E-ISSN:2250-0758
P-ISSN:2394-6962
Review Article
Economic Empowerment

International Journal of Engineering and Management Research

2026 Volume 16 Number 2 April

Publisher
Vandana Publications
www.vandanapublications.com

Exploring the Dynamics of Financial Inclusion in Enhancing Economic Empowerment among the Physically Disabled: An Empirical Investigation

Arora H[1*], Gupta S[2]

DOI:10.31033/IJEMR/16.2.2026.1874

[1*] Himanshu Arora, Assistant Professor, Department of Commerce, Sri Aurobindo College (E), University of Delhi, Delhi, India.

[2] Shikha Gupta, Professor, Shaheed Bhagat Singh College, University of Delhi, Delhi, India.

This study examines the critical role of financial inclusion in enhancing the economic empowerment of individuals with physical disabilities, a group often marginalized due to systemic barriers within financial ecosystems. While financial inclusion is widely recognized for advancing access to services and fostering socio-economic agency, the specific challenges faced by physically disabled individuals, such as mobility limitations, social stigma, inadequate policy support and inaccessible infrastructure remain underexplored in empirical research. Drawing on a survey of 519 respondents, the study reveals that access to financial services, institutional mechanisms and technology support are essential drivers of financial inclusion, while financial literacy alone does not significantly impact inclusion without corresponding infrastructural support. Structural model findings further confirm that financial inclusion positively influences economic empowerment and physical disability features of the person itself moderates the relationship between financial inclusion and economic empowerment, suggesting its potential as a transformative tool for reducing socio-economic disparities. The study advocates for comprehensive, inclusive policy interventions that integrate accessible service delivery, digital infrastructure and institutional reform alongside financial education to promote financial equity. The research findings enhance the discussion about inclusive development by demonstrating how specific financial approaches can reduce institutional barriers to enable physical disability empowerment.

Keywords: Economic Empowerment, Financial Access, Financial Literacy, Financial Inclusion, Digital

Corresponding Author

Himanshu Arora, Assistant Professor, Department of Commerce, Sri Aurobindo College (E), University of Delhi, Delhi, , India.
Email:
himanshuarora@aurobindoe.du.ac.in

How to Cite this Article

Arora H, Gupta S, Exploring the Dynamics of Financial Inclusion in Enhancing Economic Empowerment among the Physically Disabled: An Empirical Investigation. Int J Engg Mgmt Res. 2026;16(2):20-33.
Available From
https://ijemr.vandanapublications.com/index.php/j/article/view/1874

To Browse

Manuscript Received	Review Round 1	Review Round 2	Review Round 3	Accepted
2026-03-01	2026-03-15			2026-04-01

Conflict of Interest	Funding	Ethical Approval	Plagiarism X-checker	Note
None	Nil	Yes	4.16	

1. Introduction

Financial inclusion functions as a vital economic growth factor that helps reduce poverty in developing nations. Financial inclusion indices demonstrate that service access to bank accounts, credit and insurance matters equally to service quality and actual usage (Demirgüç-Kunt et al., 2022). A supportive business climate, robust infrastructure and proactive government policies are essential enablers. Financial inclusion has become a powerful tool to drive inclusive economic growth specifically for marginalized and underserved communities throughout recent years. Research shows that financial inclusion which provides accessible affordable financial services including savings credit insurance and digital payments directly leads to better socio-economic results (Dos Santos & Harvold, 2017). Financial inclusion serves as a tool to boost economic development while helping people who face distress. Bhatia & Dawar (2024) explains how economic empowerment functions as a connecting factor between financial access, social and political empowerment. The research demonstrates how inclusive financial systems can transform disadvantaged groups into self-determined individuals. Similarly, Pal et al. (2022) highlight the significance of financial inclusion as a tool to improve the economic status of vulnerable populations especially women through financial instruments which boost their decision-making abilities and independence.

