The primary reason for selecting this variable as an instrumental variable is to understand how many households in a district access the internet, excluding the concerned household, to determine the possibility of using mobile phones for financial transactions. To address causality, we employed an instrumental variable approach to examine the causal effect of digital financial transactions on women's bargaining power. It requires two criteria to be fulfilled : (1) the inclusion, and (2) the exclusion restrictions.

The inclusion restriction requires the leave-one-out rate to be potentially endogenous to the digital financial transactions as show in table 2. In contrast, the exclusion restriction requires the instrument, the leave-out rate, to influence the outcome variable solely through the DFT, ensuring its validity as an instrument. The result indicates that the district-level average internet penetration rate is influenced by an instrument; we estimated a conditional mixed process model. The correlation between unobserved determinants of WB and digital transactions is negative and statistically significant. This provides strong evidence of endogeneity. The negative sign suggests that unobserved factors that increase digital adoption tend to reduce bargaining power, or vice versa. Hence, a simple ordered probit model would be biased and inconsistent. Ignoring endogeneity would substantially understate the effect of digital financial participation on women's intra-household bargaining power. Using a conditional mixed process (CMP) model to account for endogeneity, we find that engagement in digital transactions significantly increases women's bargaining power. The estimated coefficient on digital transactions is positive and statistically significant at the 1% level, as shown in Table 2. The first-stage results confirm that the leave-one-out district-level digital penetration rate is a strong predictor of individual digital transaction use. Moreover, the estimated correlation between the error terms of the two equations is statistically significant, providing evidence of endogeneity and justifying the use of the instrumental variable approach.

The coefficient indicates that the instrumental variable is positively related to the growth of digital finance via the leave own rate, with significance at the 1 per cent level. It shows that a one percentage point increase in the fraction of internet use in a district is associated with a 0.67 percentage point increase in the probability of digital financial transaction use by women in households, after controlling for all other factors. This suggests that the use of mobile phones for financial transactions increases when the average internet usage is high.

Panel A presents the results of the second-stage regression in the instrumental variable analysis. After incorporating the instrument variable, the coefficient of mobile phone transactions is larger and positively significant at a 1 per cent significance level, somewhat more than the original baseline result. This test confirms that the generalised model underestimated the baseline result, indicating potential for unobserved characteristics. Therefore, mobile phone-based digital transactions enhance women's bargaining power and reduce intra-household gender inequality.

7.1 Mechanism Analysis: Are Education, Mass Media, Use of Money alone, and Literacy important channels?

Table 3 presents the mechanism analysis using a Conditional Mixed Process (CMP) framework to examine whether women's bargaining power (WB) is influenced by digital financial transactions (DFT) through education, mass media exposure, use of money alone, and literacy. Each column reports estimates from a system of equations that jointly models the potentially endogenous adoption of digital transactions and women's bargaining outcomes.

8.1.1 Education and Mass Media Channels

Columns (1) and (2) assess education and mass media exposure as mediating mechanisms. The coefficient on Mobile Phone for Financial Transaction is positive and highly significant in both specifications, indicating that digital transactions directly enhance women's bargaining power. Importantly, the interaction terms, i.e. Education \times Digital Transaction and Mass Media \times

Digital Transaction, are also positive and statistically significant. This suggests that the bargaining gains from digital transactions are stronger for women with higher education levels and greater exposure to mass media, highlighting the complementary role of information and awareness in translating digital access into empowerment.

The coefficient on the leave-one-out rate (instrument) in the first-stage equation is positive and significant, confirming the relevance of the instrument. The reported naïve effects (single-equation estimates) are smaller than the CMP estimates, indicating that ignoring endogeneity would underestimate the true effect of digital transactions. The estimated atanhrho_{12} parameter is negative and statistically significant in both models, providing strong evidence of endogeneity between digital transaction use and women's bargaining power. This justifies the use of the CMP framework over standard probit or logit models.

8.1..2 Use of Money Alone and Literacy Channels

Columns (1) and (2) in Panel B explore autonomy in financial decision-making (use of money alone) and literacy as alternative mechanisms. Digital financial transactions exhibit a positive and statistically significant direct effect on women's bargaining power. Moreover, the interaction terms $\text{DFT} \times \text{Use of Money Alone}$ and $\text{DFT} \times \text{Literacy}$ are also positive and significant, indicating that digital transactions are particularly empowering for women who already show greater financial autonomy or possess higher literacy levels. All specifications include a rich set of individual, household, district, and state-region fixed effects, ensuring that the estimated effects are not driven by observable socio-economic characteristics or regional heterogeneity. The consistency of results across mechanisms strengthens the credibility of the findings. Overall, the CMP results provide robust evidence that digital financial transactions enhance women's bargaining power, and this effect operates partly through education, mass media exposure, financial autonomy, and literacy. The significant endogeneity tests and strong first-stage results further confirm the validity of the empirical strategy.

