

Fintech Access and Usage as Drivers of Financial Inclusion among Women: The Moderating Role of Demographic Characteristics

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Abstract

Women represent a substantial half of the population of any economy, but are often classified as the financial exclusive group. Without this segment contributing to the GDP effectively, economic growth is not complete and meaningful. Studies on gender disparities in financial inclusion highlight the various barriers faced by women in accessing and utilizing financial services. However, the advent of financial technologies (fintech) has opened doors and transformed the delivery and use of financial services, creating new opportunities to promote financial inclusion among women. With the necessary tools, a mobile phone, payment wallets and internet connectivity, women can now access digital financial services anytime and anywhere, overcoming physical barriers such as distance, time etc. The big question is whether the financial technologies did enable easier access and usage of financial services. Recent studies point that despite the increasing availability of digital financial services, disparities in access to and usage of fintech applications continue to influence women's participation in the formal financial system. There are several demographic factors that are influencing or barring women from access and usage of financial technologies. This study investigates whether demographic characteristics influence the relationship between fintech access, fintech usage, and financial inclusion among women. A quantitative research design is adopted, with primary data collected from women account holders to assess their access to and usage of fintech applications and their level of financial inclusion. The study employs appropriate statistical techniques to examine the relationships among the study constructs and to assess the moderating effects of demographic characteristics such as age, education, employment status, income, and savings. The study contributes to the literature by providing a gender-focused perspective on the role of fintech in promoting financial inclusion. The findings are expected to provide useful insights for banks, fintech providers, policymakers, and other stakeholders in developing targeted strategies to improve women's access to and effective usage of digital financial services and thereby promote greater financial inclusion.

Introduction

Financial inclusion is often considered an integral constituent of inclusive economic development. Financial inclusion provides access and fosters usage of proper financial services that aid individuals to save, make payments, manage financial risks, obtain credit, and participate more fully in economic

activity [1]. Women's financial inclusion has received increasing attention because persistent gender-related barriers can limit women's participation in the formal financial system and constrain their economic opportunities [2]. Although considerable progress has been made in expanding women's access to financial accounts, access alone does not necessarily translate into meaningful financial inclusion. The Global Findex Database 2021 reported that 74% of women globally had an account compared with 78% of men, while barriers including lack of identification, limited access to mobile phones, distance from financial institutions, and low financial capability continued to affect women's participation in formal finance [2]. India's perspective presents a successful progress story with improvements in women's account ownership; however, differences in account activity and the effective use of financial services remain important concerns [3]. Indian women's financial inclusion is influenced by demographic, including wealth, rural–urban location, and other socioeconomic factors [4]. Understanding financial inclusion among women requires attention not only to whether financial services are available, but also to whether women can access and effectively use them.

The emergence of fintech has further transformed the delivery of financial services by enabling individuals to access and use banking and payment services through mobile phones, digital platforms, and internet-based applications [1]. For women, these technologies have the potential to reduce traditional barriers related to distance, time, mobility, and physical access to financial institutions. However, the availability of fintech services does not necessarily ensure their effective access and usage, as women's engagement with digital financial services may vary according to their socioeconomic and demographic characteristics [5,6,7]. Therefore, examining fintech access and usage together, while considering the moderating influence of demographic characteristics, is important for understanding whether fintech is translating into meaningful financial inclusion among women. The current study investigates the relationship between fintech access, fintech usage, and financial inclusion among women and examines whether demographic characteristics such as age, education, employment status and income, moderate these relationships.

