



## EMPOWERING SUSTAINABLE WELL-BEING: THE ROLE OF DIGITAL FINANCIAL LITERACY IN THE MODERN AGE

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### Abstract

Digital Financial Literacy (DFL) is essential for achieving financial security and well-being in an increasingly digital financial world, aligning with several United Nations Sustainable Development Goals (SDGs). The study explores how demographic factors such as age, education, gender, and marital status interact with DFL, financial well-being, income, and health outcomes, contributing to the goals of quality education (SDG 4), gender equality (SDG 5), and reduced inequalities (SDG 10). The study, with 504 respondents from the National Capital Region of India, examined these relationships using PLS-SEM. The findings reveal that DFL significantly impacts financial well-being (FWB), health, and income; education significantly influences all these outcomes. However, age is complicated, as it is negatively correlated with DFL and health but positively, though insignificantly, associated with financial well-being.

Additionally, married people enjoy better financial and health conditions than single people. Therefore, this study calls for focused interventions on improving DFL, especially among the elderly, the less educated, and males, to achieve sustainability in financial behavior. It provides new insights into the research areas of fintech innovation and sustainable finance, informing future policy actions toward poverty reduction (SDG 1), improved financial resilience (SDG 8), and better health outcomes (SDG 3) through increased digital financial literacy.

**Keywords:** Digital financial literacy, sustainable well-being, health outcomes, PLS-SEM, financial security, demographic factors, sustainable development goals, financial well-being.

### 1. INTRODUCTION

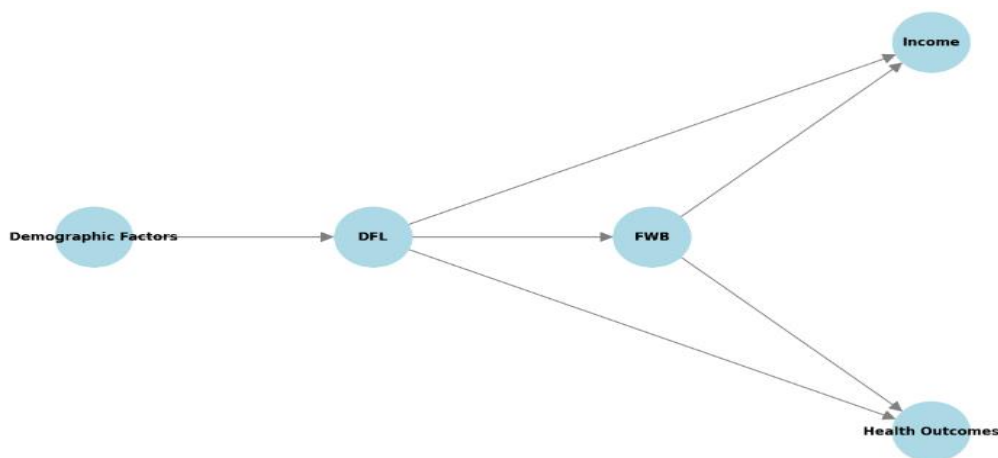
As financial transactions increasingly shift to digital platforms, individuals' ability to navigate these environments has become essential for ensuring financial security and sustainable well-being. Digital Financial Literacy (DFL) plays a critical role in scaling up digital financial skills foundational to the realization of many SDGs: poverty reduction (SDG 1), good health and well-being (SDG 3), quality education (SDG 4), and inequality reduction (SDG 10). DFL ensures long-term well-being, enables people to make informed choices, and provides access to various financial services and products. As Chhillar and Arora (2022) note, the personal finance sector is changing due to advanced digital tools and technologies, such as artificial intelligence, automation, open banking, and machine learning. When combined with elevated levels of DFL, these fintech innovations provide significant avenues for sustainable financial practice. The constructive interaction between DFL and fintech solutions may have a multiplier effect, leading to increased financial inclusion, reduced poverty, and greater economic resilience, which aligns with the fulfillment of SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure). Noor et al. (2020) explain that financial

literacy drives financial inclusion among all layers of Pakistani society, irrespective of demographic variables such as age, gender, marital status, occupation, income, and geographic location, which aligns with SDG 10 (Reduced Inequalities).

Despite the widely recognized role of DFL in modern life, its association with health status and economic well-being has yet to receive much attention. This study examines the extent to which DFL is associated with a range of well-being dimensions, including physical and mental health, financial security, and demographic factors, as moderators of the effectiveness of DFL in facilitating sustainable well-being. This study suggests that DFL is key in building resilience for individuals and society in these increasingly digital times. This study explored how DFL interacts with health and financial outcomes to inform policy, education, and practice. The results support the active engagement of people in the digital economy, contributing to the higher-order goals of sustainable finance, poverty reduction, and SDG attainment. As financial technology continuously evolves, DFL is becoming increasingly necessary to lead to inclusiveness and reduced economic inequity, thereby empowering people and communities toward sustainable development.

**2. THEORETICAL BACKGROUND**

The conceptual Model of the Study integrates demographic factors (age, education, gender, and marital status) as predictors of DFL, which in turn influences Financial Well-Being (FWB), Income, and Health outcomes (Figure 1). This model reflects how these elements are interrelated in assessing sustainable well-being. It is based on Social Cognitive Theory and Human Capital Theory. Social Cognitive Theory, developed by Albert Bandura, emphasizes how personal factors, environmental influences, and behaviors interact to form learning and development. In this case, DFL is regarded as a behavior influenced by demographic factors such as age, education, and gender. This is well within the scope of SCT, which examines how individual differences and social contexts affect learning and behavior. It is also partly inspired by ideas from the Human Capital Theory, where education or skills, in this case, DFL, are regarded as investments that yield returns in improved economic outcomes in the form of increased income and well-being. The model predicts that improvements in DFL and education will significantly improve financial and health outcomes, reflecting the returns on investment in human capital. These theories offer a conceptual framework for how demographic factors influence DFL and, in turn, how DFL influences FWB and health.



