

# Moderating Influence of Women's Socio-Economic Education and Demographic Factors on the Relationship between Financial Inclusion and Well-being: Evidence from India

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Priya Gupta<sup>\*</sup>, Mamta Aggarwal<sup>\*\*</sup>,  
Meera Bamba<sup>\*\*\*</sup>

## Abstract

Financial inclusion is recognized as a crucial pillar of sustainable development, enabling access to financial services that empower women economically and socially. This study examined the association between financial inclusion and the well-being of women workers across diverse socio-economic education and demographics settings (SEED). The data were collected from 290 working women respondents residing in the area of Delhi-NCR. The PLS-SEM techniques were employed to analyze the data obtained during the study. The moderating influence of demographics such as age, income, household head, education, employment type, and region was tested regarding the relationship between financial inclusion and well-being. Findings revealed critical insights into how different SEED groups experience

financial inclusion and highlighted the role of these factors in financial well-being. Results showed a significant moderation interaction of income, education, and region with financial inclusion on the well-being of women workers. The age, employment type, and gender of the household head do not significantly moderate the relationship. The findings provide evidence-based recommendations for policymakers, financial institutions, and organizations to design and implement targeted financial inclusion initiatives that can contribute to developing and implementing strategies for promoting the financial well-being of women from diverse backgrounds.

**Keywords:** Financial inclusion, moderation effect, financial well-being. Socio-economic, education, and demographics.

**JEL:** E23, I3, J1, N3

## 1. Introduction

Recently many improvements in individuals' financial inclusion have

<sup>\*</sup> Department of Commerce, Indira Gandhi University, Meerpur, Rewari, Corresponding Author

<sup>\*\*</sup> Department of Commerce, Indira Gandhi University, Meerpur, Rewari

<sup>\*\*\*</sup> Department of Commerce, Indira Gandhi University, Meerpur, Rewari

been made globally due to innovations and technological advancements. Despite these advancements and innovations in the financial system, around 1.7 billion people remain excluded from the financial system worldwide (World Bank, 2017). This exclusion prevents access to financial services, hinders participation in economic endeavours, and increases poverty and inequality (Song et al., 2024). Financial inclusion, especially for women, emerges as a critical area, recognized for its potential to promote economic development, poverty reduction, and improve well-being (Nguse et al., 2022). Financial inclusion comprises accessibility to various financial services like savings, credit, insurance, and other systems for all segments, especially for underserved and marginalized groups (Singh & Mallick, 2024). Women face unique barriers to the financial system, such as a lack of education, income, freedom, poverty, and inequalities (Saluja et al., 2023). These challenges in accessing the financial system make it harder for them to earn, save, invest, and build financial resilience, making it more challenging to attain sustainability (Anakpo et al., 2023). As a result, financial systems worldwide still need to reach the inclusive system. Therefore, the need to promote financial inclusion to realize sustainability became prominent.

Due to this, the United Nations has given seventeen sustainable development goals for promoting equitable, balanced, and sustainable economic growth (United Nations, 1987). These goals emphasize financial inclusion as part of the sustainable development agenda. These targets promote sustainable development by expanding financial access, a prominent tool for attaining goals (United Nations, 2008). Financial inclusion is an enabler for eight Sustainable goals (Tay et al.,

2022). Providing individuals' adequate access to affordable financial services empowers individuals, fosters economic growth, reduces poverty, and promotes balanced and sustainable economic growth (Mushtaq et al., 2023). Additionally, in the context of women, the relationship between inclusion and sustainable development is amplified due to the wide-ranging economic and social benefits provided to women, which are vital for pursuing sustainable development, like more earning potential due to economic participation (Yap et al., 2023).

A growing body of literature shows that financial inclusion contributes to well-being (Rashid et al., 2022; Vishwakarma, 2024). Some studies indicate that younger and more educated individuals have better access to digital financial services than those from low-income backgrounds and less educated people who face substantial barriers to accessing financial services (Tay et al., 2022; Vik et al., 2024). The study by Kaligis et al. (2018) shows that age and gender do not primarily emerge as the primary barriers to accessing financial services.

However, existing studies need to pay more attention to the complex interplay of socio-economic education and demographic factors that can enhance or constrain the association between financial inclusion and well-being. Additionally, only a few studies are available that study the influence of these factors in the context of women workers. Working women face unique challenges and obstacles, such as low pay, the gender wage gap, more unpaid care work, and undue responsibilities (Otobe, 2017; Saluja et al., 2023). Given this substantial gap in the existing studies, this study provides deeper insights into the nuanced relationship between financial inclusion and financial well-being,

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with particular light on how different factors moderate the relationship in the context of women workers. This study aims to explore the influence of financial inclusion on the financial well-being of women working in the areas of Delhi–NCR and to study the interaction of different socio-economic, education, and demographics (income, education, age, region, employment type and household) and financial inclusion on the financial well-being of working women.

Understanding the key factors influencing the association between financial inclusion and well-being is crucial for researchers and policymakers to design strategies for promoting women's inclusion in the financial system. By examining the nuances and influence of different factors in the relationship, this work adds to the understanding of how these factors can impact the well-being differently. This understanding can help researchers, financial institutions, government, and policymakers craft targeting strategies that promote women's inclusion and improve their overall quality of life for a diverse population, particularly those in the marginalized and deprived section.

This study is divided into seven sections. Section 1 introduces the study. Section 2 provides a detailed outlook of existing literature in the relevant field. Section 3 specifies the research methodology covering the research area, sample size determination, adequate sample size, measures used, and tools and techniques to be used. Section 4 represents the findings derived from the study, and section 5 provides the discussion based on the results. Section 6 describes the theoretical and practical implications of the study. Finally, section 7 entails the study's limitations and recommendations for future directions.

## 2. Review of Literature

This section provides a detailed outlook on the association between financial inclusion and other demographics with financial well-being.

### 2.1. Financial Well-being

Financial well-being is a broad concept that indicates an individual's ability to manage financial resources in an effective way to meet current and future financial obligations along with maintaining financial resilience for the future (Aubrey et al., 2022; Bhatia & Singh, 2023; Brüggem et al., 2017; Sehrawat et al., 2021). This concept doesn't encompass mere income and wealth but incorporates an individual's perception regarding their financial security, satisfaction and ability to meet the financial obligations that can improve their quality of life (Garg et al., 2024; Kaur et al., 2023). Financial well-being comprises various key dimensions: financial control, future financial security, capacity to absorb financial shocks (financial resilience) and financial satisfaction through the attainment of financial goals. Financial control emphasizes the extent to which an individual takes control over their financial situation, such as managing day-to-day expenditures, savings, budgeting and exercising control over spending without feeling overwhelmed (Bialowolski et al., 2021; Muleke & Muriithi, 2013). Financial security is a critical dimension of well-being that assesses an individual's ability to plan, save and take required actions to ensure future financial stability (Kumar et al., 2023; Philippas & Avdoulas, 2020; Vieira et al., 2023). In other words, it can be defined as an individual's capability to fulfil the current financial obligation while maintaining future financial stability (Gupta et al., 2025; Prakash et al., 2022; Srivastava et al., 2024). Financial

resilience implies an individual's ability to handle an unexpected financial emergency without financial distress (Prakash & Hawaldar, 2023; Vieira et al., 2023; Vishwakarma, 2024). Financial satisfaction implies an individual's sense of achieving financial goals, having financial control and proper confidence to meet current and future financial needs (Garg et al., 2024; Tenney & Kalenkoski, 2019; West et al., 2021).