Literature Review

Demographics play a predominant role in studying the issues related to women financial inclusion. The literature review for this paper explores the role of demographics in the access to and use of fintech for furtherance of financial inclusion

Women financial Inclusion – Role of Demographics

Women financial inclusion is influenced by demographic characteristics such as age, education, employment and income as they affect women's ability to obtain, understand, and independently use formal financial services. Financial access and usage of financial services among women are greatly influenced by various demographic factors. Any policies towards promotion of financial inclusion should be built on an understanding of the impact of the demographic variables on women's access to and usage of financial services. Existing literature included personal demographic variables such as age, education, income, marital status, etc. in their model of financial wellbeing [8,9]. Earlier studies included demographic factors as an input variable in determining financial well-being interventions [10]. There is a need to understand the complex interplay of the socio-economic education and demographics that enhance or constrain the relationship between financial access, usage and financial inclusion. Only a few studies are available that study the influence of these factors in the context of women [11]. Between socio-economic and demographic variables, demographic variables significantly affect the financial inclusion of women [12].

Fintech Access, Usage and Women financial inclusion

Conventional financial inclusion initiatives may not be appropriate to address the challenges faced by women in accessing financial services [13]. There has been a paradigm shift from financial inclusion to

fintech led financial inclusion in India after 2014 when India introduced the Digital India initiative [14]. Fintech led financial inclusion is the integration of financial technologies into financial inclusion [15]. Fintech, which delivers financial services digitally, promises to promote financial inclusion and close the gender gap [16]. With the necessary tools – a mobile phone, phone number and Internet connection – women can access digital financial services anytime and anywhere, addressing barriers such as distance from financial institutions [17]. It is found that digitally active customers tend to hold more extensive product holdings [18]. However, challenges still persist as women's usage of mobile phone for opening of bank accounts is seen to be 12% less than that of men as also their further active use of mobile phone for conduct of financial transactions is 9% less than that of men [19]. This pattern varies across different regions and with various income levels. Digital financial services are effective in promoting women financial inclusion only if the digital solutions are structured to their needs and challenges [20]. This requires an understanding of the determinants that influence the promotion of digital financial inclusion among women and the role played by demographic factors in influencing the adoption of digital financial services.

Methodology

The study adopted a quantitative, cross-sectional research design to empirically examine the influence of fintech access and fintech usage on financial inclusion among women. Primary data were collected through a structured questionnaire from women in Telangana using a random sampling approach. A total of 606 valid responses were obtained from respondents representing diverse demographic characteristics. In the proposed analytical model, fintech access and fintech usage were specified as the independent constructs, while financial inclusion was specified as the dependent construct. Age, education, employment status, and income were incorporated as moderating variables to assess whether these demographic characteristics alter the strength or direction of the relationships between fintech access, fintech usage, and financial inclusion.

Each of the three constructs were measured using multiple observed indicators based on previously established measures in the financial inclusion and fintech literature, with the items adapted to the context of women respondents in Telangana. Respondents rated the items using a [five-point/seven-point] Likert scale, where higher scores indicated greater levels of fintech access, fintech usage, or financial inclusion, respectively.

The resulting measurement model was assessed for indicator reliability, internal consistency reliability, convergent validity, and discriminant validity before testing the structural relationships and moderating effects. Table 1 data shows that the measurement model demonstrates satisfactory internal consistency reliability and convergent validity, supporting its suitability for subsequent assessment of the structural model and the hypothesized moderating relationships.

Table 1: Reliability and Convergent Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Fintech Access	0.909	0.916	0.943	0.847
FI	0.904	0.946	0.927	0.659
Fintech Usage	0.947	0.950	0.962	0.863

Results and Discussion

Having established the reliability of the constructs, Smart PLS 4.0 was used to study the moderation effect.

4.1 Moderation effect of demographics on Fintech access and Financial Inclusion

To examine whether demographic characteristics condition the relationship between fintech access and financial inclusion, a moderation analysis was conducted using age, education, employment status, and income as moderating variables.

