

The Effect of Digital Banking Services on the Financial Autonomy and Household Decision-Making Power of Women

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Abstract:

Digital banking has revolutionized financial inclusion across rural India, yet its impact on women's empowerment remains underexplored. This study investigates the influence of digital financial services on rural women's financial autonomy and household decision-making power in Tiruchirappalli district, Tamil Nadu. This research provides empirical validation of financial control over household bargaining power of women in digital contexts and measures the literacy barriers specific to rural women, it also provides a district-level analysis in Tamil Nadu. A descriptive research design was chosen to provide a comprehensive understanding of the research problem. A cross-sectional study was undertaken by collecting primary data from the sampling elements chosen from the rural blocks of Tiruchirappalli district. The population of the study comprises of 14 panchayat unions in Tiruchirappalli district. Each block was considered as a cluster and based on their population size 6 clusters were chosen, two from high, medium and low population respectively. They are Manapparai, Lalgudi, Musiri, Marungapuri, Manachanallur and Thiruverambur. 50 households were chosen from each cluster at random and the survey instrument was administered. Therefore, the sample size of the study is 300. The study focused on assessing the financial literacy, digital financial inclusion, financial autonomy and household decision-making power of women using Smart PLS-SEM 4.0 software to validate the structural relationships between the construct and indicators. The study found that the results of the PLS-SEM model support the hypotheses of financial literacy with financial autonomy and financial autonomy with household decision-making power are significantly related. However, it is not statistically significant for digital financial inclusion and financial autonomy. Financial literacy turns access into real power. Therefore, policymakers should integrate literacy training before scaling digital infrastructure.

Keywords: Financial Literacy, Digital Banking, Financial Inclusion, Financial Autonomy, Household Decision-Making

Introduction

The global banking sector has undergone a massive structural evolution, transitioning from traditional branch-based model to a technology-driven pattern by the convergence of emerging technologies including artificial intelligence, blockchain, open banking and digital identity systems which have collectively accelerated access to proper financial services for everyone. The integration reflects the resilience of the banking institutions to evolve in changing technological conditions prioritizing user experience. In India, this digital revolution has been particularly explosive, fueled by increasing smartphone penetration and proactive government initiatives. The number of digital banking users in the country has increased from 100 million in 2020 to 370 million by 2024, representing a compound annual growth rate of 38.7% (Rokade, 2025). This trend may lead to a projected growth of 740 million digital banking users in 2027. Central to this shift is the Unified Payments Interface (UPI), which has seen a massive surge in transaction volume and the emergence of neo-banks that cater to tech-savvy consumers through all-digital service models. By leveraging big data analytics and mobile platforms, the banking sector is effectively dismantling geographic and cost-related barriers, setting the stage for deeper financial inclusion in rural and remote regions. For women, this shift is critical because it removes the need to travel long distances to branches or expectation of an accompaniment which limited their financial participation. By leveraging emerging technologies to bypass socio-cultural restrictions and provide secure financial control, digital banking has restructured the intra-household bargaining position of women, enabling them to actively manage household

resources. Studies consistently show that the expansion of digital banking especially through mobile banking and digital wallets have led to increased financial autonomy for women. Since its launch in 2014, the Pradhan Mantri Jan Dhan Yojana (PMJDY) has empowered millions of women by providing them with essential banking access (Sarkar, 2021). The shift has been shown to empower women by giving them a secure and private means to save money and manage financial resources, reducing their reliance on male family members. However, the literature also reveals a significant gap between account ownership and active usage, noting that low digital literacy, fear of fraud and poor internet connectivity in rural areas are major barriers to full adoption (Singh & Tiwari, 2020). The ability to control personal finances often translates into a stronger voice in family matters, including spending on healthcare, children's education and household purchases (Lohani, et al., 2023). This is a critical indicator of social empowerment, as it challenges traditional patriarchal norms (Shaw, et al., 2025). While research indicates a positive correlation, it also points to a need for more localized studies. This study aims to build upon existing frameworks by providing an in-depth analysis of how digital banking services specifically affects the financial autonomy and household decision-making power of women in a defined rural area. Digital banking platforms are increasingly offering personalized recommendations allowing technology proficient users to learn about budgeting, saving and investing at their own pace in a risk-free environment. By providing custom-fit advice based on the user habits, the banking applications help bridge the gap in financial literacy and build the confidence necessary for women to make informed financial decisions. Women do have bank accounts like men, but active usage of the digital tools is still in the developing phase. Digital banking provides the privacy and control necessary for women to manage their own income. This autonomy translates into higher participation in community affairs and a greater voice in household expenditures related to health, nutrition and education. The success of digital financial inclusion is inseparably linked to digital literacy. The stability and digitalization of the banking sector have provided the necessary infrastructure for this shift. Technical barriers such as connectivity and language are secondary to the psychological barrier of trust. Building a secure, transparent and user-friendly digital environment remains the primary challenge for the future of the banking industry. While national digital banking penetration has escalated, the specific mechanisms through which financial literacy and digital inclusion translate into women's financial autonomy and household decision-making power remain underexplored, particularly in rural districts like Tiruchirappalli. This study fills this gap by testing how literacy and digital banking lead to women's autonomy. The following literature review examines existing evidence on these relationships to establish the theoretical foundation for the proposed hypotheses.