### 2.2. Financial Inclusion and Well-being

Financial inclusion ensures that individuals, especially those in underserved and marginalized sections, access affordable and beneficial financial services such as cards, insurance, and payment systems (Adera & Abdisa, 2023). Financial well-being refers to being in control of one's financial life. It implies having enough money to meet current and future financial needs to absorb the high financial shocks and allow them to attain financial freedom (Philippas & Avdoulas, 2020). It is crucial in reducing financial intimidation and lowering the cost associated with achieving financial benefits, improving an individual's savings, and ultimately contributing to their financial wellness (Rashid et al., 2022). Research by Adera and Abdisa (2023) states that women who have better access to valuable and affordable financial services and utilize them experience greater financial development that reduces their poverty and increases their standard of living. Being included financially strengthens the country's financial landscape and boosts individual financial wellness (Noor et al., 2022). It contributes to the nation's economic growth by mobilizing savings, facilitating more investments to build assets, smoothing consumption, and managing financial shocks (Kumari & Ferdous Azam, 2019).

Financial inclusion is directly linked to an individual's financial security as it alleviates financial problems and provides financial wellness by reducing financial risks (Shanti & Murty, 2019). Financial inclusion comprises usage, accessibility, and availability positively linked to enhancing women's financial safety and security (Vishwakarma, 2024).

It gives women the freedom to obtain financial satisfaction (Atta, 2023). Women's engagement and integration into the financial system through affordable, accessible, and relevant financial services have a more transformative influence on their ability to manage finances properly by avoiding their financial risks and uncertainty and securing financial security (Esmailpour Moghadam & Karami, 2023; Vishwakarma, 2024). Research conducted by Nandru et al. (2021) states that street vendors' financial inclusion positively influences their financial wellness by moving them to the path of financial security and satisfaction.

Based on existing literature, the proposed hypothesis of the study is:

**H1:** Financial inclusion positively influences the financial well-being of working women.

### 2.3. Age

Gyasi et al. (2021) investigated financial inclusion's influence on health, focusing on gender difference and age by gathering data from 1201 individuals. Findings show that men had higher financial inclusion than women, proving more beneficial for older adult's health. Bui and Luong (2023) provide the challenges and obstacles faced by women. Findings illustrate that despite women's high financial inclusion, older women remain among the most financially excluded groups. Digital banking successfully contributes to

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their financial inclusion score, especially for older women with access to mobile phones and bank accounts. Research work done by Tsouli (2022) indicates that a higher age ratio negatively influences financial inclusion due to more economic pressures and many dependent populations. Additionally, research by Wilson (2021) provides that age differences in monetary sequence preferences reveal that older individuals tend to make more economically sound decisions.

**H2:** Age moderates the relationship between financial inclusion and well-being in the context of women workers.

### 2.4. Income

Omar and Inaba (2020) underscore the critical role of financial inclusion as a driver of social inclusion, mainly focused on poverty and income inequality. Findings provide that per capita income, internet usage, inflation, and income inequality are the significant determinants of financial inclusion. Moreover, Abdelghaffar et al. (2023) explore the relationship between financial inclusion and human development across different income groups and countries. Findings provide that it significantly influences human development in low- and middle-income countries more than in high-income countries. Kaligis et al. (2018) states that higher income levels are significantly related to using formal financial services to gain financial freedom. The higher income level makes individuals more capable of making financial decisions with full autonomy without any external pressure to secure better financial health and position (Hendriks, 2019).

**H3:** Income level moderates the relationship between financial inclusion and well-being in the context of women workers.

### 2.5. Education level

The level of education substantially influences financial inclusion concerning account ownership. Educated women tend to have more financial knowledge to make decisions (Kaligis et al., 2018). Higher education tends to profoundly influence using financial services such as bank accounts and credits (Chen & Yuan, 2021). Work done by Mzobe (2015) indicates that education is a critical component that substantially influences financial inclusion; education influences individuals' account ownership, saving level, and insurance, which serve as a primary parameter for measuring financial inclusion. Higher education increases household consumption due to better literacy and earning potential (Luo, 2024). The study of Song et al. (2024) explores the moderating role of education in the relationship between financial inclusion and employment level. Findings reveal that financial inclusion positively influences employment by providing increased access to financial services and helping individuals engage more in economic endeavours.

**H4:** Education level moderates the relationship between financial inclusion and well-being in the context of women workers.

### 2.6. Household head

Kaligis et al. (2018) provide that gender and age do not substantially influence financial inclusion concerning account ownership. Households headed by female members face numerous problems in managing the household due to their multiple roles in the family (Shadabi et al., 2021). Women living in female household-headed households face more decline in mental health due to more societal pressure and limited access to

resources along with support systems (Shadabi et al., 2021). The study conducted by Bose et al. (2021) states that female-headed households are triply disadvantaged groups in decision-making due to economic, social, and responsibility disadvantages. Female-headed households often have low income and limited resources, so they face strain in their ability to save, invest, and make decisions. They face barriers due to societal biases and constraints and bear more responsibility due to unpaid care work at home.

**H5:** Gender of household head moderates the relationship between financial inclusion and well-being in the context of women workers.

### 2.7. Region

Work done by Luo (2024) investigates the influence of digital financial inclusion on household consumption between rural and urban residents. Findings illustrate that urban residents benefited more due to better access to digital infrastructure and services than rural residents. Financial inclusion helps to reduce the imbalances in welfare between all the regions themselves (Li & Peng, 2023). The study conducted by Sun and Tu (2023) reveals that the income gap between rural and urban individuals widens with an increase in financial inclusion when it stands at a low level and narrows with an increase in financial inclusion up to a certain level. At the same time, Gao and Li (2022) state that financial inclusion bridges the rural and urban gap in residential consumption. The disparity in the status of literacy and inclusion is rooted in differences in geographic locations. Individuals who belong to metropolitan areas have better access to and utilization of financial services offered by banks and financial institutions due

to the availability of financial resources (Gupta & Verma, 2024).