Financial inclusion in India demonstrates ongoing development through better banking infrastructure spread throughout urban and rural areas. The Reserve Bank of India (2024) reports states that Public Sector Banks (PSBs) expanded their branch network from 84,404 to 84,859 during March 2023 to March 2024 while Private Sector Banks (PvSBs) grew from 41,258 to 44,691 during this time. The number of rural branches maintained by PSBs exceeds 29,000 while PvSBs expanded their rural branches from 8,417 to 8,924 between 2023 and 2024. The number of ATMs and Cash Recycler Machines (CRMs) indicates that banking service accessibility continues to grow. Public Sector Banks operated 1,34,694 ATMs and CRMs (both on-site and off-site) in March 2024 while Private Sector Banks had 79,884 touch points increasing from 76,975 during the previous year.

The expansion of rural and semi-urban branch networks and ATM numbers demonstrates Indian banks' dedication to serving underserved areas to improve financial inclusion. According to RBI (2024) the gradual expansion of branches together with ATMs throughout rural and semi-urban areas demonstrates an inclusive strategy for financial access expansion. The Government of India has implemented several important initiatives to boost financial inclusion for people with disabilities since they recognize financial service access as essential for socio-economic empowerment. The PMJDY and the Sugamya Bharat Abhiyan are two government policies that have made it possible for Persons with Disabilities (PWDs) to join the formal financial system. The Reserve Bank of India (RBI) has instructed banks to admit all customers including by establishing ramps and Braille-friendly ATMs and user-friendly digital banking systems (RBI, 2017). The Deendayal Disabled Rehabilitation Scheme (DDRS) and the National Centre for Financial Education (NCFE) represent two initiatives that advance disability financial literacy and capability. The government requires banks to establish financial inclusion programs for disabled individuals as their primary priority. The Ministry of Social Justice and Empowerment (2020) states that banks need to provide specialized services with employment and survival-oriented loans (Ministry of Social Justice and Empowerment, 2020). The actions demonstrate institutional commitment to inclusive growth that aligns with the Rights of Persons with Disabilities Act 2016 mandate of equal financial service accessibility for everyone. The implemented measures face continued implementation challenges that need better policy oversight and capacity development

The situation has improved but problems persist because of low usage rates, unequal access and high costs and insufficient financial literacy (Sarma, 2016). The improvement of financial knowledge and the implementation of mobile banking technology, enhanced regulations and targeted financial products will drive progress (Allen et al., 2016). The Indian experience through Jan Dhan Yojana and other initiatives shows how integrated solutions can work but also shows the ongoing challenge of turning access into economic empowerment (Kadaba et al., 2023). The achievement of sustainable and inclusive progress requires addressing these gaps.

People with physical disabilities face institutional barriers that block their complete economic participation by preventing them from accessing banking services, employment opportunities and social security benefits. Financial inclusion has gained support from development organizations and lawmakers who view it as a path to economic independence and reduced dependency on outside assistance. The empowerment of this specific demographic has become essential according to their reasoning.