Review of Literature

Over the past decade, scholars have increasingly emphasized the interconnected roles of financial literacy, digital financial inclusion and women's financial autonomy in shaping household decision-making power, especially in rural India (Showkat et al., 2024; Lestari et al., 2025). In this context, Tiruchirappalli district, with its dense network of Self-Help Groups and growing penetration of formal banking and digital channels serve as an ideal case to examine the influence of digital banking services on women's financial autonomy and intra-household bargaining (Rani, 2016; Ambika & Nair, 2022). The literature review focuses on three interrelated themes: (1) financial literacy and financial autonomy, (2) digital banking services and financial autonomy and (3) financial autonomy and household decision-making power of rural women in Tiruchirappalli.

Financial literacy and Financial autonomy

Financial literacy refers to the ability to understand and use financial products and services. It has emerged as a fundamental necessity for women's access to formal finance and subsequent empowerment (Showkat et al., 2024). Studies from rural India show that women with low financial literacy often struggle to operate even basic bank accounts and rarely use digital tools such as mobile banking, UPI or internet banking. Women who receive structured financial-education training via SHGs and local NGOs demonstrate greater confidence in reading bank statements, choosing appropriate savings products and negotiating loan terms, which they interpret as increased control over their finances (Kumar, 2024). Cross-country research further reinforces that financial literacy operates as a key mediator between formal account ownership and women's economic empowerment (Lestari et al., 2025). A 2025 study using structural equation modelling shows that higher financial literacy not only raises the probability of adopting digital financial services but also enhances women's perceived control over savings,

credit and expenditure decisions (Showkat et al., 2024). In the context of Tiruchirappalli, where SHG-based savings and credit groups have been active, suggests that women's financial literacy especially when combined with basic banking and digital-tool training can translate into greater autonomy in managing their own and household finances (Anitha et al., 2017). This leads to the hypothesis: Higher financial literacy among rural women increases their perceived financial autonomy.

Digital financial inclusion and Financial autonomy

Digital banking services encompassing mobile banking, internet banking, UPI and digital wallets have transformed the architecture of financial inclusion in rural India, particularly for women who face mobility and social constraints (Ambika & Nair, 2022). Empirical work on rural districts in Karnataka and other states indicates that digital banking improves access to credit, savings and insurance for women, especially when implemented alongside awareness campaigns and local banking agents (NIIT Foundation, 2024). A study on digital banking and financial inclusion in India reports that women who regularly use mobile banking or UPI perceive higher control over their savings and credit decisions, provided they have basic digital-literacy skills and access to a smartphone (Miyan, R., & Mishra, A. K. 2025). At the same time, researchers caution that ownership of an account or exposure to digital channels does not automatically imply effective inclusion (Showkat et al., 2024). Socio-cultural norms, digital-literacy gaps and weak infrastructure, such as poor network quality and limited smartphone access, continue to constrain women's active use of digital banking in rural areas (Ambika & Nair, 2022). Reviews of women entrepreneurs in the unorganized sector highlight that when digital financial tools are integrated with local support networks, such as SHGs, common service centres or village-level banking correspondents, women are more likely to manage payments, savings and business cash flows independently (Sowmya, B., & Pai, R. 2025). Supporting literature confirms account ownership doesn't guarantee effective inclusion without skills training. Thus, digital banking enables transactions but requires literacy for true empowerment. However, the hypothesis: Financial inclusion increases women's financial autonomy is to be verified.