**H6:** Region moderates the relationship between financial inclusion and well-being in the context of working women.

### 2.8. Employment

Employment provides individuals with a stable earning source, which increases their likelihood of being included in the financial system, enabling better savings, investments, financial planning and access to credit (Bhatia & Singh, 2024). Within existing literature, contradictory evidence is found considering the influence of employment type on the relation between financial inclusion and well-being. Some studies state that the kind of employment does not have a substantial impact on the association between financial inclusion and well-being (Binsuwadan et al., 2024; Prakash et al., 2022; Rahman et al., 2021; Rashid et al., 2022). Conversely, full-time workers report better access to workplace opportunities, which enables better access to financial services that contribute to their wellness (Nielsen et al., 2017). Financial distress has a more profound influence on the financial wellness of self-employed than wage-employed employees (Berrill et al., 2021).

**H7:** Employment type moderates the relationship between financial inclusion and well-being in the context of working women.

## 3. Research Methodology

This study was conducted in the Delhi and NCR areas, including Gurugram, Noida, Faridabad, and Rewari, to depict diversity in the respondents' socio-economic, educational, and demographic output. This chosen area offers high occupational, residential, and

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academic diversity(Saigal, 1999). Data were gathered through a primary survey using a purposive random sampling technique. The women actively engaged in any economic activity were selected as the sample unit for this study.

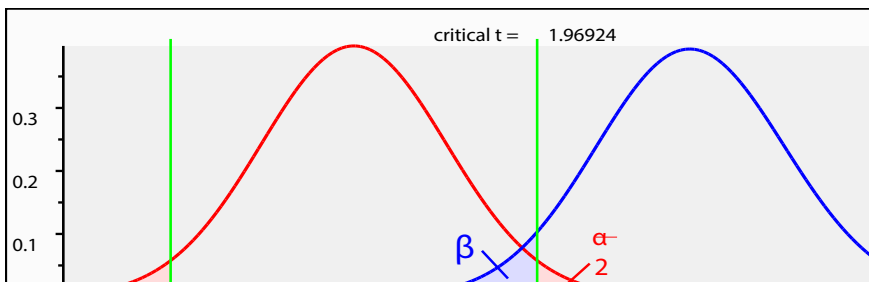
**3.1. Sample Size and Design**

For this work, a quantitative cross-sectional research design was chosen to gather data from women working in different economic endeavours. Firstly, the questionnaire used in this work was pretested by conducting a pilot survey on 80 respondents to check the reliability and validity criteria before performing the job. During the pilot survey, it was found that the loading of all the items was more significant than 0.708, except for a few items. Still, the items were not excluded, as these fall within the criteria suggested by Sarstedt et al. (2017). The factor loading lower than 0.4 and 0.7 is acceptable if the construct's AVE exceeds 0.5. One item, FWB3, was deleted due to lousy factor loading lower than the

criteria suggested by Sarstedt et al. (2017) and its adverse influence on the AVE of the relevant construct. The formula  $G^*$  power and thumb rule method was adopted to calculate the required sample size formula.

The thumb rule method considered a sample size equal to ten times the item appropriate for conducting the study. Here, the total number of items is 13, and the appropriate sample size for this study is  $13 * 10 = 130$ . This study has been conducted on 290 women respondents, which is more than double the required sample size suggested by the thumb rule method and fulfils the required threshold criteria.

Secondly, the  $G^*$  power method was adopted to calculate the required sample size at a 95% confidence level, 95% power of 0.95, and an effect size of 0.05, represented in Figure 1. Using this method, a sample of 262 respondents was obtained, and to satisfy the required sample criteria, this work was conducted on 290 female respondents.



**Figure 1.** Sample size  
Source:  $G^*$  Power

**3.2. Measures and Techniques**

The questionnaire for gathering the data from women respondents was divided into three parts. The first part provides the study overview and assures the respondents that their information will only be utilized for

academic purposes. In this part, the meaning of terms such as financial inclusion and well-being were clarified to the respondents. The second part contains the respondents' socio-economic, educational, and demographic information, and the third part represents

the different measurement scales utilized for conducting the work. All the data on the measurement scale were collected on a five-point scale. Financial inclusion scales were adapted from the study of Arafat and Leon (2020) financial inclusion as an independent variable, and financial self-efficacy as a mediating variable. The sample of this study used 176 respondents who used a purposive sampling method. The data analysis model used is structural equation modeling (SEM). The six-item financial well-being scale was adapted from the CFPB Financial Well-Being Scale (2017). In the six-item financial well-being scale, the first item, "I can handle a major unexpected expense without any difficulty", reflects the financial resilience dimension, which implies an individual's ability to manage any unexpected financial shock such as job loss, medical expenditure, loss in business etc. without falling into financial distress. Item 2, "I am securing my financial future", reflects future financial security and meeting financial goals implies an ability to plan for the future and progress towards it, including retirement savings, security, buying property, etc. Item 3, "Because of my financial situation, I feel like I have all the things that I want in my life," highlights financial satisfaction, which implies the contentment and fulfilment of financial goals due to having enough financial resources to meet the requirements. Item 4, "I enjoy the way in which I am managing the finance", reflects financial confidence and satisfaction dimensions, which imply an individual's positive mindset, attitude and satisfaction towards managing the personal finances. Item 5, "I am beginning to take control over my finances", indicates a financial control dimension that reflects an individual's ability to manage day-to-day financial operations and ensure that savings,

spending and budgeting are in their charge. Item 6, "I have saved enough money to last my lifetime", reflects the financial security dimension, which implies that individuals have enough income and financial resources to meet the present and future financial requirements.

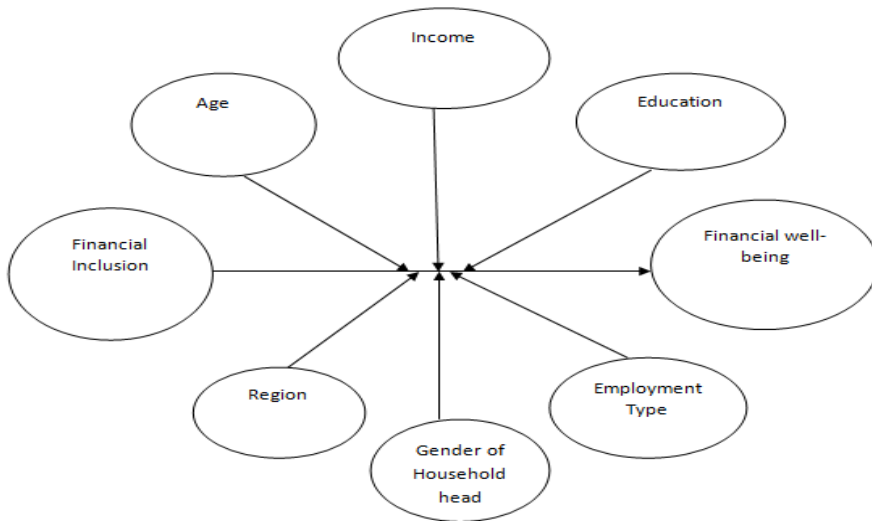
The survey results were analyzed in three stages: descriptive, measurement, and structural model. Descriptive analysis checks the frequency and percentage of respondents in different socio-economic, educational, and demographic contexts using SPSS. The measurement and structural model were assessed using the PLS-SEM technique. Secondly, the measurement model is used to measure how observed variables measure their observed variable using Cronbach alpha, factor loading, composite reliability AVE, etc. Path coefficients, R<sup>2</sup> and Q<sup>2</sup>, were used to calculate the structural model.