**Figure 1. The Conceptual model of the study is based on Social Cognitive Theory and Human Capital Theory**

Source: Authors’ Own.



### 3. OBJECTIVES OF THE STUDY

Keeping in consideration the multidimensional effect of DFL on sustainable well-being in the modern world, the study has two key objectives:

- Evaluate the Impact of Demographic factors on Digital Financial Literacy, Financial Well-Being, Income, and Health outcomes.
- Examine the interplay of Digital Financial Literacy, Financial Well-Being, Income, and Health Outcomes.

### 4. REVIEW OF LITERATURE

The study examines the relationships between age, Digital Financial Literacy (DFL), FWB(FWB), health, income, education, gender, and marital status, grounded in existing literature.

#### Age and DFL

Age is negatively related to DFL because older people usually cannot practice modern technologies as dexterously as younger people, as there is reduced cognitive flexibility and narrower exposure to technology. Whereas aging often goes hand in hand with more incredible wealth and financial security, boosting financial well-being on the one hand, the correlation of aging is negative due to deteriorating health and an increase in chronic diseases; Gu & Dupre 2021. Earnings usually rise with professional progress with increasing age; however, earnings tend to stagnate or decline as a person approaches his or her retirement date. The null hypotheses are as follows:

H<sub>01a</sub>: Age has no significant effect on Digital Financial Literacy.

H<sub>01b</sub>: Age does not significantly influence FWB.

H<sub>01c</sub>: Age does not significantly impact health.

H<sub>01d</sub>: Age does not significantly influence income.

#### DFL and Its Effects

DFL enhances individuals' ability to make informed financial decisions, access a broader range of financial services, and improve personal financial management (Potrich, Vieira, & Kirch, 2015). It positively impacts health by facilitating access to financial products such as insurance and savings, reducing stress, and promoting well-being. DFL also allows individuals to leverage digital financial tools for income generation and investment (Lusardi and Mitchell, 2014). The null hypotheses are as follows:

H<sub>02a</sub>: DFL does not significantly influence FWB.

H<sub>02b</sub>: DFL does not significantly impact Health.

H<sub>02c</sub>: DFL does not significantly influence Income.

#### Education's Role in Financial and Health Outcomes

While education is linked to better financial literacy, this relationship is significant only when financial literacy is a core focus of the education system. Lower levels of formal education may stimulate interest in financial literacy. Higher education is usually associated with better FWB, though even well-educated individuals can face financial challenges such as repaying student loans (Zhan & Sherraden, 2011). Education correlates with better health outcomes by enabling



access to healthcare and reducing stress through higher income (Ryu & Fan, 2023). However, pursuing higher education can sometimes lead to stress and unhealthy behaviors. The null hypotheses are as follows:

H<sub>03a</sub>: Education does not significantly influence DFL.

H<sub>03b</sub>: Education does not significantly influence FWB.

H<sub>03c</sub>: Education does not significantly impact Health.

H<sub>03d</sub>: Education does not significantly influence Income.

### **FWB and Health**

Hassan, Kassim, and Said (2021) emphasize that FWB is more linked to mental health rather than physical health, suggesting an indirect relationship. Piumatti (2017) further complicates the relationship by showing that among the elderly, FWB's impact on health is influenced by age and existing conditions, indicating that its direct effect on health may not be significant. The null hypothesis is:

H<sub>04</sub>: FWB does not significantly affect Health.

### **Income's Influence on FWB and Health**

Income is crucial for FWB, as it allows individuals to meet their needs and save for the future (Diener & Biswas-Diener, 2002). Higher-income is linked to better health outcomes by providing access to healthcare and reducing financial stress (Cutler & Lleras-Muney, 2010). The null hypotheses are as follows:

H<sub>05a</sub>: Income does not significantly affect FWB.

H<sub>05b</sub>: Income does not significantly influence Health.

### **Gender Disparities in Financial Literacy and Well-Being**

Gender disparities in DFL often show males scoring lower than females, especially where financial management is traditionally a female responsibility. Men may experience lower FWB due to societal pressures as primary breadwinners, leading to increased financial stress (Dolan et al., 2008). Men also generally have worse health outcomes, attributed to riskier behaviors and reduced medical care access (Courtenay, 2000). The null hypotheses are as follows:

H<sub>06a</sub>: Gender does not significantly influence DFL.

H<sub>06b</sub>: Gender does not significantly influence FWB.

H<sub>06c</sub>: Gender does not significantly affect Health.

H<sub>06d</sub>: Gender does not significantly influence Income.

### **Marital Status and Financial Literacy**

Married individuals have higher DFL due to shared financial decision-making and family budgeting. Marriage also enhances FWB through dual incomes and shared financial responsibilities (Zagorsky, 2005). Additionally, married people typically enjoy better physical health due to emotional and economic support (England, 2001). The likelihood of earning more increases in marriage, especially for men (Lichter, Qian, & Mellott, 2006). The null hypotheses are as follows:

H<sub>07a</sub>: Marital Status does not significantly affect DFL.

H<sub>07b</sub>: Marital Status does not significantly influence FWB.



H<sub>07c</sub>: Marital Status does not significantly impact Health.

H<sub>07d</sub>: Marital Status does not significantly influence Income.