Financial autonomy and Household decision-making power

A growing body of evidence links women's financial autonomy to greater influence in household decision-making, particularly over consumption, health, children's education and mobility (Showkat et al., 2024). Studies on rural banking and socio-economic practices in India show that women who use internet and mobile banking report higher participation in household budgeting and investment decisions, especially when they also earn income from SHG-linked or self-employment activities (Lestari et al., 2025). The mechanism appears to be twofold: financial autonomy strengthens women's bargaining power through greater control over income and savings, while digital-enabled transactions provide visible, auditable records that can support women's claims in intra-household negotiations (Anitha et al., 2017). In the specific context of Tiruchirappalli, a recent study on women's economic empowerment through SHGs notes that group-based microfinance and formal banking linkages have enhanced women's mobility, confidence and collective decision-making power, including over loan use and household expenditure (Rani, 2016). The study finds that women using formal bank accounts and digital channels for self-help groups savings gain greater authority to initiate and negotiate financial decisions, rather than just following orders (Ambika & Nair, 2022). This matches wider evidence that digital inclusion plus financial literacy training shifts household power by helping women track, control and explain their finances. (Showkat et al., 2024). Consequently, the third hypothesis is framed as follows: Women with higher financial autonomy due to digital banking and financial literacy report greater participation in key household decisions.

These elements of literature converge on a common description: financial literacy and digital financial inclusion particularly through digital banking services act as important levers of women's financial autonomy. In turn, greater financial autonomy appears to strengthen women's voice in household decision-making. However, existing research predominantly focuses on national trends, with limited district-level studies specifically examining how digital banking influences women's financial autonomy and household decision-making dynamics.

Objective of the study

To investigate the collective influence of digital financial inclusion and financial literacy on women's financial autonomy and the successive impact of financial autonomy on their household decision-making power in rural Tiruchirappalli district.

Research methodology

A descriptive research design was chosen to provide a comprehensive understanding of the research problem. A cross-sectional study was undertaken by collecting primary data from the sampling elements chosen from the rural blocks of Tiruchirappalli district. The population of the study comprises of 14 panchayat unions in Tiruchirappalli district. Each block was considered as a cluster and based on their population size (Source: Population Census report of Tiruchirappalli district 2011) 6 clusters were chosen two from high, medium and low population size respectively. They are Manapparai, Lalgudi, Musiri, Marungapuri, Manachanallur and Thiruverambur. 50 households were chosen from each cluster at random and the survey instrument was administered. Therefore, the sample size of the study is 300. The inclusion criteria for the sample were women above 18 years and permanent residents willing to provide data relevant to the study. The exclusion criteria were migrant women and non-residents living in the selected rural blocks. Women living in Tiruchirappalli corporation and municipality limits were also excluded for the study. The primary data was collected through an interview schedule which comprises of the following sections: Section 1: Socio-demographic data which includes age, educational level, occupation, marital status and household size, providing essential respondent profiling for subsequent analysis. Section 2 consists of four validated subscales measuring: Financial literacy (2 items) measuring confidence and security perceptions in digital transactions. Digital financial inclusion (3 items) measuring frequency and barriers to mobile banking usage. Financial autonomy (3 items) measuring independence from male family members and direct benefit receipt from government welfare payments or subsidies. Household decision-making (5 items) measuring influence on major purchases and household expenditures. The interview schedule was developed by adapting validated scales from National Family Health Survey - 5 (International Institute for Population Sciences, 2021), Demographic and Health Surveys, Women's Status Module (2020), and World Bank Women's Economic Empowerment framework (Hearle et al., 2020), with digital banking items contextualized from DBS Bank India's, Women and Finance survey (2024) and MicroSave Consulting's Female beneficiaries' experience of receiving Direct Benefit Transfer study (2022). The Likert-scale items enable SEM analysis while capturing context-specific pathways. The instrument was validated for its reliability which revealed (Cronbach's $\alpha > 0.7$), before main data collection, supporting hypothesis testing through confirmatory factor analysis and mediation modelling. Secondary Data includes Census report of 2011, Tiruchirappalli District Report, Tamil Nadu Rural Development Department Block Profiles, NABARD Status of Microfinance Reports (2020-2025) and RBI Financial Inclusion Index (2024-25) and academic journals for contextual understanding, development of constructs and validation of the survey instrument.

Data analysis

The survey data was cleaned, coded and analyzed using Statistical Package for social sciences (SPSS) and Smart PLS SEM 4. Descriptive statistics were used for frequency analysis and summarization of socio demographic data. PLS-SEM was deployed to determine the structural relationship between financial literacy and inclusion on financial autonomy and household decision-making power in the context of digital banking services.