## 4. Findings

This section illustrates the findings in three sub-parts. Firstly, the demographic profile of the respondents has been presented. Then, the analysis portion indicates assessment in two ways: evaluation of the measurement model and structural model.

### 4.1. Demographics

The sample consists of women engaged in different types of economic activities in the areas of Delhi NCR, as presented in Table 1. Firstly, the age group consists of two groups: young and mature. Women respondents below age 35 are considered young, and about 35 are considered mature. In the sample, 69.6% of women are below 35 years, and 30.4% are above 35 years. A low level of education comprises those respondents who have at least completed high school.



**Figure 2.** Framework of the Study

Source: Author's creation

High education here represents the category of those who possess at least a graduation degree compared to others. In the sample, 39.65% belong to the lower-income group, and 60.35% belong to the high-income group.

An annual income below 2,500,000 is considered relatively low in Delhi as this region is regarded an expensive place to live. For the purpose of data coding, women's whose income exceeds 2,50,000 considered as high income group. In the sample, a maximum number of women respondents belong to the low-income group (78.96%), and only 21.04% belong to the high-income group. A maximum number of women respondents have male members. At the same time, the maximum number of respondents belongs to the urban region (72.07%). Most women respondents report working in different sectors such as education, IT, healthcare etc. (67.9%), followed by self-employed women (32.1%).

#### 4.2. Evaluation of Measurement Model

Evaluation of the measurement model consists of evaluating the reliability and validity of the items based on multiple criteria, such as factor loading, rho, VIF, and AVE.

Confirmatory factor analysis was used first to measure the measurement model, as indicated in Figure 3. As the present model is reflective, their loading was initially used. The outcome reported in Table 2 conveyed the reliability and validity criteria of the constructs based on Cronbach alpha, loading, VIF, AVE rho, etc.

Cronbach alpha measures the internal consistency of the data obtained through the primary survey. Its value is more than 0.7, which satisfies its threshold criteria (Bujang et al., 2018). Factor loading represents the strength of the relationship among the items and their relevant constructs. The higher the loading, the better the item represents the relevant construct. The loading of each item

**Table 1.** Respondents Profile

	Group	Frequency (N= 290)	%
Age	Young	209	69.6%
	Mature	81	30.4%
Education	Low	115	39.65%
	High	175	60.35%
Income	Low	229	78.96%
	High	61	21.04%
Household head	Male	200	68.96%
	Female	90	31.04%
Region	Urban	209	72.07%
	Rural	81	27.93%
Employment Type	Employed	197	67.9%
	Self-employed	93	32.1%

**Source:** Data gathered through primary survey

**Table 2.** Evaluation of the Model using reliability and validity criteria

Constructs	Items	Loading	VIF	Mean	SD	Cronbach alpha	CR (rho_a)	CR (rho_c)	AVE
Financial Inclusion	FI1	0.696	1.584	3.738	1.000	0.860	0.873	0.893	0.548
	FI2	0.722	1.916	4.200	1.127				
	FI3	0.569	1.521	3.814	1.209				
	FI4	0.805	2.030	3.838	1.082				
	FI5	0.788	1.942	3.821	1.106				
	FI6	0.816	2.486	3.990	1.116				
	FI7	0.756	1.991	3.855	1.183				
Financial Well-Being	FWB1	0.774	1.581	3.331	1.044	0.789	0.817	0.856	0.547
	FWB2	0.833	1.940	3.652	1.076				
	FWB4	0.786	1.779	3,541	0.972				
	FWB5	0.726	1.504	3.572	1.022				
	FWB6	0.545	1.207	3.531	0.993				

Note: "CA= Cronbach Alpha; CR= Composite Reliability; SD= Standard Deviation; AVE= Average Variance Extracted; VIF= Variance Inflation Factor"

**Source:** Results based on data collected through primary survey

is greater than 0.708 except for three items: FI1, FI3, FWB3, and FWB6. The item FWB 3 has been deleted due to very low factor loading (0.), which reduces the AVE to less than 0.5. Deletion of this one item secures AVE to 0.5 for each relevant construct. The three items, FI1, FI3, and FWB6, have factor loading between 0.4 to 0.7. Still, these items are kept as the AVE of the constructs is more significant than 0.5, as Sarstedt et al. (2017) recommended. Additionally, no multicollinearity issue was found as the VIF of all the items is less than 5 ( $VIF < 5$ ). The AVE of both the underlying constructs surpassed the 0.5 threshold limit. These results established the trustworthiness and effectiveness of the measurement model.

As per Fornell Larcker's criteria, the square root of AVE should be higher than the correlations of the latent variables. High discriminant validity exists when constructs are more related to their indicators than other relevant model constructs. This ensures that all the constructs measure the concepts reported in Table 3.

Cross-loading was calculated to check the discriminant validity of the constructs. Cross-loading shows how well each item has been loaded to the particular construct. The findings shown in Table 4 depict that each item has higher loading in its respective construct than the other. This ensures the presence of discriminant validity in the measurement model.