[Insert Table 3]

According to some studies, access to finance enhances women's decision-making skills, boosts their self-esteem, and improves their social status (Cheston & Kuhn, 2002; Su & Azam, 2023). By increasing household consumption and financial independence, as well as enhancing women's empowerment and gender-based digital financial inclusion (GDFI), poverty can be significantly alleviated (Kumari et al., 2025). When a woman takes part in decision-making, it enhances her role and influence in the household, and increased involvement in decisions further amplifies her empowerment. On the other hand, if a woman did not participate in decision-making, she was viewed as lacking empowerment (Acharya et al., 2010).

8. Heterogeneity Analysis

8.1 Wealth Status

A heterogeneity analysis examined the impact of DFT on women's bargaining power across different wealth groups.¹⁷ This section explores variations based on wealth status, distinguishing between women with below-average wealth and those with higher wealth. Table 3 indicates that women from wealthier households experience greater empowerment in making household decisions after adopting digital payment methods than those from lower-income backgrounds.

Leave-own-out rate is a valid instrument, meeting the necessary instrumental variable criteria. Columns (1)–(2) indicate that digital finance has a more pronounced effect on empowering women from higher wealth backgrounds than those with lower wealth status. This suggests that wealthier women face less financial constraints in acquiring digital devices, enabling them to actively engage in digital financial transactions. As a result, they gain greater control over

¹⁷ Wealth status is divided into two categories: below-average wealth and high wealth. It is measured on a scale from 1 to 5, where 1 represents the lowest wealth level and 5 represents the highest. A score of 3 is regarded as average wealth. Individuals with wealth levels of 1, 2, or 3 are classified as having below-average wealth, whereas those with scores of 4 and 5 are considered to have higher wealth.

financial decisions and enhance their bargaining power within the household. Access to digital finance may further strengthen their economic independence, providing them with more opportunities to participate in income-generating activities and engage in long-term financial planning.

[Insert Table 4]

8.2 Castes

This section examines heterogeneity based on caste status, distinguishing between women from lower and higher castes as shown in Table 5. The results indicate that women with higher levels of caste are more capable of managing decision-making at all levels than those with lower caste.

[Insert Table 5]

8.3 Head of the Household

Table 5 examines the impact of a head of a household on her decision-making power within the household. It highlights the bargaining power of women based on their status as household heads, regardless of whether they are male or female. Columns (1) and (2) present the male and female heads of household, while panel B show the corresponding results of the first-stage regression. The findings highlight the significant impact of the head of the household on women's bargaining power within the household. The results indicate that digital finance is more likely to enhance the bargaining power of women having a female head of the household as compared to the male-headed, reflecting that women are getting involved in the decision making process and taking the lead of the household in term of the women decision making as compared to the male head of the household due to the societal norms, traditional values, and patriarchal structures than daughters.

In contrast, households with a male head of household have slightly lower decision-making authority within the household. A female head is considered a respectable sign for women,

leading to greater empowerment and higher decision-making authority across various aspects compared to a male head of the household.

[Insert Table 6]

9. Robustness test

The robustness checks confirm the stability and reliability of the main findings regarding the impact of digital financial transactions (DFT) on women's outcomes. Several alternative specifications and subsample analyses are employed to assess whether the estimated effects are sensitive to model assumptions, controls, and sample composition. We will test the robustness of the results by changing the village-level controls and the instrument variable. Secondly, with women using digital transactions across different age groups, and third, by dividing the WB into quintiles. First, Panel A presents estimates excluding village-level characteristics. The coefficient on digital financial transactions remains positive and highly significant (0.525, $p < 0.001$), indicating that the basic estimates are not driven by village-level controls. This suggests that the estimated impact of DFT is robust to the exclusion of local contextual factors. Panel B reports the corresponding first-stage regression results using the village-level leave-one-out (LOU) rate as an instrument. The instrument is strongly correlated with DFT (coefficient = 0.405, $p < 0.001$), confirming its relevance. The statistically significant negative value of atanhrho_12 ¹⁸ indicates the presence of endogeneity and justifies the use of an instrumental variable approach. Second, when village-level characteristics are included (Panel C), the effect of DFT remains positive and statistically significant (0.426, $p < 0.001$), although it has slightly diminished in magnitude. The first-stage results in Panel D continue to show a strong and significant association between the LOU rate and DFT, reinforcing the validity of