5.1 Socio-demographic data of the respondents

Measures	Items	Frequency	Percentage
Age	Below 30 Years	125	41.7
	31- 40 Years	90	30.0
	Above 40 Years	85	28.3
Education Level	Illiterate	26	8.7

	Primary education	33	11.0
	Secondary education	27	9.0
	Graduate	57	19.0
	Post-Graduate	98	32.7
	Professional	59	19.7
Occupation	Homemaker	74	24.7
	Farmer	30	10.0
	Daily wage labour	35	11.7
	Small business owner	39	13.0
	Employed	122	40.7
Marital Status	Married	111	37.0
	Unmarried	154	51.3
	Divorced/Widow	35	11.7
Household Size	Below 3 members	73	24.3
	3-5 members	162	54.0
	More than 5 members	65	21.7
Total	300	100	

Inference:

The table above illustrates the demographic characteristics of the study sample. It displays that the largest group of respondents are in age group of less than 30 years at 41.7%, the educational level is mostly post-graduation with 32.7%, the dominant occupation is employment in government or private organisation at 40.7%, and 51.3% of the respondents are unmarried and 54% of the household size consists of 3-5 members.

Measurement items

Constructs	Items Coded	Indicators
Financial Literacy (FL)	FL 1	I feel confident in making transactions like paying bills or transferring money using a mobile banking app.

	FL 2	I feel safe and secure when using digital banking platforms.
Digital Financial Inclusion (DFI)	DFI 1	I am able to use my bank's mobile application to check my account balance.
	DFI 2	I use digital banking services at least once a week.
	DFI 3	The lack of internet connectivity is a major barrier for me to use digital banking.
Financial Autonomy (FA)	FA 1	Digital banking has made it easier for me to receive money directly, for example, government benefits or payments for my work.
	FA 2	I feel more confident about my financial future because of my ability to access and manage my money digitally.
	FA 3	I am less dependent on male family members (husband, father, brother) to handle my financial transactions.
Household Decision-Making (HD)	HD 1	I am more involved in making decisions about large household purchases (e.g., appliances, land) since I started using digital banking.
	HD 2	My opinion on household financial matters is valued more because I can independently manage money.
	HD 3	I feel I have a greater say in family spending on education and healthcare.
	HD 4	My use of digital banking has led to a more equal partnership in financial decision-making within my family.
	HD 5	I now contribute more to household expenses because digital banking makes it easier to access my funds.

Validation of the measurement scale

Measurement scale validation is an essential process of ensuring that the research tools used to evaluate data are both reliable and valid. Reliability guarantees the consistency of the measurements, while validity ensures that the scale accurately measures the intended supported to measure. Together, these two concepts provide confidence in the quality of data and allow researchers to draw credible conclusions from their findings. This study ensures the constructs are well-defined and the indicators are good measures. The table shows the tests for four constructs are Financial Literacy (FL), Digital Financial Inclusion (DFI), Financial Autonomy (FA) and Household Decision-Making (HD). The results confirm that the scale is both reliable and valid.

Constructs	Indicators	Outer Loadings	Cronbach's α	CR	AVE
Financial Literacy (FL)	FL 1	0.913	0.797	0.908	0.831
	FL 2	0.910			
Digital Financial Inclusion (DFI)	DFI 1	0.920	0.766	0.861	0.678
	DFI 2	0.925			
Financial Autonomy (FA)	FA 1	0.877	0.843	0.905	0.761
	FA 2	0.886			
	FA 3	0.853			
Household Decision- Making (HD)	HD 1	0.814	0.904	0.929	0.725
	HD 2	0.927			
	HD 3	0.869			
	HD 4	0.885			
	HD 5	0.751			