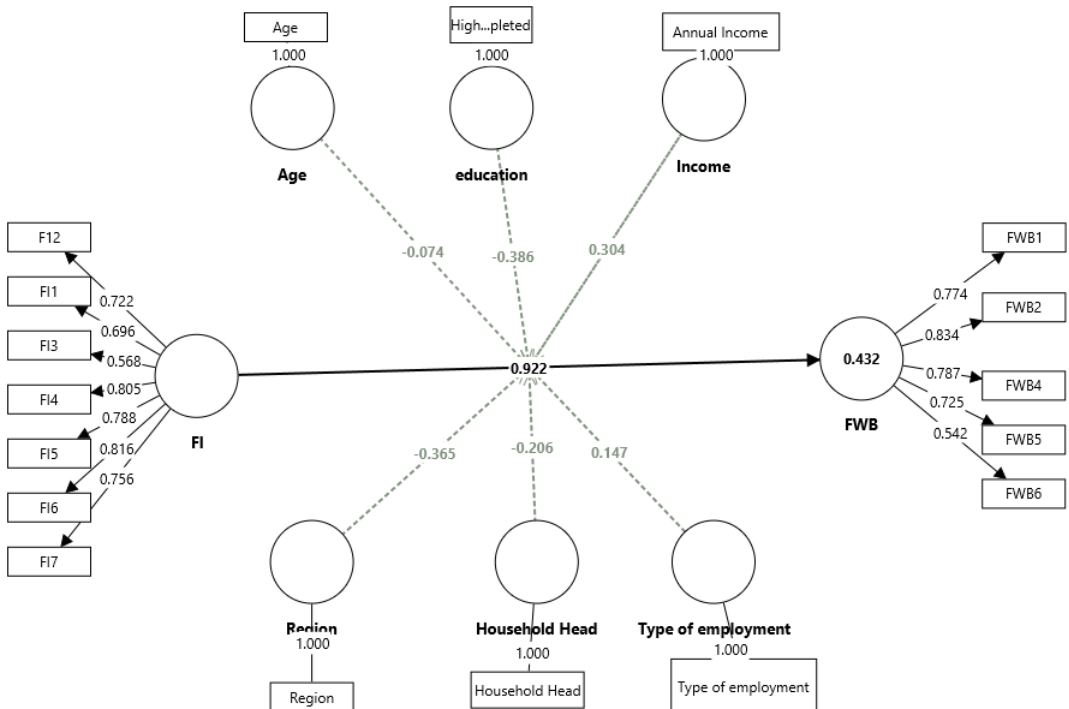


Figure 3. Measurement Model

Source: PLS

**Table 3.** Discriminant Validity

Constructs	FI	FWB
<b>Fornell Larcker Criteria</b>		
FI	0.740	
FWB	0.552	0.740

Source: Data gathered through primary survey

**Table 4.** Cross-loadings

	FI	FWB
FI1	<b>0.696</b>	0.406
FI2	<b>0.722</b>	0.334
FI3	<b>0.569</b>	0.292
FI4	<b>0.805</b>	0.485
FI5	<b>0.788</b>	0.473
FI6	<b>0.816</b>	0.426
FI7	<b>0.756</b>	0.394
FWB1	0.425	<b>0.774</b>
FWB2	0.499	<b>0.833</b>
FWB4	0.414	<b>0.786</b>
FWB5	0.402	<b>0.726</b>
FWB6	0.259	<b>0.545</b>

Source: Data gathered through primary survey

#### 4.3. Evaluation of Structural Model

Path analysis using PLS measures the direct influence and moderation effect.

##### 4.3.1. Direct Influence

PLS-bootstrapping at 5000 was used to test the structural model. The results of the direct impact indicated in Table 5 report that financial inclusion has a direct positive substantial

influence on the well-being of working women.

The path coefficient  $\beta$  suggests the strength of influences of antecedent variables on their subsequent endogenous construct. The  $\beta$ , equal to 0.922, indicates a strong influence of financial inclusion on the well-being of women workers. This effect is significant, as indicated by the p-value, which is less than 0.05 and  $t > 1.96$ , as indicated by Table 6 and Figure 4.

**Table 5.** Bootstrapping Results of direct effect

Hypothesis	Path	Beta	Sample mean (M)	S. D	T statistics	P value	F <sup>2</sup>	Decision
H1	FI - > FWB	0.922	0.904	0.131	7.055	0.000	0.238	Accepted

Source: Data gathered through primary survey

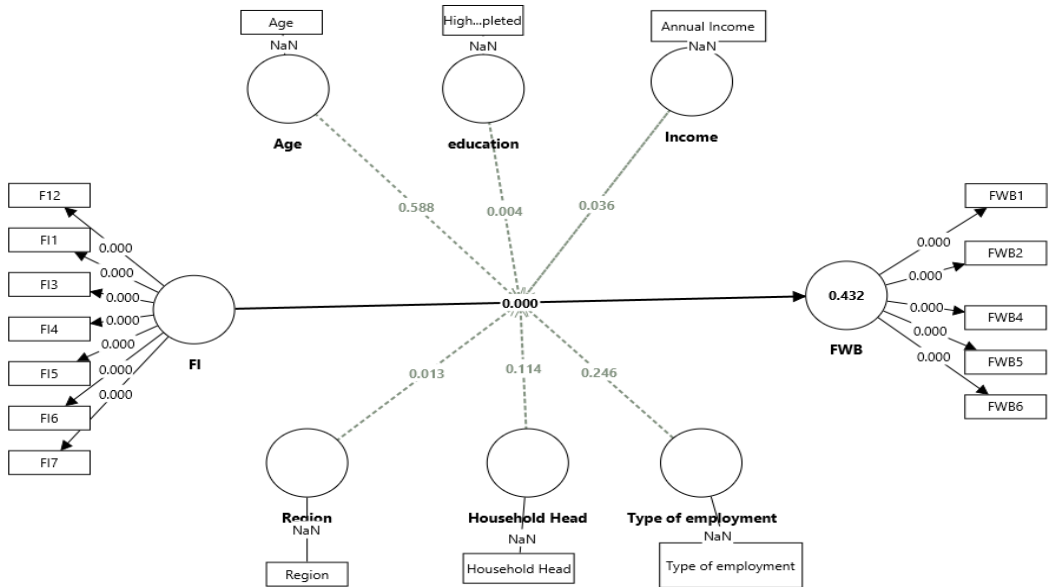


Figure 4. PLS Path model

Source: Smart PLS

$R^2$  is the statistical measure that can assess how well the antecedents explain variance for the endogenous construct. Table 6 shows that financial inclusion's antecedent factor explains 43.2 % of the variance in financial well-being. At the same time, adjusted  $R^2$  represents the modified version of  $R^2$  that adjusts the number of predictors in

the given model. These measures are used to determine how well the model fits the data. A higher value indicates better predictive accuracy of the model. A  $Q^2$  of 0.342 suggests that the model adequately predicts financial well-being. This represents that the variables in the model have meaningful predictive capability.

Table 6. Predictive Power and Relevance

Latent	$Q^2$	$R^2$	Adjusted $R^2$
FWB	0.342	0.432	0.406

Source: Data gathered through primary survey

#### 4.3.2. Moderation Influence

Table 7 depicts the moderation influence of different socio-economic education and demographic samples on financial inclusion and well-being. Results illustrate that age, employment type and the household head have no moderation influence on well-being relationships ( $p > 0.05$  or  $t < 1.96$ ). There is

no significant difference in the relationship between inclusion and well-being among young and mature women ( $p = 0.588$ ), regularly employed and self-employed ( $p = 0.246$ ) and women with male and female household heads ( $p = 0.114$ ). The influence of financial inclusion on well-being significantly influences women with different education

**Table 7.** Moderation Effect on FI->FWB

Hypothesis	Demographic factors	Groups	Sample Size	Regression weight	Standard deviation(S.D)	t-statistics	p-value	Conclusion
H2	Age	Young	209	-0.074	0.136	0.541	0.588	Rejected
		Mature	81					
H3	Education	Low	115	-0.386	0.134	2.878	0.004*	Accepted
		High	175					
H4	Income	Low	229	0.304	0.145	2.095	0.036*	Accepted
		High	61					
H5	Household head	Male	200	-0.206	0.130	1.580	0.114	Rejected
		Female	90					
H6	Region	Urban	209	-0.365	0.146	2.495	0.013*	Accepted
		Rural	81					
H7	Employment Type	Employed	197	0.147	0.127	1.160	0.246	Reject
		Self-employed	93					

\*\*indicates significant at 5% significance level".