¹⁸ It indicates that the error terms of the two equations are correlated ($\rho \neq 0$). This means the equations need to be estimated simultaneously (e.g., using a system estimation method like CMP), because unobserved factors influence both dependent variables simultaneously. The primary purpose of this coefficient is to capture unobserved heterogeneity or endogeneity, which means that unmeasured factors simultaneously affect both outcomes.

the instrument across specifications. Third, age-group heterogeneity reveals that the impact of digital financial transactions is stronger among younger women (aged 15–29), with a coefficient of 0.730 ($p < 0.001$), compared to women aged 30–49 (0.470, $p < 0.001$). The corresponding first-stage regressions demonstrate strong instrument relevance in both age groups, though the effect is more pronounced for younger women, suggesting greater responsiveness to digital finance among younger cohorts.

Finally, robustness checks using sample splits further support the findings. The 20 and 80¹⁹ per cent subsamples yield positive and significant effects of DFT, with larger magnitudes observed in the larger sample. The naïve estimates are substantially smaller than the IV estimates, highlighting the importance of addressing endogeneity. Overall, these robustness exercises consistently demonstrate that the positive association between digital financial transactions and women’s outcomes remains robust across various alternative specifications, instruments, age groups, and sample divisions, thereby strengthening confidence in the causal interpretation of the results.

[Insert Table 7]

[Insert Table 8]

[Insert Table 9]

10. Discussion

According to a McKinsey Global Institute analysis 2016²⁰, digital finance has the potential to reach 1.6 billion individuals in developing nations, with women accounting for more than half of them. The study found that access to finance benefits women by enhancing their decision-making abilities, boosting their self-esteem, and improving their social standing (Cheston &

¹⁹ A beneficial and instructive method for assessing robustness is sub-sample analysis. Unlike structure-specific robustness checks, the sub-sample method does not put structural limits on the data, which is the main justification for using it (Nawaz, 2020).

²⁰ See (Manyika et al., 2016)

Kuhn, 2002). The Bill and Melinda Gates Foundation prioritises financial inclusion to empower women and advance gender equality (Hendriks, 2019). It argues that having access to appropriate financial resources is essential for empowering women. Field et al. (2021) examined the effects of transferring labour payments to women's bank accounts. The results from India show that giving women more control over these payments can help them overcome social barriers to joining the workforce.

According to some studies, access to finance enhances women's decision-making skills, boosts their self-esteem, and improves their social status (Cheston & Kuhn, 2002; Su & Azam, 2023). By increasing household consumption and financial independence, as well as enhancing women's empowerment and gender-based digital financial inclusion (GDFI), poverty can be significantly alleviated (Kumari et al., 2025). When a woman takes part in decision-making, it enhances her role and influence in the household, and increased involvement in decisions further amplifies her empowerment. On the other hand, if a woman did not participate in decision-making, she was viewed as lacking empowerment (Acharya et al., 2010).

By acquiring new skills and embracing digital information and communication technologies (ICTs), women and girls have increased their self-confidence, strengthened their economic independence and self-sufficiency, and made more informed decisions. Hilbert (2011) argues that if women have the same access to jobs, education, healthcare, and income as men, information technology can turn the digital divide into real opportunities. It improves women's access to employment, income, education, and healthcare services (Chatterjee et al., 2020). Mobile money is the better result of financial inclusion and well-being (Suri & Jack, 2016). 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, affected by physical differences between genders (Becker, 1976). According to Bertrand et al., (2015) the belief that "husbands should earn more than their wives", it impacts