Outer Loading shows the correlation between an indicator and its respective construct. Typically, high loadings above 0.70 suggest that the indicator is a good measure of the construct. The table shows that the indicators for all constructs have high outer loadings. Specifically, Financial literacy (FL) has two indicators with high loadings range of FL1 indicate 0.913 and FL2 indicate 0.910. Digital financial inclusion (DFI) has a high outer loadings series of DFI 1 at 0.920 and DFI 2 at 0.925. Financial autonomy (FA) consists of three indicators that have consistently strong loadings: FA 1 at 0.877, FA 2 at 0.886 and FA 3 at 0.853. Finally, Household decision-making (HD) has five indicators and the results of outer loading are 0.814 for HD 1, 0.927 for HD 2, 0.869 for HD 3, 0.885 for HD 4 and 0.751 for HD 5 respectively. Cronbach's Alpha (α) and Composite Reliability (CR) considered value of 0.70 or higher is a good indicator of reliability. All the constructs in the table exceed this threshold. Financial Literacy (FL) has an excellent reliability, with a Cronbach's Alpha (α) of 0.797 and CR of 0.908. The AVE is 0.831, which is well above the 0.70 threshold and is conforming to strong convergent validity. Digital financial inclusion (DFI) has a good reliability of Cronbach's Alpha (α) of 0.766, CR of 0.861 and its convergent validity is also confirmed with an AVE of 0.678. Financial Autonomy (FA) has very high reliability values are Cronbach's Alpha (α) of 0.843, CR of 0.905 and strong convergent validity indicated to be confirmed with an

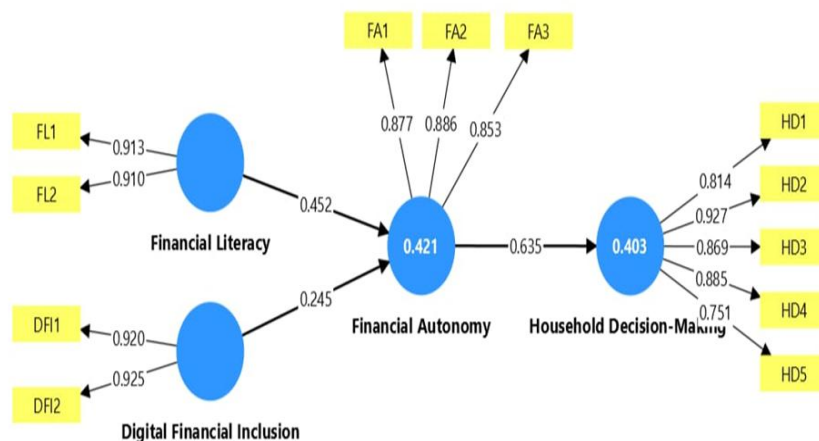
AVE of 0.761. Household Decision-Making (HD) reliability is excellent with Cronbach's Alpha (α) of 0.904, CR of 0.929 and the AVE of 0.725 confirms strong convergent validity.

The results show that the all four constructs which are Financial Literacy, Digital Financial Inclusion, Financial Autonomy and Household Decision-Making meet the standard criteria for reliability and validity. The high values for Cronbach's Alpha (α), Composite Reliability (CR) and Average Variance Extracted (AVE) are well above the recommended threshold for all constructs with strong evidence that measurement scales are highly reliable and valid.

Discriminant validity – Heterotrait-Monotrait ratio (HTMT)

	Digital financial inclusion	Financial autonomy	Financial literacy	Household decision-making
Digital financial inclusion				
Financial autonomy	0.645			
Financial literacy	0.889	0.763		
Household decision-making	0.479	0.724	0.471	

The analysis of discriminant validity using the Heterotrait – Monotrait Ratio (HTMT) indicates that all constructs in the model are sufficiently distinct. The HTMT values for all pairs of constructs are below the recommended threshold of 0.90. The correlation between Digital Financial Inclusion through Financial Autonomy is 0.645, while the correlation with Financial Literacy value is 0.889. The relationship between Digital Financial Inclusion & Household decision-making is 0.479. The HTMT ratio is 0.763 indicating a distinct relationship between Financial Autonomy & Financial Literacy. The value of 0.724 is correlation between the Financial Autonomy & Household decision-making. The lowest ratio is 0.471, observed between Financial Literacy & Household decision-making. The overall findings of HTMT ratio suggest that Financial literacy, Digital financial inclusion, Financial autonomy and Household decision-making are all the constructs that demonstrate good discriminant validity. The only ratio that warrants a closer look is the one between Digital financial inclusion and Financial literacy (0.889), which remains valid and shows a high degree of correlation which is implying that people who are more digitally and financially included also tend to have higher financial literacy.