**Source:** Data gathered through primary survey

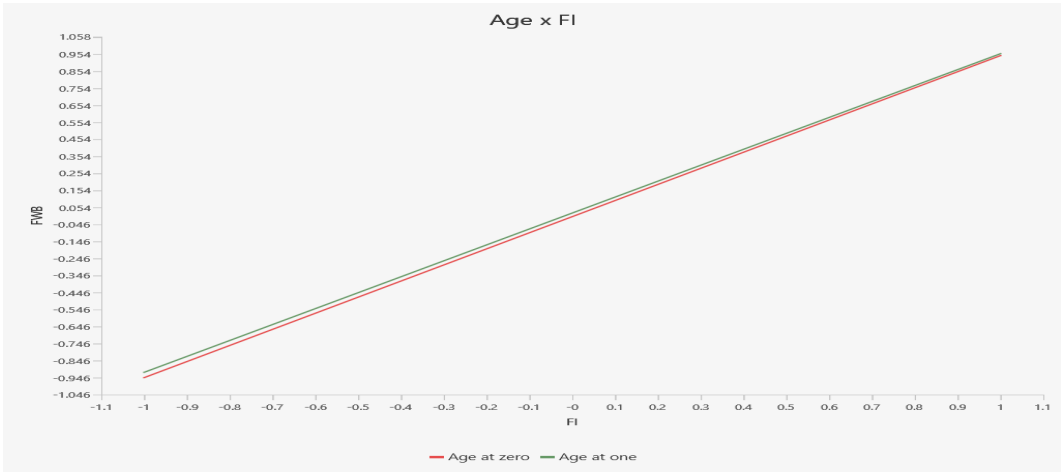
levels, income levels, and women living in other regions ( $p < 0.05$  or  $t > 1.96$ ). It is found that a significant difference exists between women with low and high education ( $p = 0.004 < 0.05$ ) and low and high income ( $p = 0.036 < 0.05$ ) and women living in rural and urban regions ( $p = 0.013 < 0.05$ ).

## 5. Discussions

The results of direct influence indicate that financial inclusion has a significant positive impact on women's financial well-being, as represented by the acceptance of H1 in Table 6. This implies that financial inclusion provides women adequate access to financial resources like savings, credit, loans, etc., enabling them to save money for emergencies and invest in small businesses, ultimately improving their financial stability. By accessing financial services, women can take control of their financial lives and make decisions regarding spending, investment, and lending with confidence and self-reliance. The

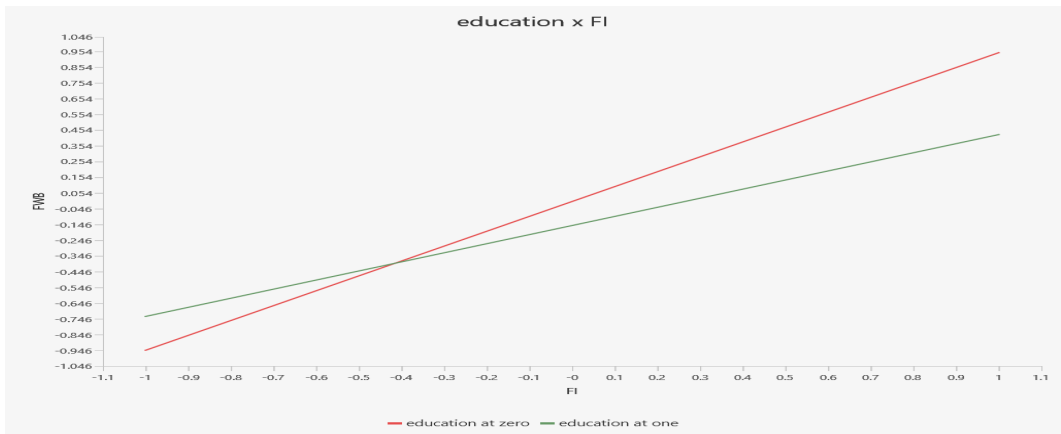
findings of the study align with the research work conducted by Huang and Guo (2020); Nandru et al. (2021) and Rashid et al. (2022)

Figure 5 depicts the interaction between two age groups (young vs mature) and financial inclusion on well-being. The two lines represent two different age groups (age at zero with red line) and mature (age at one with green line). Results depict that the lines for both age groups are very close, indicating little difference in the financial well-being between young and mature individuals when financial inclusion remains at the lower end. The slope of both lines is almost identical, representing that the rise in financial inclusion has a similar effect on financial well-being for both young and mature individuals. This suggests that age does not significantly influence the relationship between financial inclusion and well-being. The influence of financial inclusion on well-being remains consistent regardless of individual age.



**Figure 5.** Interaction between age and financial inclusion on financial well-being

**Source:** Created through Smart PLS



**Figure 6.** Interaction of Financial inclusion and education on financial Well-being

**Source:** Created through Smart PLS

Figure 6 depicts the interaction between education (low vs high) and financial inclusion on well-being. The two lines represent the two different education levels: low (education at zero, red) and high (education at one, green) education. A clear difference indicates that, on average, financial well-being is lower for low-education groups than higher education when financial inclusion exists at the lower end. As financial inclusion rises,

financial well-being rises for both low and high-education groups. The positive slope of both lines represents this. In the low-education group, enhanced financial inclusion has a pronounced influence on improving women's financial well-being, as defined by the steeper slope lines. For high-education groups, increased financial well-being leads to better wellness, as indicated by the green lines and gentler slope. This shows that

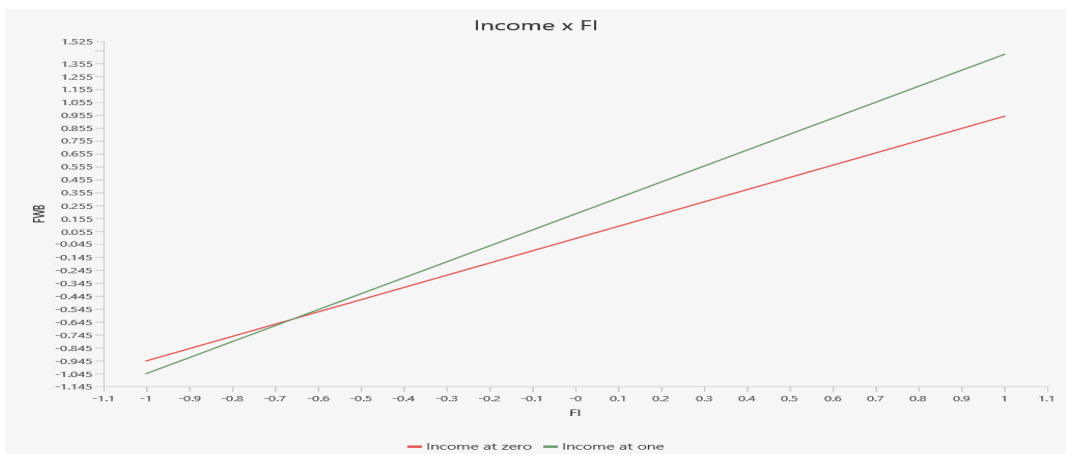
improving financial inclusion significantly positively influences financial well-being for low- and high-education groups, but it is more vital for low-education groups. It suggests that women of high-education groups might already be using advanced financial products.