### **Mediation Effects of FWB and Income**

DFL can improve health outcomes by enhancing access to financial resources and enabling better decision-making independent of income levels (Lusardi & Mitchell, 2014). While income is traditionally linked to health outcomes, DFL can also positively impact health by promoting prudent financial behaviors like budgeting, which are not necessarily tied to income. The null hypotheses are as follows:

H<sub>08</sub>: The relationship between DFL and Health is not mediated by FWB.

H<sub>09</sub>: The relationship between DFL and FWB is not mediated by Income.

H<sub>010</sub>: The relationship between Income and Health is not mediated by FWB.

H<sub>011</sub>: The relationship between DFL and Health is not mediated by Income.

## **5. RATIONALE OF THE STUDY**

In this rapidly changing financial environment today, Digital financial literacy is quite an important enabler toward sustainable finance, with FinTech innovation the leading force. DFL is crucial in effectively managing finances and welfare in the modern digital world. DFL positively influences financial behavior and thus helps accomplish financial inclusion goals (SDG 10) and economic resilience (SDG 8). Although several studies have identified the relationship between financial literacy and lower financial stress, a huge gap in the literature exists regarding general health and well-being (SDG 3). The study tries to understand how improved DFL leads to improved financial and health outcomes that contribute to the overall goal of sustainable development. DFL is likely to emerge as one of the pre-conditions for the practical usage of digital platforms. The study helps identify probable groups at risk from financial exclusion within the National Capital Region of India. By exploring the interaction of DFL with demographic factors, the study underlines how financial literacy empowers people to use FinTech innovations. The findings help policymakers make necessary interventions to enhance DFL among vulnerable groups. These are critical activities toward attaining sustainable financial practices, SDG 12, taking people out of poverty; SDG 1, advancement in health burdens; SDG 3, and therefore, an inclusive and resilient economy.

## **6. RESEARCH METHODOLOGY**

It is a quantitative research study that investigates the influence of DFL on health and FWB, along with demographic moderators. Using judgment and snowball sampling, a cross-sectional online survey was conducted among 504 respondents from the National Capital Region (NCR) of India. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4.0, chosen for its effectiveness in handling complex models and non-normal data.

The sample was diverse in age, gender, income, and education. The "10 times rule" guided the sample size determination. DFL levels were assessed using a scale by Chhillar, Arora, and Chawla (2024), while health outcomes were measured with the SF-12v2 and FWB with the CFBP scale (2015). The analysis involved measurement and structural model assessments, per Hair et al. (2018).

## 7. ANALYSIS AND RESULTS

### 7.1. Demographics

A cross-sectional online survey was conducted among 504 respondents from India's National Capital Region (NCR). The demographic profile of the respondents indicates a balance in gender representation, as 49.3% of the participants are male and 50.7% are female. An overwhelming portion of the respondents were married, 67.3%, with almost equal shares of married males and females, each accounting for 33.7%. Most of the respondents fall within the 18-39 age bracket, with 36.3% falling in the 18-29 years category and 39.3% between the ages of 30-39 years. The remainder fell within the 40-49 age bracket (15.6%), and 8.8% were 50 years and above. As for education, 57.5% reported post-graduation or higher, while 35.5% had completed graduation or equivalent, and only a meager percentage, 7%, had education below the secondary level. The employment status indicates that 71.1% fall in the category of the salaried class, while 28.9% are self-employed. The distribution on annual income is 32.5% between 2-5 Lakhs, 28.5% between 5-10 Lakhs, and 23% above 10 Lakhs, while very few earn below 2 Lakhs per annum. The average income is between 5 Lakhs to 10 Lakhs.

### 7.2. Measurement Model Assessment as per Hair et al., 2018

The study used PLS-SEM and applied a hierarchical component model for multidimensional higher-order constructs. For this measurement model evaluation, a disjoint two-stage approach (Agarwal & Karahanna, 2000; Becker et al., 2012) was used for specifying and estimating higher-order constructs. Figure 2 shows the path coefficient of the reflective measurement model of LOCs.

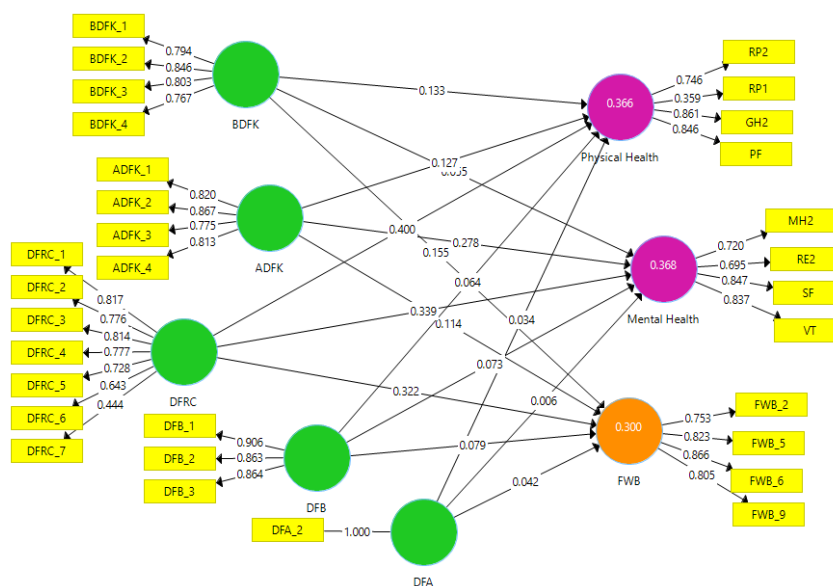


Figure 2. Reflective Measurement Model of LOCs

Source: SmartPLS output.