Table 2: Moderating Effect of Demographic Characteristics on the Relationship between Fintech Usage and Financial Inclusion

Moderator	Interaction Effect	B	t-value	p-value
Age	Access x Age - FI	-0.048	1.275	0.202
Education	Access x Education - FI	0.093	2.376	0.018
Employment Status	Access x Employment - FI	-0.123	3.038	0.002
Income	Access x Income - FI	-0.116	3.814	0.000

The moderation analysis indicates that the relationship between fintech access and financial inclusion is significantly conditioned by education, employment status, and income, whereas age does not exert a significant moderating effect. Education demonstrates a significant positive interaction effect ($\beta = 0.093$, $t = 2.376$, $p = 0.018$), indicating that the positive relationship between fintech access and financial inclusion varies positively with education level. Income exhibits a significant negative interaction effect ($\beta = -0.116$, $t = 3.814$, $p < 0.001$), indicating that the strength of the fintech access–financial inclusion relationship varies negatively across the ordered income categories. Employment status also shows a statistically significant negative interaction effect ($\beta = -0.123$, $t = 3.038$, $p = 0.002$), though the direct effect of employment on financial inclusion is positively significant ($\beta = 0.159$, $t = 4.652$, $p = 0.000$). Age does not significantly moderate the relationship ($\beta = -0.048$, $t = 1.275$, $p = 0.202$). Overall, the findings provide evidence that demographic characteristics play a differential role in conditioning the relationship between fintech access and financial inclusion among women.

4.2 Moderation effect of demographics on Fintech usage and Financial Inclusion

To examine whether demographic characteristics condition the relationship between fintech usage and financial inclusion, a moderation analysis was conducted using age, education, employment status, and income as moderating variables.

Table 3: Moderating Effect of Demographic Characteristics on the Relationship between Fintech Usage and Financial Inclusion

Moderator	Interaction Effect	β	t-value	p-value
Age	Usage x Age - FI	0.155	3.629	0.000
Education	Usage x Education - FI	-0.038	0.862	0.389
Employment Status	Usage x Employment - FI	-0.077	2.012	0.044
Income	Usage x Income - FI	-0.063	1.759	0.079

The moderation analysis indicates that the relationship between fintech usage and financial inclusion is significantly moderated by age and employment status, whereas education and income do not exhibit statistically significant moderating effects. Age has a significant positive moderating effect ($\beta = 0.155$, $t = 3.629$, $p < 0.001$), indicating that the positive relationship between fintech usage and financial inclusion becomes stronger across the age categories. Employment status also demonstrates a statistically significant interaction effect ($\beta = -0.077$, $t = 2.012$, $p = 0.044$), indicating that the relationship between fintech usage and financial inclusion varies negatively across the coded employment categories. In contrast, education does not significantly moderate the relationship between fintech usage and financial inclusion ($\beta = -0.038$, $t = 0.862$, $p = 0.389$). Similarly, income does not demonstrate a statistically significant moderating effect ($\beta = -0.063$, $t = 1.759$, $p = 0.079$). Overall,

the findings indicate that age and employment status significantly condition the relationship between fintech usage and financial inclusion, while education and income do not significantly moderate this relationship.

Conclusion

The moderation results provide evidence that the role of fintech access and usage as drivers of financial inclusion among women varies across demographic characteristics, supporting the central proposition of the study that demographic factors condition the effectiveness of fintech-enabled financial participation. The findings suggest that policies promoting women's financial inclusion through fintech should focus not only on expanding access but also on enabling effective usage. Digital and financial literacy programmes should accompany fintech expansion, particularly given the significant role of education and age in the respective relationships. Financial institutions and fintech providers should also consider differences across employment and income groups when designing affordable, accessible, and user-friendly digital financial services. Overall, targeted rather than uniform interventions may help ensure that fintech access and usage translate more effectively into women's financial inclusion.