wives' employment rates, income levels, and marital satisfaction. Traditionally, women have lower job quality and earn less than men (Fortin, 2015). This disparity contributes to women having a lesser standing within families and limited influence when allocating family resources. Given this context, women's employment participation can be increased by digital finance. Innovations in financial products have made it easier for people to access financial services like payments, loans, and investments. A lack of financial support often prevents people from starting their businesses (Karaivanov, 2012). Our results suggest that women facing gender discrimination benefit from owning land, as it empowers them to raise their voices in negotiations, leading to increased empowerment (Mishra & Sam, 2016). Ownership of assets by women increases their bargaining power (Friedemann-Sánchez, 2006), and they actively participate in decision-making at home; their involvement in household matters increases (Agarwal, 1997). They allocate more funds to their kids' health and education (Clogg & Shihadeh, 1994). Older females have more decision-making power in the household (Awaworyi Churchill et al., 2020). Wealthier women can only decide on some dimensions of household bargaining power and move places like markets, health facilities, and outside the village. Compared to a joint family, a nuclear family appears to be more supportive of the household bargain. They are even independent when moving outside of the village or community, such as to the market or health facility. Women with higher and secondary education demonstrate a higher understanding and knowledge, as well as a greater likelihood of challenging conventional cultural norms and embracing gender equality. Education is a crucial means of empowering women (Zhou et al., 2021). A smaller family size is associated with less bargaining power and freedom of movement outside the home. They need to put more effort into negotiating with family members. More than half of the women have control over their husbands' earnings, and women play a more significant role in managing household finances, which is linked to having better financial management skills (Jose & Younas, 2023;

Sarban & Hassanzadeh, 2014). Exposure to mass media, such as reading newspapers or watching television at least once a week, is positively associated with women's decision-making abilities in all dimensions of household bargaining power and their increased ability to move independently outside the house. There is a positive relationship between the information provided through mass media to women and the services they receive for household chores in India (Ghosh, 2006). Women's earning potential, economic participation beyond the household, literacy levels, and property rights strengthen their bargaining power and are expected to improve their capacity to drive change and exercise agency (Sen, 1999). The study commonly observed that women's land rights and ownership are linked to greater mobility and increased involvement in household decision-making (Allendorf, 2007; Panda & Agarwal, 2005; Roy, 2008).

11. Conclusion

The widespread growth of mobile phones in developing nations has extensive socioeconomic implications. This paper concentrates on the condition of women in a country where gender inequality is a significant issue. This study highlights the transformative role of mobile phones in enhancing women's decision-making power, mobility, and control over financial resources. By utilising the leave-own-out instrument, our findings suggest that digital financial inclusion is crucial in strengthening women's bargaining power and increasing their participation in all aspects of decision-making, thereby contributing to SDG 5, one of the main goals of the Sustainable Development Goals, which aims to empower women and advance gender equality. Sub-sample analysis suggests that certain socio-economic factors, such as household wealth, caste, and the head of the household, had an influence on decision-making. Addressing the barriers through targeted policies and digital financial literacy initiatives can further amplify the benefits of mobile technology, fostering greater gender equality and economic independence for women. Therefore, for women to defy gender stereotypes, increase their

negotiating power and enhance their involvement in the workforce, digital financial inclusion is essential. Thus, our study supports the notion that mobile phones have a positive impact on the status of women in Indian households, demonstrating their effect across various aspects.

12. Policy Implications

The proper policy recommendation is to support women's savings and entrepreneurship. Giving women better financing and savings options, specialised training programs, and mentorship can help them start businesses, generate income, and accumulate assets. Ultimately, this will improve their financial well-being and enhance their financial resilience and literacy. Lastly, it is essential to promote cooperation and collaborations between international agencies, financial institutions, stakeholders, government agencies, and non-governmental organisations. These policy recommendations will help reduce the financial inclusion gaps experienced by women. This would enable individuals to improve their living conditions, engage more actively in the economy, and support initiatives for reducing societal norms and promoting general economic growth. Giving women free or subsidized mobile phones could be more cost-effective than funding specific education programs for girls to achieve similar improvements in women's status. Furthermore, our study suggests that women can enhance their say in the household by promoting a matrilineal system in society and enhancing women's agency in the household; therefore, this study is a little step toward achieving the empowerment goals of SDG 5.

13. Limitations

Several constraints to my analysis imply further scope of research. This study needs to cover the men in the household who use mobile phones for transactions. Using panel data, we can account for individual and yearly differences and use a difference-in-difference method to see if buying mobile phones significantly improves women's status more than in households that did not buy them. Since the spread of mobile phones for transactions is a new and quickly

growing trend, we anticipated that more panel surveys would begin to monitor mobile money and ownership. Also, due to the time-variant factors, one year of cross-sectional data is one of the study's limitations. It does not take long to see how mobile money affects women's bargaining power in the household.