### 7.3. Stage 1 - Reflective Measurement Model of LOCs

#### 7.3.1. Assessment of Item Loadings and Multicollinearity

The item loadings express the correlation of indicators with their respective constructs. These loadings above 0.70 were considered strong (Hair et al., 2006). All items recorded loadings above 0.70 (see Table 1) and are suitable by indicator reliability standards. Variance Inflation Factor (VIF) values were calculated to check for multicollinearity among the indicators. The

VIF values ranged from 1.000 to 2.512 (see Table 1), all below the threshold of 5, indicating that multicollinearity is not a concern in the study.

### 7.3.2. Internal Consistency Reliability and Convergent Validity

Internal consistency reliability was evaluated using Cronbach's alpha, rho\_A, and composite reliability (CR). As indicated in Table 1, Cronbach's alpha, rho\_A, and composite reliability are all above the recommended threshold of 0.70, confirming the internal consistency of the constructs. Convergent validity was assessed using the Average Variance Extracted (AVE), which exceeds the threshold of 0.50, confirming adequate convergent validity.

**Table 1: Reliability and Convergent validity**

Construct/Item	Loading	VIF	Cronbach's Alpha	Rho_A	Composite Reliability	AVE
ADFK			0.838	0.85	0.891	0.672
ADFK_1	0.82	1.704				
ADFK_2	0.867	2.399				
ADFK_3	0.775	1.916				
ADFK_4	0.813	1.7				
BDFK			0.817	0.821	0.879	0.645
BDFK_1	0.794	1.8				
BDFK_2	0.846	2.193				
BDFK_3	0.803	1.835				
BDFK_4	0.767	1.401				
DFA			0.78	0.76	0.72	0.522
DFA_2	0.889	1.3				
DFB			0.858	0.943	0.91	0.771
DFB_1	0.906	1.876				
DFB_2	0.863	2.512				
DFB_3	0.864	2.354				
DFRC			0.845	0.87	0.883	0.525
DFRC_1	0.817	2.424				
DFRC_2	0.776	1.943				
DFRC_3	0.814	2.463				
DFRC_4	0.777	1.944				
DFRC_5	0.728	2.009				
DFRC_6	0.643	1.818				
DFRC_7	0.644	1.234				
FWB			0.828	0.837	0.886	0.66
FWB_2	0.753	1.532				
FWB_5	0.823	1.95				
FWB_6	0.866	2.144				
FWB_9	0.805	1.694				
Physical Health			0.72	0.763	0.81	0.535
GH2	0.861	1.937				
PF	0.846	1.843				
RP1	0.659	1.042				
RP2	0.746	1.393				
Mental health			0.78	0.794	0.859	0.605
SF	0.847	2.2				
VT	0.837	2.154				
RE2	0.695	1.353				
MH2	0.72	1.442				

Source: SmartPLS output.

### 7.3.3. Discriminant Validity

The discriminant validity was checked using the Fornell-Larcker criterion and the HTMT ratio (Table 2). According to the Fornell-Larcker criterion, the results indicated that each construct's AVE square root was higher than its correlation with other constructs. All the HTMT values for the construct pairs were below the threshold of 0.85. The highest value was 0.874, supporting the discriminant validity. The cross-loadings in Table A in the Appendix indicated that each indicator loaded higher on its respective construct than on any other construct, further confirming discriminant validity.

**Table 2: Discriminant Validity**

Fornell and Larcker criterion								
Constructs	ADFK	BDFK	DFA	DFB	DFRC	FWB	Mental Health	Physical Health
ADFK	0.82							
BDFK	0.474	0.803						
DFA	0.145	0.08	0.899					
DFB	0.264	0.308	0.085	0.878				
DFRC	0.532	0.594	0.226	0.304	0.725			
FWB	0.385	0.428	0.15	0.258	0.508	0.813		
Mental Health	0.505	0.412	0.134	0.268	0.544	0.593	0.778	
Physical Health	0.425	0.453	0.159	0.263	0.574	0.611	0.741	0.732
HTMT								
Constructs	ADFK	BDFK	DFA	DFB	DFRC	FWB	Mental Health	Physical Health
ADFK								
BDFK	0.545							
DFA	0.155	0.085						
DFB	0.282	0.345	0.079					
DFRC	0.607	0.72	0.225	0.347				
FWB	0.449	0.508	0.167	0.295	0.588			
Mental Health	0.62	0.505	0.15	0.303	0.646	0.722		
Physical Health	0.572	0.578	0.191	0.337	0.732	0.778	0.874	

Source: SmartPLS output

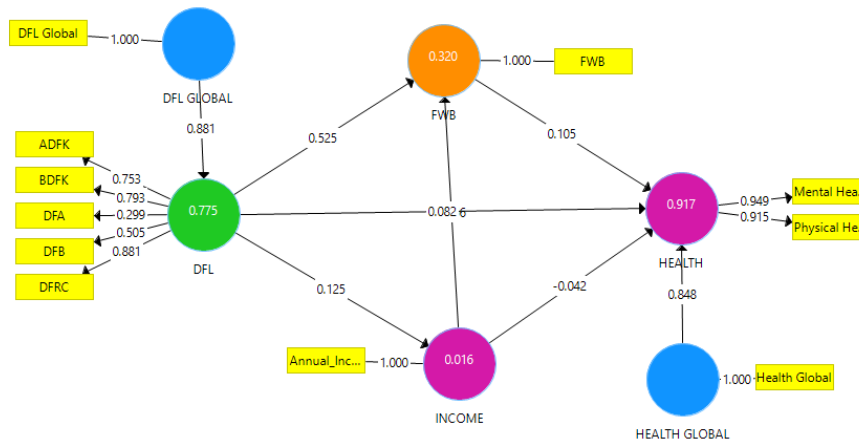
The results of the measurement model assessment confirm that the constructs exhibit good reliability, convergent validity, and discriminant validity, as per the criteria outlined by Hair et al. (2018).