In contrast, low-education individuals might begin to use essential financial services such as savings, access to technology, and microloans. An increase in financial inclusion leads to substantial improvements in their financial situations. The results align with the research (Kuma & Godana, 2023; Mahdzan et al., 2020).

Figure 7 represents the interaction between income (low vs high) and financial inclusion on women’s financial well-being. There is a visible and clear difference between the average financial well-being of women across the low-income group (at zero with a red line) and the high-income group. As financial inclusion rises, financial well-being increases for women of both income groups. The slope appears steeper for the high-income groups than for the low-income group. This trend suggests that a rise in financial inclusion

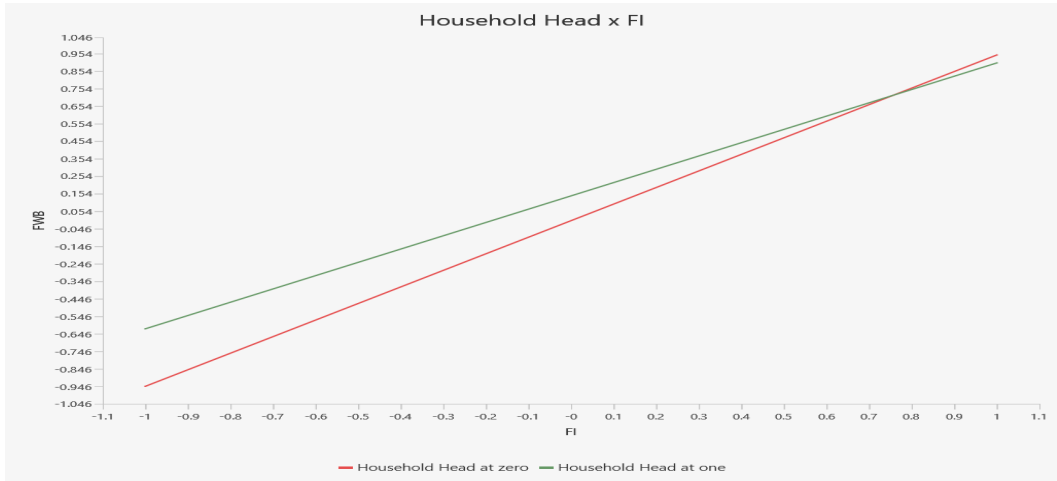
has a more profound positive influence on financial well-being in the high-income group compared to the lower-income group. In summary, this indicates that the impact of financial inclusion on the income group is significantly more substantial for the higher income group. Findings support the research work conducted by (Kuma & Godana, 2023; Mahdzan et al., 2020).

Figure 8 indicates the interaction between the gender of household heads and financial inclusion on their financial well-being. The two red and green lines indicate the household head, where male heads are represented with zero and red lines, while female heads are represented with one and green lines. When financial inclusion is at the lower end, financial well-being is lower for the households managed by males and higher for those managed by females. As financial inclusion rises, financial well-being also increases for both types of households’ head women, as indicated by the positive slope of the lines. The hill of female-headed households appears steeper than that of male household heads. This implies that a rise in

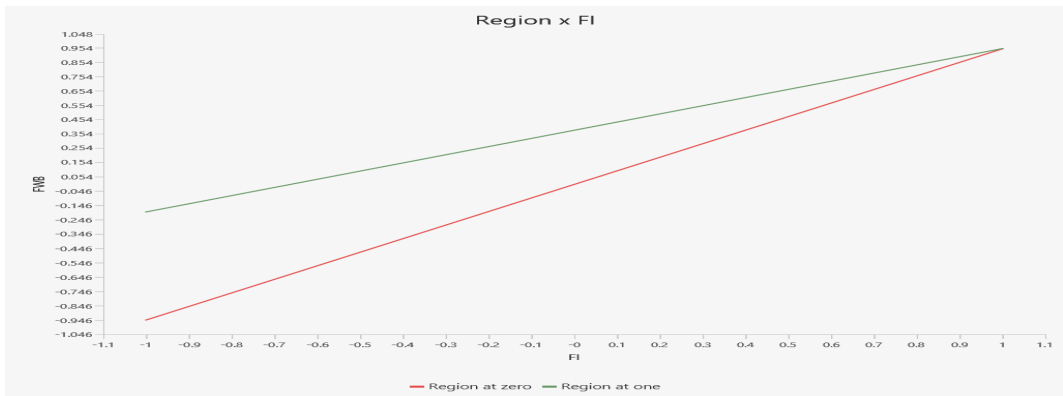


**Figure 7.** Interaction of Financial inclusion and income on financial well-being

Source: Created through Smart PLS



**Figure 8.** Interaction of Financial inclusion and household head on financial well-being  
**Source:** Created through Smart PLS

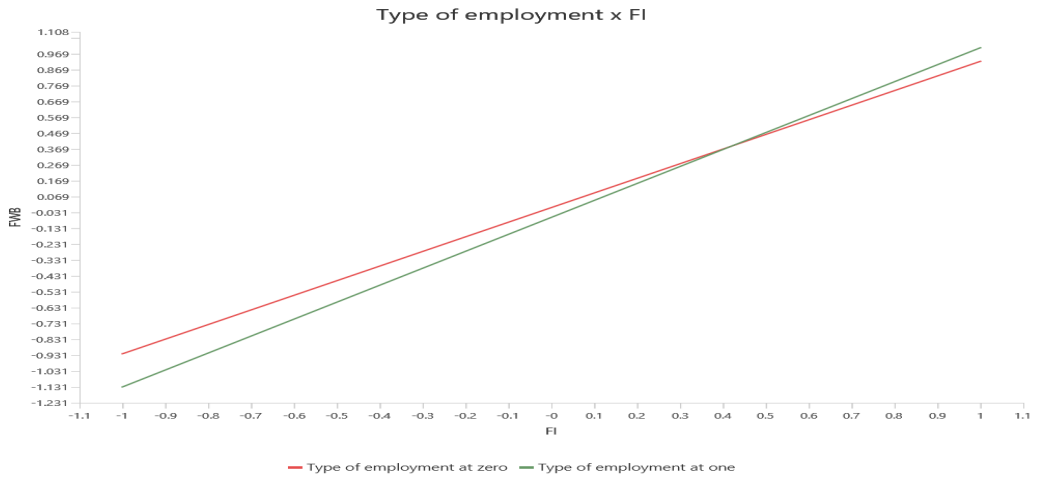


**Figure 9.** Interaction of Financial Inclusion and region on financial well-being  
**Source:** Created through Smart PLS

financial inclusion has a more significant influence on the financial well-being of female households. However, this effect is not statistically significant, as represented by the p-value in Table 8.