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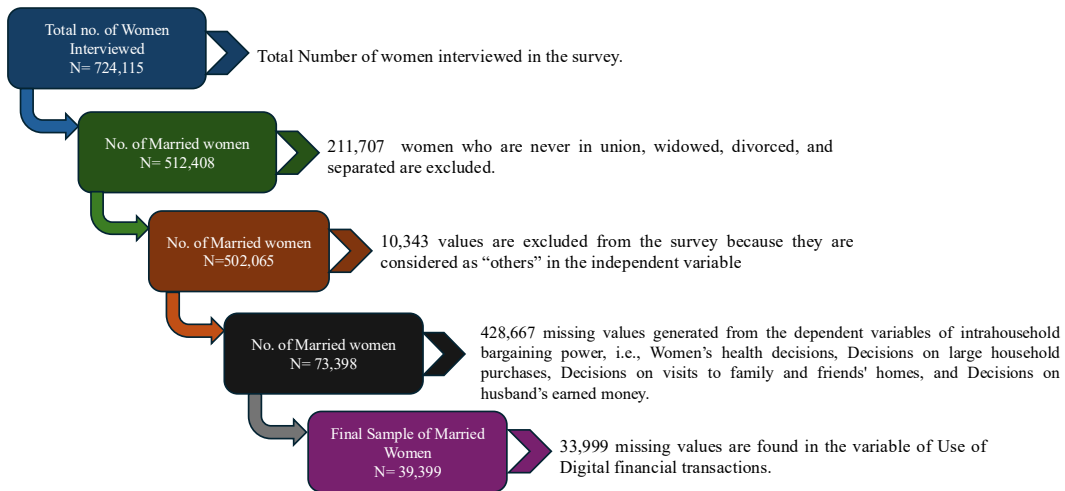
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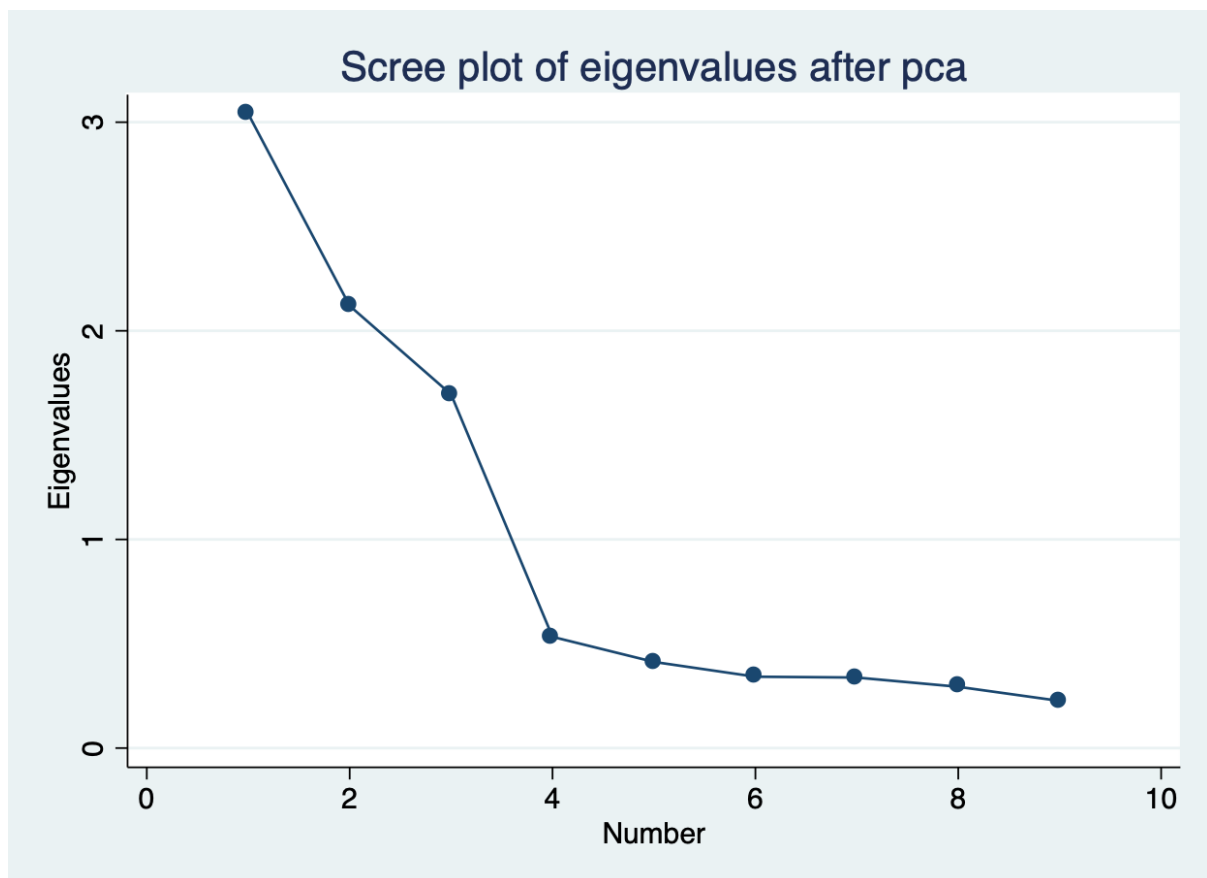
Figures