References:

- Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2022). The Global Findex Database 2021: Financial inclusion, digital payments, and resilience in the age of COVID-19. World Bank.
- Roy, P., & Patro, B. (2022). Financial inclusion of women and gender gap in access to finance: A systematic literature review. *Vision: The Journal of Business Perspective*. <https://doi.org/10.1177/09722629221104205>.
- Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2022). The Global Findex Database 2021: Financial inclusion, digital payments, and resilience in the age of COVID-19. World Bank.
- Govindapuram, S., Bhupatiraju, S., & Sirohi, R. A. (2023). Determinants of women's financial inclusion: Evidence from India. *Annals of Public and Cooperative Economics*, 94(1), 131–158. <https://doi.org/10.1111/apce.12376>.
- Sahay, R., Eriksson von Allmen, U., Lahreche, A., Khera, P., Ogawa, S., Bazarbash, M., & Beaton, K. (2020). The promise of fintech: Financial inclusion in the post COVID-19 era. IMF Departmental Paper No. 2020/009. <https://doi.org/10.5089/9781513549303.087>.
- Chen, S., Doerr, S., Frost, J., Gambacorta, L., & Shin, H. S. (2023). The fintech gender gap. *Journal of Financial Intermediation*, 54, 101026. <https://doi.org/10.1016/j.jfi.2023.101026>.
- Tripathi, S., & Rajeev, M. (2023). Gender-inclusive development through fintech: Studying gender-based digital financial inclusion in a cross-country setting. *Sustainability*, 15(13), 10253. <https://doi.org/10.3390/su151310253>.
- Joo, S. H., & Grable, J. E. (2004). An exploratory framework of the determinants of financial satisfaction. *Journal of Family and Economic Issues*, 25(1), 25–50.
- Malone, K., Stewart, S. D., Wilson, J., & Korsching, P. F. (2010). Perceptions of financial well-being among American women in diverse families. *Journal of Family and Economic Issues*, 31(1), 63–81.
- Brüggen, E. C., Hogreve, J., Holmlund, M., Kabadayi, S., & Löfgren, M. (2017). Financial well-being: A conceptualization and research agenda. *Journal of Business Research*, 79, 228–237.

- Gupta, Priya; Aggarwal, Mamta; and Bamba, Meera (2025) "Antecedents and Measures of Women's Financial Empowerment: A Comprehensive and Global Literature Review," *Journal of International Women's Studies*: Vol. 27: Iss. 4, Article 6.
- Chaidir, T., Yasin, M., Jalaludin, J., & Arini, G. A. (2024). Determinants of Socio-Demographic Characteristics on Financial Inclusion of Women in Mataram City and West Lombok Regency. *Jurnal Pendidikan Indonesia*, 5(11), 1242–1255.
- Arnold, J., & Gammage, S. (2019). Gender and financial inclusion: the critical role for holistic programming. *Development in Practice*, 29(8), 965–973.
- Bathula, S., and A. Gupta, (2021), "The determinants of Financial Inclusion and Digital Financial Inclusion in India: A Comparative Study", *The Review of Finance and Banking*, Vol. 13, No. 2., pp.1-2
- Shen, Y., C.J. Hueng, and W. Hu, (2020), "Using digital technology to improve financial inclusion in China", *Applied Economics Letters*, Vol. 27, No. 1, pp. 30-34
- Boileau L., and Y. Yang (2022), "Fintech, Female Employment, and Gender Inequality", *IMF Working Papers*, No.22/108, International Monetary Fund, 700 19th Street, N.W., Washington, D.C., pp. 1-32
- Girón, A., A. Kazemikhasragh, A. F.Cicchiello, and E.Panetti, (2022), "Financial inclusion measurement in the least developed countries in Asia and Africa", *Journal of the Knowledge Economy*, Vol. 13, No. 2, pp. 1198–1211.
- D'souza. R, (2018), "Examining Mobile Banking as a Tool for FI in India", *ORF Issue Brief*, No.265, 20, Rouse Avenue Institutional Area, New Delhi, INDIA, pp. 1–12
- Ghosh, S. (2022). Gender and financial inclusion: does technology make a difference? *Gender, Technology and Development*, 26(2), pp.195–213
- Babar, H. (2023), "Fintech- a Solution for Financial Inclusion and Women's Economic Empowerment?", *Qeios*, pp. 1–13