### 7.4. Stage 2: Higher-Order Construct (HOC) Validity Assessment

In Stage 2 of the disjoint two-stage approach, the validity of the higher-order constructs (HOCs) was assessed. As shown in Table 3, the VIF values ranged from 1.000 to 2.218, all below the threshold of 5. This indicates that multicollinearity is not a concern, and the constructs are adequately distinct. Redundancy analysis was conducted to assess the predictive relevance of the HOCs (Figure 3). Convergent validity of formatively measured HOC is established using



redundancy analysis; the HOCs are correlated to the alternative single-item measurement of the same construct (Hair et al., 2014).



**Figure 3. Redundancy analysis**

Source: SmartPLS output

Table 3 shows the outer loadings and weights of indicators related to the HOCs, which are all high and significant. The outer loadings and weights were above the threshold value of 0.7, with T-statistics also showing their significance at  $p < 0.001$ . The results validate using HOCs, making it suitable for the subsequent structural model assessment.

**Table 3: Higher order construct validity.**

Constructs	VIF	Outer Loadings	Outer Weights
ADFK	1.489	0.777 <sup>a</sup>	0.344 <sup>a</sup>
BDFK	1.679	0.794 <sup>a</sup>	0.325 <sup>a</sup>
DFA	1.062	0.293 <sup>a</sup>	0.111 <sup>a</sup>
DFB	1.144	0.52 <sup>a</sup>	0.199 <sup>a</sup>
DFRC	1.856	0.857 <sup>a</sup>	0.395 <sup>a</sup>
Mental Health	2.218	0.932 <sup>a</sup>	0.532 <sup>a</sup>
Physical Health	2.218	0.934 <sup>a</sup>	0.54 <sup>a</sup>

Note: Indicates significance at 5% level.

Source: SmartPLS output

### 7.5. Structural Model Evaluation

The structural model was evaluated using various criteria, including predictive relevance ( $Q^2$ ), Coefficient of determination ( $R^2$ ), path coefficient significance, effect sizes ( $f^2$ ), PLSpredict for out-of-sample predictive relevance, and overall model fit.

**Table 4: PLSpredict, Predictive Relevance, and Coefficient of Determination**

HOCs	LOCs	PLS	LM	Difference	$Q^2 (=1-SSE/SSO)$	R	R Square
		RMSE	RMSE				
DFL	DFRC	0.962	0.969	0.007	0.039	0.093	0.086
	ADFK	0.95	0.945	-0.005			
	BDFK	0.995	0.993	-0.002			
	DFB	1.004	0.991	-0.013			

	DFA	0.998	0.999	0.001			
Financial Well-being		0.975	0.975	0	0.359	0.38	0.372
Health	Mental Health	0.984	0.986	0.002	0.455	0.537	0.53
	Physical Health	0.989	0.986	-0.003			
Annual Income		1.065	1.065	0	0.216	0.227	0.22

Source: SmartPLS output

The  $R^2$  values indicate that the model explains 38.0% of the variance in Financial Well-being, 53.7% in Health, 9.3% in DFL, and 22.7% in Income (see Table 4).

**Table 5: Effect size**

F Square	DFL	FWB	Health	Income
Age	0.058	0.007	0.009	0.051
DFL		0.43	0.195	0.043
Education	0	0.049	0.001	0.045
FWB			0.241	
Income		0.017	0.004	
Males	0.036	0.003	0.001	0.058
Married	0.001	0.02	0.003	0.014

Source: SmartPLS output

Effect sizes ( $f^2$ ) showed that Age had a moderate impact on DFL ( $f^2 = 0.058$ ) and Income ( $f^2 = 0.051$ ) but minimal effects on Financial Well-being ( $f^2 = 0.007$ ) and Health ( $f^2 = 0.009$ ). Financial Well-being had a significant effect on Health ( $f^2 = 0.241$ ), while Income had minor effects on both Financial Well-being ( $f^2 = 0.017$ ) and Health ( $f^2 = 0.004$ ). Males and Marital Status had minimal effects, with the most significant impact on Income ( $f^2 = 0.058$ ) (see Table 5). DFL significantly influenced Financial Well-being and Health, while other variables like Age and Education had more minor effects. The Stone-Geisser  $Q^2$  values confirmed predictive relevance, with DFL showing low predictive relevance ( $Q^2 = 0.039$ ), Financial Well-being and Income showing moderate relevance ( $Q^2 = 0.359$  and  $Q^2 = 0.216$ , respectively), and Health showing strong predictive relevance ( $Q^2 = 0.455$ ) (see Table 4).

Overall model fit was assessed using SRMR,  $d_{ULS}$ ,  $d_G$ , Chi-Square, and NFI. The SRMR value of 0.062 indicated a good fit, supported by  $d_{ULS}$  (0.353) and  $d_G$  (0.149) values. The Chi-Square value of 456.673 and NFI of 0.796 indicated a reasonable fit despite NFI being slightly below the ideal threshold. Finally, PLSpredict results showed minimal differences in RMSE between the Partial Least Squares (PLS) and Linear Model (LM), indicating similar predictive accuracy, with RMSE differences ranging from -0.013 to 0.007 (see Table 4). Overall, the structural model demonstrates satisfactory predictive relevance and fit, with significant path coefficients and effect sizes for the relationships between constructs.

## 7.6. Hypothesis testing results

Figure 4 and Table 8 show the bootstrapping output of the structural model in SmartPLS.