Figure 1. Shows the sample selection procedure



Source: Author's Calculation from NFHS-5

Figure 2. Scree Plot



Source: Author's calculation from NFHS-5

Table 1. Summary Statistics of the Variable

Individual Controls	All
Age	
15-19	0.0246 (0.001)
20-24	0.1452 (0.002)
25-29	0.219 (0.002)
30-34	0.205 (0.003)
35-39	0.176 (0.002)
40-44	0.121 (0.002)
45-49	0.106 (0.002)
Education	
No Education	0.164 (0.002)
Primary Education	0.109 (0.002)
Secondary Education	0.519 (0.003)
Higher Education	0.206 (0.003)
Yes	0.238 (0.003)
<hr/> Household Controls <hr/>	
Religion	
Hindu	0.831 (0.002)
Muslim	0.114 (0.002)
Christian	0.026 (0.001)
Sikh	0.019 (0.0007)
Buddhist	0.005 (0.0006)

Jain	0.0018 (0.0003)
Caste	
General	0.255 (0.003)
OBC	0.478 (0.003)
Scheduled Caste	0.202 (0.002)
Scheduled Tribe	0.063 (0.001)
Wealth	
Poorest	0.111 (0.002)
Poorer	0.156 (0.0024)
Middle	0.197 (0.002)
Richer	0.242 (0.003)
Richest	0.291 (0.003)
Sector	
Rural	0.608 (0.003)
Urban	0.391 (0.003)
Family Type	
Family Nuclear	0.680 (0.003)
Family Joint	0.319 (0.003)
Household Size	
Smallest	0.054 (0.001)
Small	0.391 (0.003)
Medium	0.339 (0.003)
Large	0.175 (0.002)
Largest	0.038 (0.001)

Mass Media

Mass Media exposed with no media	0.628 (0.003)
Mass Media Exposed with at least two media	0.170 (0.002)
Mass Media Exposed with more than two media	0.200 (0.003)

Self Employed

Yes	0.032 (0.001)
No	0.248 (0.003)

Age of Household Head

Female	0.159 (0.002)
Male	0.840 (0.002)

District Level Controls

Percentage of women with secondary education	78.48 (0.102)
Percentage of self employed	21.025 (0.078)
Percentage of currently working	0.638 (0.009)
Percentage of % women owning mobile phone	0.638 (0.009)
Percentage of women with bank account	86.61 (0.063)
Percentage of Women in Scheduled Caste	20.278 (0.087)
Percentage of Women in Scheduled Tribe	6.366 (0.056)
Percentage of women with higher secondary education	20.68 (0.080)
Percentage of women with secondary education	72.62 (0.114)
Women Bargaining power index	4.012 (0.008)

Instrument Variable

Leave own out rate at district level internet	0.579 (0.001)
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Note: The table highlights the explanatory variable used in the analysis. Weighted mean and standard error are reported in parentheses

Table 1.1 Summary Statistics of the Independent Variable

Women Decision making at household level	
Women Household Purchase	0.824 (0.002)
Women Decision on Health Decision	0.834 (0.002)
Women decision on Families and Friends	0.835 (0.002)
Women on husbands' Earned Money	0.787 (0.002)
Freedom of Mobility	
Allowed to go to the market	0.620 (0.003)
Allowed to go to the health facility	0.573 (0.003)
Allowed to go to the outside of the villages	0.5361 (0.003)
Assets	
Ownership of Land	0.226 (0.002)
Ownership of Houses	0.942 (0.008)

Note: The table reports the summary statistics of the Independent Variable. The weighted means are reported, and the standard error is reported in parentheses.