Figure 9 indicates the interaction between regions and financial inclusion on women's financial well-being. The red and green lines indicate two regions: Urban (region depicted by zero with the red line) and Rural (illustrated by one with a green line). This shows a

clear and visible difference: on average, urban women's financial well-being is lower than rural women's. As financial inclusion increases, financial well-being rises for both rural and urban areas, as indicated by the positive slope of both lines. Still, the slope in the rural region (green line) appears steeper than that of the urban region (red line). This trend indicates that financial inclusion has a more substantial positive influence on financial well-being in rural areas than in urban. Within



**Figure 10.** Interaction of Financial Inclusion and employment type on financial well-being

**Source:** Created through Smart PLS

the rural area, enhanced financial inclusion has a more profound impact on their financial well-being, represented by a steeper slope of the green line.

Figure 10 depicts the interaction between employment type (regular employed or self-employed) and financial inclusion on well-being. The two lines represent two different employment types, regular employed (employment at zero with red line) and self-employed (employment at one with green line). Findings illustrate that lines for both the employment types are very close, representing little difference in the status of financial wellness between regular and self-employed. The slope of both lines is almost identical, representing that the ratio of change in financial inclusion has an almost similar influence on financial well-being for both regular and self-employed women.

For every empirical work, generalization of the findings is vital, as it determines the extent to which findings derived from the sample can be applied to the broader set of all over the population. The generalizability of the results

depends upon the regional characteristics and adequacy of sample size. This work was conducted by taking a sample from 290 female respondents in Delhi-NCR. The sample size is small, yet the results can be generalized, as it is adequate for applying the structure equation modelling employed in this work. PLS-SEM can produce reliable results even with small sample sizes, particularly when critical assumptions regarding reliability, validity and model fitness criteria are met. The specific area of Delhi-NCR was chosen due to its high socio-economic, educational, occupational, and regional diversity, being India's capital and largest metropolises, with approximately 46% of the population being women (NSO, 2021). In the area, IT, healthcare and education are the dominant sectors (Saigal, 1999).

Additionally, several existing micro-level studies have drawn meaningful conclusions using comparable sample sizes and areas. Kuma and Godana (2023) conducted a study in Ethiopia to investigate the influence of different socio-economic

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factors on women's economic wellness by gathering data from 100 respondents, providing valid conclusions within their regional scope. Similarly, Gafoor and Amilan (2024) examine the influence of Fintech adoption on financial well-being using a sample of 208 participants, revealing valid conclusions and SEM capability to reveal the relationship within the context effectively. Additionally, Rohatgi et al. (2023) examine the influence of financial literacy and other factors on women's economic empowerment by gathering data from 286 women respondents in the Delhi-NCR area, demonstrating the validity of this micro-level study conducted in the same region with almost similar sample size. Based on this evidence, it can be concluded that the sample size is adequate to draw meaningful conclusions relevant to the women living in the area of Delhi-NCR.

## 6. Implications of the study

### 6.1. Theoretical Implications

This work significantly contributes to the existing knowledge on financial inclusion and well-being relationships by emphasizing the critical role of demographic variables as moderating variables. By considering factors such as age, education, income, region, and gender of household heads, this study offers insights into how these factors influence financial well-being in the context of working women. The study's findings show that factors such as income, education, and region and their interaction with financial inclusion significantly influence and lead to financial well-being. This suggests that a nuanced understanding of these factors is critical for promoting women's financial wellness. This study extends beyond the studies that only focus more on gender differences, which is

noted due to differences in inclusion and risk-taking abilities between males and females.

This work broadens the scope of women's financial well-being by applying this extended and improved framework in this prominent area related to working women. It provides more practical insights into how these can be used for other employment groups, specifically in the informal economy. This work can prove valuable for developing more targeted interventions to promote the inclusion and well-being of women workers by considering the diverse needs of different demographic settings.

### 6.2. Practical Implications

This study underscores the significance of different factors such as income, education region, and financial access to products and services when designing financial well-being programs for women workers. Findings suggest that governments, policymakers, and financial institutions should tailor financial inclusion and wellness initiatives to address the unique needs of different groups in the women's workforce.

Lack of access, usage, and availability of financial services leads to increased financial insecurities in the context of working women. More Initiatives should be tailored to include women workers in the financial system by extending the facilities of ATMs, microcredits, and others in all areas. These practices can help to reduce financial distress and improve financial well-being.

Women workers who belong to low-income groups are more likely to experience financial insecurities and lower financial inclusion. Designing such types of products and services that can cater to the unique needs of women workers can lead to improving their financial wellness. More education

and training programs should be tailored to upgrade women's knowledge and practical skills, which can contribute to increasing their income level and the path to financial wellness. Women workers should be guided to adopt healthy financial practices such as managing debt, maintaining emergency funds, and balancing spending with their income and savings. Adoption of these practices can reduce their financial stress and improve their well-being. This study emphasizes recognizing the diverse needs of the women workforce to design customized financial well-being programs considering factors such as income, education, and region. This can reduce financial distress and improve women workers' wellness, leading to a more productive and satisfied workforce.

### 7. Limitations and Future Research Directions

This study makes numerous additions to the existing literature. Still, some limitations need to be acknowledged. This study took respondents from different demographics within the Delhi-NCR area. Cross-country studies within this area can be conducted to draw more valuable insights. Additionally, this study focused only on working women deprived of a survey section. More work can be undertaken to perform this study on other deprived sections to gain deeper insights. Further work can be conducted to study the unique barriers and obstacles women face in their empowerment journey. This study has taken the moderating influence of many socio-economic and demographic factors by not considering the impact of family structure, including the number of family members, family type, etc. Future work can be conducted by incorporating the role of family structure in this association, which could provide a more

comprehensive and nuanced understanding of different factors that influence the association between financial inclusion and well-being. More studies in this area can be performed to analyze the influence of these specified factors on women's entrepreneurial potential to start a new startup. More work based on longitudinal time frames can be undertaken to investigate the improvement in women's economic empowerment status. This work was conducted using a limited sample size. More work can be performed by expanding the sample size to draw more generalized results. More work can be done to evaluate the influence of policies such as Jan Dhan, Mudra, E-haat, and other initiatives in financially empowering women.

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