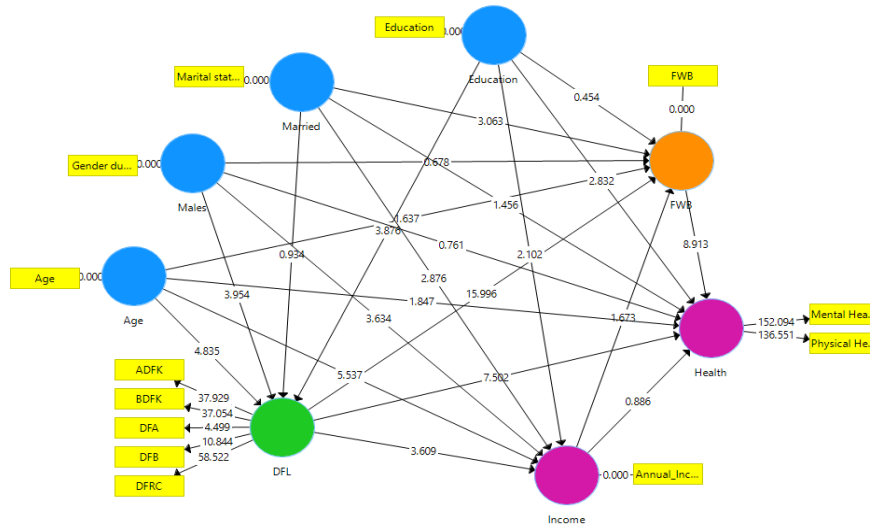


Figure 4: Bootstrapping outcome

Source: SmartPLS output

Table 6: Structural Model results.

Hypothesis	Structural Path	$\beta$	t Statistics	P Values	Results
H01a	Age -> DFL	-0.264	4.835	0	Reject
H01b	Age -> FWB	0.081	1.637	0.102	Not Reject
H01c	Age -> Health	-0.075	1.847	0.065	Not Reject
H01d	Age -> Income	0.288	5.537	0	Reject
H02a	DFL -> FWB	0.558	15.996	0	Reject
H02b	DFL -> Health	0.369	7.502	0	Reject
H02c	DFL -> Income	0.175	3.609	0	Reject
H03a	Education -> DFL	0.17	3.876	0	Reject
H03b	Education -> FWB	0.016	0.454	0.65	Not Reject
H03c	Education -> Health	0.089	2.832	0.005	Reject
H03d	Education -> Income	0.093	2.102	0.036	Reject
H04	FWB -> Health	0.429	8.913	0	Reject
H05a	Income -> FWB	0.072	1.673	0.095	Not Reject
H05b	Income -> Health	0.031	0.886	0.376	Not Reject
H06a	Males -> DFL	-0.177	3.954	0	Reject
H06b	Males -> FWB	-0.027	0.678	0.498	Not Reject
H06c	Males -> Health	0.024	0.761	0.447	Not Reject
H06d	Males -> Income	-0.148	3.634	0	Reject
H07a	Married -> DFL	0.05	0.934	0.351	Not Reject
H07b	Married -> FWB	0.144	3.063	0.002	Reject
H07c	Married -> Health	0.054	1.456	0.146	Not Reject
H07d	Married -> Income	0.137	2.876	0.004	Reject
H08	DFL -> Income -> FWB	0.013	1.413	0.158	Not Reject



H09	Income -> FWB -> Health	0.031	1.59	0.112	Not Reject
H010	DFL -> FWB -> Health	0.24	7.668	0	Reject
H011	DFL -> Income -> Health	0.005	0.832	0.406	Not Reject

Source: SmartPLS output

H01a was rejected with  $\beta = -0.264$ ,  $T = 4.835$ ,  $p < 0.001$ , indicating that age significantly negatively affects DFL. H01b was not rejected with  $\beta = 0.081$ ,  $T = 1.637$ ,  $p = 0.102$ , suggesting that age does not significantly affect financial well-being (FWB). H01c was not rejected with  $\beta = -0.075$ ,  $T = 1.847$ ,  $p = 0.065$ , indicating that age does not significantly affect Health. H01d was rejected with  $\beta = 0.288$ ,  $T = 5.537$ ,  $p < 0.001$ , suggesting that age significantly positively affects Income.

H02a was rejected with  $\beta = 0.558$ ,  $T = 15.996$ ,  $p < 0.001$ , indicating that Debt-to-Financial Liabilities (DFL) significantly affect FWB. H02b was rejected with  $\beta = 0.369$ ,  $T = 7.502$ ,  $p < 0.001$ , indicating that DFL significantly affects Health. H02c was rejected with  $\beta = 0.175$ ,  $T = 3.609$ ,  $p < 0.001$ , indicating that DFL significantly positively affects Income.

H03a was rejected with  $\beta = 0.17$ ,  $T = 3.876$ ,  $p < 0.001$ , indicating that Education has a positive and significant effect on DFL. H03b was not rejected with  $\beta = 0.016$ ,  $T = 0.454$ ,  $p = 0.65$ , suggesting that Education does not significantly affect FWB. H03c was rejected with  $\beta = 0.089$ ,  $T = 2.832$ ,  $p = 0.005$ , indicating that Education has a significant and positive effect on Health. H03d was rejected with  $\beta = 0.093$ ,  $T = 2.102$ ,  $p < 0.036$ , indicating that Education significantly positively affects Income.

H04 was rejected with  $\beta = 0.429$ ,  $T = 8.913$ ,  $p < 0.001$ , indicating that FWB significantly positively affects Health.