Table 2: Impact of DFT on the women’s bargaining power through instrumental variable estimates

	Model (1)	Model (2)	Model (3)	Model (4)
Mobile Phone for the 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

Note: The table reports the coefficient of the digital financial transaction on the women’s bargaining power from separate regressions with different outcomes instrumented using a district-level leave-one-out digital penetration measure. Standard errors are clustered at the district level and are reported in parentheses. Individuals and district-level controls are reported in Table 1.

***p<0.01, **p<0.05, *p<0.1.

Table 3: 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 (DFT)	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

Note: The results highlight the reports of the coefficient of the DFT from different instrument variable regressions with different outcomes. The dependent variable is the overall bargaining power of women, with digital finance as the independent variable. The results are estimated by the instrument's leave-one-out rate. Standard errors are clustered at the district level and are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

WB: Women Bargaining Power.

Table 4: Shows the 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)
atanrho_12	-0.060*** (0.085)	-0.323*** (0.080)
Observation	20,480	18,914

Note: The results present the heterogeneity analysis of married women based on their wealth status, comparing those with below-average wealth to those with higher wealth. The results are estimated by the instrument which is leave own out rate. Standard errors are clustered at state region level and are reported in parentheses. The result is significant at 1 percent, 5 percent, and 10 percent, denoted by ***, **, *, respectively.

Table 5: Shows the impact of digital transactions on women bargaining power of higher and lower caste

	Lower Caste	Higher Caste
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

Note: The results present the heterogeneity analysis of married women based on their caste status, comparing those with low caste to those with higher caste. The results are estimated by the instrument, which leaves out its own out rate. Standard errors are clustered at the district level and are reported in parentheses. The result is significant at 1 percent, 5 percent, and 10 percent, denoted by ***, **, *, respectively.

Table 6: Impact of digital transactions on women's 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)
atanrho_12	-0.290*** (0.054)	-0.364*** (0.104)
Observation	33,150	6,244

Note: The results present the heterogeneity analysis based on their head of household, comparing those households with a male head to those with a female head. The results are estimated by the instrument, which leaves out its own out rate. Standard errors are clustered at the district level and are reported in parentheses. The result is significant at 1 percent, 5 percent, and 10 percent, denoted by ***, **, *, respectively.

Robustness test

Table 7. Robustness check by using the leave-one-out rate at the village level

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

Table 8. Robustness check by using the different age groups

Age group (15-29)	
	(1)
DFT	0.730*** (0.107)
<i>Panel A First Stage regression</i>	
Leave own out rate on DFT	0.761*** (0.154)
atanhrho_12	-0.334*** (0.067)
Observations	39,394
Age group (30-49)	
DFT	0.470*** (0.113)
<i>Panel B First Stage regression</i>	
Leave own out rate on DFT	0.680*** (0.131)
atanhrho_12	-0.252*** (0.064)
Observations	39,394

Table 9. Robustness check by using the sample division at different levels

With sample divide at 20 percent	
	(1) 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	
DFT	0.596*** (0.085)
Naïve effect	0.102*** (0.017)
Panel A First Stage regression: DFT(Endogeneity)	
Leave own out rate on DFT	0.749*** (0.117)
atanhrho_12	-0.293*** (0.050)
Observations	39,394

Note: The results highlight the robust analysis of women-based village-level leave-out rates and village-level characteristics, dividing the age group and labelling the sample into different. Columns (1) show the labelling of Poor, Fair, Average, Good, and Excellent bargaining power as 1, 2, 3, 4, and 5, respectively, in the cases of a 20 per cent and 80 per cent sample. The results are estimated by instrument is leave own out rate by CMP specification. Standard errors are clustered at the district level and are reported in parentheses. # p<.10. * p<.05. ** p<.01. *** p<.001.