Assessment of the Structural Model

Hypothesis Path	Hypothesis	Original sample (O)	Sample Mean (M)	STDEV	t-Value	p-Value	Result
Digital Financial Inclusion -> Financial Autonomy	H1	0.245	0.241	0.126	1.941	0.052**	Not Supported
Financial Autonomy -> Household Decision-Making	H2	0.635	0.641	0.100	6.358	0.000*	Supported
Financial Literacy -> Financial Autonomy	H3	0.452	0.453	0.116	3.899	0.000*	Supported

Note: * Significance at $p < 0.05$, ** Not Significance at $p < 0.05$

The results of a structural model evaluate three hypotheses by examining the relationships between the variables. This table indicates the t-value and p-value, whether the values can suggest that the constructs are significant or not. Hypothesis 1: Digital Financial inclusion -> Financial Autonomy t-value at 1.941 and p-value for this path is 0.052, which is indicated as greater than the 0.05. This result suggests there is no statistically significant relationship between Digital Financial Inclusion and Financial Autonomy. Hypothesis 2: Financial Autonomy-> Household Decision-Making t-value is 6.358 and p-values for this path is 0.000, which is indicated as lesser than the 0.05. The outcome shows a statistically significant relationship between Financial Autonomy and Household Decision-Making. The data strongly supports the idea that greater financial autonomy has a positively significant impact on a household's decision-making power process. Hypothesis 3: Financial Literacy -> Financial Autonomy t-value of 3.899 and p-value for this path is 0.000, which is indicated as lesser than the 0.05. Consequences, the result shows a statistically significant relationship between Financial Literacy and Financial Autonomy. The data provides strong evidence that a higher level of financial literacy leads to a significant increase in financial autonomy. Overall, the results of the model support the hypotheses that financial literacy and financial autonomy are significantly related and that financial autonomy is significantly related to household decision-making power. However, it does not support the hypothesis that digital financial inclusion has a significant impact on financial autonomy.

Discussion

This research provides empirical validation of financial control over household bargaining power of women in digital contexts and measures the literacy barriers specific to rural women, it also provides a district-level analysis in Tamil Nadu. Existing research strongly supports the notion that an individual's control over their financial resources is a critical determinant of their influence and participation in the household decisions. Financial literacy has a positively significant effect on financial autonomy. It is the foundational skill for independent financial management. Financial autonomy is challenging without sufficient financial literacy, even if they have access to a wide range of financial services. Therefore, sufficient digital banking infrastructure along with financial literacy will give women the ability to make their own financial decisions and have full control over their economic resources without being dependent on others. The integration of knowledge of digital banking and access to

infrastructure creates a functional baseline. This helps women especially to move from being a passive observer of the economy to an active participant. By mastering digital banking tools, women gain the right of self-governance. Once an individual possesses the capacity to manage their own resources effectively, this competence naturally scales upwards to decide on household finance which is the ultimate exercise of this power. This transition is vital because a household managed by a digitally literate, autonomous individual is statistically more resilient against economic shocks and more likely to achieve upward mobility. In our study area, however there is a contradiction reflecting negative relationship between financial inclusion with perceived financial autonomy which suggests that increased exposure or access to digital platforms without adequate skill training creates dependency on male intermediaries for transaction support.

Conclusion

This study on digital banking adoption among rural women in Tiruchirappalli district provides critical insights into the intersection of financial inclusion, gender empowerment and technology access in India. While digital banking services have proliferated through government initiatives, their transformative potential remains unrealized without foundational skills. The findings confirm that a woman's control over her financial resources, directly enhances her household decision-making power. This pathway from financial autonomy to bargaining power operates through increased confidence and reduced dependency on male intermediaries. However, mere access to digital platforms does not guarantee empowerment. The insignificant effect of digital access on adoption highlights a critical barrier: without digital and financial literacy, rural women face pressure from complex interfaces, privacy concerns and reliance on family members for transactions. This study demonstrates that empowering rural women requires a sequenced approach: literacy first and infrastructure second. Digital access alone fails unskilled women, they stay dependent. Financial literacy turns access into real power. Therefore, policymakers should integrate literacy training before scaling digital infrastructure. Regional languages should be prioritized in voice-based digital transactions and government should focus training women who lack skills rather than on areas with more phones or internet coverage.

Limitations and Future Outlook:

The study is limited to one district therefore the findings may not apply to states with weaker digital infrastructure in the country. The research can be further extended in terms of comparative analysis and longitudinal studies. Districts with heavy self-help group concentrations versus low self-help groups can be studied as a comparative analysis to examine its network impact to justify how self-help groups create social and peer effects that spread benefits beyond individual members. Longitudinal studies can be carried out to prove the cause effect relationship. The same sample can be tracked over a period of 2-3 years to prove literacy actually causes autonomy and financial decisions.

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