H05a was not rejected with  $\beta = 0.072$ ,  $T = 1.673$ ,  $p = 0.095$ , suggesting that Income does not significantly affect FWB. H05b was not rejected with  $\beta = 0.031$ ,  $T = 0.886$ ,  $p = 0.376$ , indicating that Income does not significantly affect Health.

H06a was rejected with  $\beta = -0.177$ ,  $T = 3.954$ ,  $p < 0.001$ , indicating that Gender (Males) significantly negatively affects DFL. H06b was not rejected with  $\beta = -0.027$ ,  $T = 0.678$ , and  $p = 0.498$ , suggesting that Gender (Males) does not significantly affect FWB. H06c was not rejected with  $\beta = 0.024$ ,  $T = 0.761$ ,  $p = 0.447$ , indicating that Gender (Males) does not significantly affect Health. H06d was rejected with  $\beta = -0.148$ ,  $T = 3.634$ ,  $p < 0.001$ , indicating that Gender (Males) significantly negatively affects Income.

H07a was accepted with  $\beta = 0.05$ ,  $T = 0.934$ ,  $p = 0.351$ , suggesting that Marital Status (Married) does not significantly affect DFL. H07b was rejected with  $\beta = 0.144$ ,  $T = 3.063$ ,  $p = 0.002$ , indicating that Marital Status (Married) significantly affects FWB. H07c was not rejected with  $\beta = 0.054$ ,  $T = 1.456$ ,  $p = 0.146$ , suggesting that Marital Status (Married) does not significantly affect Health. H07d was rejected with  $\beta = 0.137$ ,  $T = 2.876$ ,  $p = 0.004$ , indicating that Marital Status (Married) significantly positively affects Income.

H08 was rejected, indicating that FWB partially mediates the relationship between DFL and Health. Both the Direct Effect (DFL -> Health) and the Indirect Effect (DFL -> FWB -> Health) were found to be significant. H09 was accepted, indicating that Income does not mediate the relationship between DFL and FWB. The Indirect Effect (DFL -> Income -> FWB) was not found to be significant. H010 was accepted, indicating that FWB does not mediate the relationship between Income and Health. The Indirect Effect (Income -> FWB -> Health) was not found to be significant. H011 was accepted, indicating that Income does not mediate the



relationship between DFL and Health. The Indirect Effect (DFL -> Income -> Health) was not found to be significant.

### 7.7. Importance Performance Analysis

An Importance-Performance Analysis (IPA) was conducted to identify the most critical predictors of FWB and health. The Importance-Performance Map for FWB (Figure A in Appendix) identifies DFL as the most crucial factor, with a significant impact on improving financial decision-making skills. Education, marital status, and income also positively influence FWB, albeit to a lesser degree. Conversely, gender (being male) and age negatively affect FWB, with younger individuals facing more significant challenges in achieving FWB. Similarly, the Importance-Performance Map for Health (Figure B in Appendix) highlights age and being male as negative factors, with age being the most significant detriment. DFL emerges as a key positive factor for health, alongside FWB, which also strongly influences health outcomes. Education, marital status, and income positively impact health, with education showing a slightly higher effect. Therefore, DFL is vital for enhancing both FWB and health. While education, marital status, and income contribute positively to these outcomes, gender (specifically being male) and age are negative factors, with age being the most critical negative element affecting health. Younger individuals particularly struggle with achieving FWB.

## 8. DISCUSSION

The study reveals that DFL that older individuals displayed lower DFL levels, aligning with findings by Mitzner et al. (2019) and Chen & Lai (2023) that older adults are less inclined towards adopting new technologies, diminishing their digital literacy and reduction in DFL elevates financial risks for the elderly, especially as financial services move online. Although a positive link exists between age and financial well-being, it lacks statistical significance, suggesting that income, education, and financial management skills play more crucial roles. Despite potentially more excellent financial stability in older age due to asset accumulation, this advantage is minor across different age groups (Lusardi & Mitchell, 2014) and may be connected to retirement savings. Age's negative but insignificant relationship with health mirrors the expected decline in physical and mental capabilities over time, highlighting the importance of tailored healthcare interventions for the elderly (Steptoe et al., 2015) to address the global challenge of aging, non-communicable diseases and mental health issues (Prince et al., 2015). Age correlates positively with income, attributed to the accumulation of experience and skills, though this increase is confined to specific age ranges and sectors, peaking before retirement (Mincer, 1974; Tamborini, Kim & Sakamoto, 2015). Age adversely affects DFL and health while positively affecting income, though it necessitates elderly-specific healthcare strategies.

Enhanced DFL significantly boosts FWB, health, and income. This finding aligns with literature emphasizing financial literacy's role in improving financial outcomes and life quality (Lusardi & Tufano, 2015; Xiao & O'Neill, 2016). Individuals with higher DFL are better equipped to make sound financial decisions, enhancing financial stability and reducing stress, positively affecting health (Choung, Chatterjee & Pak, 2023). Strong digital finance skills bring better money management and financial outcomes. Similarly, Potrich et al. (2018) observed that DFL facilitates wise decisions on online financial matters, individual outcomes, and economic stability. Indeed, increased financial education and training build better DFL across all demographics.

In the case of urban India, education, income, and marital status all have positive relations with financial health and general health. Increased financial security and event resilience in case of



risk are provided by higher levels of income. Education equips citizens to make informed decisions concerning sound finances; according to Lusardi and Mitchell (2017), the benefits accruable from financial education boost future planning and debt management, thereby justifying policies that enhance educational attainment and financial literacy. Marital status improves financial status through shared burdens and resources; Dew and Xiao 2011 affirm that married people have higher financial satisfaction and security. The study concluded that being of male gender and at an older age negatively affects FWB and health because societal expectations quite often put young men under financial pressure and poor health. The predicted negative correlation between age and health and FWB underscores the need for targeted interventions for aging populations and youth facing financial challenges. The gender financial gap is narrowing, mainly as women's financial literacy improves (Bucher-Koenen et al., 2021). Age significantly affects health negatively, with older individuals experiencing poorer health and higher chronic disease risks (Greer et al., 2021; Wurm et al., 2017).