Appendix-II

Table A.1 Respondents' decision on the Intrahousehold decision-making of women

Variables	Household Purchases	Health Decision	Families and Friends Visit	Decision on Husband's Earned Money
Mobile Phone for Financial Transaction (No)				
Yes	0.725*** (0.259)	0.368* (0.225)	0.819*** (0.272)	0.546** (0.251)
Naïve Effect	0.003 (.0324)	0.015 (.0300)	0.009 (.0300)	0.095*** (.030)
Margins (dy/dx)	0.0007 (0.008)	0.0036*** (0.007)	0.002 (0.007)	0.026*** (0.008)
Panel B: First stage (Dependent variable: Mobile phone for Digital transaction)				
Leave own out rate	0.137*** (0.030)	0.137*** (0.030)	0.137*** (0.036)	0.137*** (0.030)
Household Characteristics	Yes	Yes	Yes	Yes
District Characteristics	Yes	Yes	Yes	Yes
State Region Fixed Effects	Yes	Yes	Yes	Yes
Endogeneity Test				
<i>Under Identification test</i>				
(Kleibergen-Paap rk LM statistic):	18.074	13.882	13.882	18.074
<i>Weak Identification Test</i>				
Kleibergen-Paap rk Wald F	20.073	16.630	16.630	20.073
<i>Overidentification Test</i>				
Hansen J test	Chi-square(0) p-value=1.0000 (equation exactly identified)	Chi-square(0) p-value=1.0000 (equation exactly identified)	Chi-square(0) p-value=1.0000 (equation exactly identified)	Chi-square(0) p-value=1.0000 (equation exactly identified)
Observation	39,394			

Source: Author's calculation from NFHS-5 (2019-21)

Note: Probit analysis of women's intrahousehold decision-making is affected by four factors: (1) Decisions on purchasing household items, (2) Decisions about their health, (3) Decisions regarding visits to family and friends, and (4) Decisions on the use of the husband's earned money. Standard errors are clustered at the district level and are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A.2 Respondents' decision on the freedom of mobility of women at different places

Variables	Allowed to go to the Market	Allowed to go to the health facility	Allowed to go to the outside of the village
Mobile Phone for Financial Transaction (No)			
Yes	0.059 (0.276)	0.065 (0.284)	0.073 (0.305)
Naïve Effect	0.159*** (0.033)	0.191*** (0.031)	0.219*** (0.032)
Margins (dy/dx)	0.053*** (0.011)	0.066*** (0.010)	0.077*** (0.011)
Panel B: First stage (Dependent variable: Mobile phone for Digital transaction)			
Leave own out rate	0.137*** (0.030)	0.137*** (0.030)	0.137*** (0.030)
Household Characteristics	Yes	Yes	Yes
District Characteristics	Yes	Yes	Yes
State Region Fixed Effects	Yes	Yes	Yes
Endogeneity Test			
<i>Under Identification test</i>			
(Kleibergen-Paap rk LM statistic):	18.074	18.074	18.074
<i>Weak Identification Test</i>			
Kleibergen-Paap rk Wald F	20.073	20.073	20.073
<i>Overidentification Test</i>			
Hansen J test	Chi-square(0) p-value=1.0000 (equation exactly identified)	Chi-square(0) p-value=1.0000 (equation exactly identified)	Chi-square(0) p-value=1.0000 (equation exactly identified)
Observation	39,394	39,394	39,394

Source: Author's calculation from NFHS-5 (2019-21)

Note: The probit analysis of freedom of movement is influenced by three factors: (1) Permission to go to the market, (2) Permission to visit a health facility, and (3) Permission to go outside of the village. Standard errors are clustered at the district level and are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A.3 Respondents' decision on the ownership of land and houses

Variables	Land	House
Mobile Phone for Financial Transaction (No)		
Yes	0.541* (0.297)	0.039 (0.321)
Naïve Effect	0.314*** (0.036)	0.298*** (0.030)
Margins (dy/dx)	0.086*** (0.009)	0.098*** (0.010)
Panel B: First stage (Dependent variable: Mobile phone for Digital transaction)		
Leave own out rate	0.137*** (0.030)	0.137*** (0.030)
Household Characteristics	Yes	Yes
District Characteristics	Yes	Yes
State Region Fixed Effects	Yes	Yes
Endogeneity Test		
<i>Under Identification test</i>		
(Kleibergen-Paap rk LM statistic):	18.074	18.074
<i>Weak Identification Test</i>		
Kleibergen-Paap rk Wald F	20.073	20.073
Observation	39,394	39,394

Source: Author's calculation from NFHS-5 (2019-21)

Note: It represents the probit analysis examining the ownership of assets, which is influenced by two factors: (1) Land ownership and (2) House ownership. The study contains a variety of independent and control variables. Standard errors are clustered at the district level and are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.