DFL notably enhances health outcomes by enabling better financial management, reducing stress, and promoting informed health-related decisions. Financial stability, linked to income, eases access to healthcare, healthier lifestyles, and stress reduction, thereby improving health. Although DFL boosts health, its impact is less significant than income, primarily through stress and anxiety reduction. The study reveals that being male and married offers lesser health benefits. Married individuals gain social support, enhancing their mental and physical health, albeit less than income or other factors (Umberson & Thomeer, 2020). For males, health benefits may derive from biological or socioeconomic roles but are minor compared to other determinants (Waldron et al., 2019). The findings suggest a positive relationship between education, FWB, DFL, health, and income, corroborating other research on education's role in enhancing life quality. Higher education levels lead to better financial, health, and income decisions, enabling individuals to access healthcare and understand health information (Cutler & Lleras-Muney, 2010). It enhances financial literacy and welfare improvement (Lusardi & Mitchell, 2014).

FWB enhances health through reduced stress, better healthcare access, and improved outcomes (Kim & Garman, 2003). Higher-income increases FWB and security (Diener & Biswas-Diener, 2002), but its impact on health is influenced by lifestyle, healthcare access, and social resources (Adler & Newman, 2002). Surprisingly, the study found that males have lower DFL than females (OECD, 2020). Gender does not significantly affect FWB or health, with education, employment, and resource access being more critical (Wagstaff & van Doorslaer, 2000). The negative correlation between being male and income may reflect gender inequalities or show women earning more in less discriminatory sectors (Goldin, 2014). Marriage does not significantly affect DFL but improves FWB, health, and income (Gutter & Copur, 2011; England, 2001). DFL directly influences FWB independently of income, suggesting financial literacy improves well-being through better financial decisions (Marmot, 2015). Income primarily affects health via direct access to resources and healthcare. DFL improves health outcomes by reducing financial stress and enhancing financial management (Amagir et al., 2020).

## 9. CONCLUSIONS AND RECOMMENDATIONS

The research unravels the intricate relationships between age, education, digital financial literacy (DFL), income, gender, and marital status as they affect FWB and health, aligning with several United Nations Sustainable Development Goals (SDGs). Age affects these factors in complex ways: it is negatively associated with DFL and health but is positively associated, though insignificantly, with FWB. Education appeared as a significant factor, positively



affecting FWB, DFL, health, and income, thus supporting SDG 4 (Quality Education). DFL is an important determinant of FWB, health, and income, contributing to SDG 1 (No Poverty) and SDG 3 (Good Health and Well-being). Equally, factors like gender and marital status are significant, where, in general, married people tend to have better financial and health conditions, supporting SDG 5 (Gender Equality) and SDG 10 (Reduced Inequalities).

Enhancing DFL across all demographics is crucial for improving FWB and health, directly contributing to SDG 4. Special attention should be given to older populations who face challenges in adopting digital financial practices, addressing SDG 10. Despite age having an insignificant statistical effect on health, age-specific interventions are necessary to support SDG 3 by slowing the decline in physical and mental health among older adults. Education, linked to better FWB, digital literacy, income, and health, highlights the need for policies promoting educational opportunities, particularly financial literacy, to achieve SDG 4. The study also reveals higher DFL among women, sometimes accompanied by higher incomes, challenging traditional gender roles, and supporting SDG 5. Gender-sensitive policies should continue to eliminate pay inequities and encourage digital consumption across all genders. Additionally, structural support and resource pooling within families bolsters FWB and health can further aid in achieving these SDGs.

## 10. CONTRIBUTION AND FUTURE SCOPE

The present research offers key insights into how demographic factors such as age, gender, marital status, and education affect FWB and health, contributing to the achievement of several SDGs. It puts a case for integrating DFL into educational curricula and public health strategies, aligning with SDGs 4 and 3. The results suggest that digital literacy could be a crucial pathway to improving financial and health outcomes in an economy where digitization is rapidly advancing, thereby supporting SDG 1, SDG 3, and SDG 10. Furthermore, the distinct role income plays in health outcomes, separate from FWB, highlights the need for direct financial interventions to support health, aligning with SDG 3.

The research adds to the existing knowledge pool by emphasizing the essential role of DFL in determining financial and health outcomes, directly supporting SDGs 1, 3, and 10. It is the first study to investigate the mediation effects of FWB, offering nuanced insights into how digital literacy can affect individual well-being both directly and indirectly. The study also challenges earlier assumptions on gender roles in financial literacy, contributing fresh perspectives on the evolving dynamics of income and financial management across genders, supporting SDG 5.

Future research could explore whether DFL programs tailored for different age groups, especially the elderly, lead to better financial and health outcomes over time, thus contributing to SDG 10. Additionally, the research could examine how emerging financial technologies influence financial behaviors and literacy across diverse demographics, further aligning with SDG 9 (Industry, Innovation, and Infrastructure). Investigating the interaction effects of marital status and gender under diverse cultural contexts could offer deeper insights into the socioeconomic factors that drive these outcomes, contributing to SDGs 5 and 10.

### **Additional information**

#### **Authors contributions**

All authors contributed to the study's conception and design.

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### Data availability statement

Data for the study is available on request.

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