Financial inclusion is crucial for the population, not merely as a means of accessing credit or savings mechanisms but as a pathway to economic agency, livelihood stability and broader socio-economic empowerment. Physical disability often acts as a significant barrier to achieving financial inclusion, limiting access to essential financial services and economic opportunities. There are several research highlights the benefits of financial inclusion for entrepreneurs (Hasan et al., 2023; Ajide, 2020), the literature remains limited concerning the unique challenges faced by physically disabled individuals. Tsatsou (2022) emphasizes that people with physical disabilities, particularly in marginalized urban settings, encounter intersecting barriers, including social stigma, mobility constraints and lack of tailored financial products. These findings are echoed by Wann & Burke-Smalley (2023), who demonstrate significant disparities in financial access across different disability types, underlining the need for disability-specific interventions. Sarker & Khan (2022), through a qualitative study in Bangladesh, further reveals that people with physical disabilities experience exclusion in microfinance programs due to infrastructural inaccessibility and institutional bias. Similarly, Puli et al. (2024) underscore the fragmented policy landscape and lack of inclusive service design as key hindrances. In the Malaysian context, Hanafi et al. (2025) identify gaps in policy implementation and the necessity for a more inclusive financial ecosystem. This oversight presents a significant research gap in understanding the intersection of disability and financial access. While policies aim to promote inclusive finance, the practical challenges for disabled populations remain underexplored empirically. Addressing this gap, the current study poses the research question: what are the dynamics of Financial Inclusion in Enhancing Economic Empowerment among the Physically Disabled and how does physical disability act as a barrier to achieving financial inclusion and what structural or behavioral factors mediate this relationship? Investigating this can inform targeted policies to enhance the economic empowerment of persons with disabilities. Against this backdrop, the present study justifies the need for empirical research is aim to achieve the following objectives: To study the dynamics of financial inclusion and its influence on economic empowerment among the physically disabled and to assess the moderating role of physical disability in the relationship between financial inclusion and economic empowerment of people with disability. By addressing a critical research gap, this investigation aims to inform inclusive development policies and provide actionable insights for stakeholders advocating for financial equity.

2. Review of Related Literature and Proposition of Hypothesis

2.1 Access to Financial Services

Financial inclusion is widely recognized as a critical enabler of economic empowerment, referring to the provision of accessible, affordable and useful financial services such as savings, credit, insurance and digital banking to all individuals, including marginalized groups like PWDs (Bhatia & Dawar, 2024). For PWDs, financial inclusion goes beyond just being able to get to a physical bank branch. The framework includes user-friendly technologies for people with disabilities as well as policies that welcome everyone and independent access to financial services. Despite global efforts, individuals with disabilities persist in encountering substantial obstacles attributable to infrastructural inaccessibility, inadequate disability-sensitive communication, restricted financial literacy and adverse societal attitudes (Jiya et al., 2022). Census 2011 says that just 36% of disabled people in India were categorised as workers. Most of them are now in the economically active 30–50 age bracket, which shows how important it is to offer financial services that are open to everyone. Ofori-Okyere (2023) emphasises the significance of accessible digital banking, inclusive product design and targeted financial education in mitigating these access disparities. Evidence indicates that financial access can enhance the autonomy, self-sufficiency and general well-being of PWDs by promoting asset accumulation and diminishing susceptibility to financial shocks (Arun et al., 2013; Mitra et al., 2013).

FinTech technologies, such biometric-enabled mobile banking and voice-assisted applications, have significantly improved accessibility for persons with disabilities, underscoring the critical importance of technological adoption (Akanfe et al., 2025). Furthermore, trust in financial institutions and sufficient financial literacy substantially influences the correlation between access to finance and economic empowerment (Pal et al., 2023). However, systemic issues including bad data on disabled people, not following through on policies and discrimination based on more than one factor still make it hard for everyone to fully participate in the economy (Lara-Rubio et al., 2024). These complications indicate that financial inclusion is inadequate without supplementary measures in education, technology and institutional policy. Promoting inclusive finance is in line with global development goals, especially SDG 1 (No Poverty) and SDG 10 (Reduced Inequalities). It also calls for a multi-faceted strategy to provide people with disabilities more influence both economically and socially. Taking this into account, the following theory is proposed:

H1: Access to Financial Services positively impacts the financial inclusion and economic empowerment of individuals with disabilities.

2.2 Financial Literacy and Awareness

Although there are efforts at the policy level in both developed and developing nations, people with disabilities (PwD) still have trouble getting financial services because of structural and functional constraints. Khan et al. (2022) points to the systematic literature review on how structural and functional barriers in financial inclusion affect Persons with Disabilities through information asymmetry and unsuitable banking procedures and the lack of awareness about disability requirements. The individual obstacles working together prevent PwD from accessing meaningful financial inclusion. Financial literacy functions as the essential tool for solving these problems. The fundamental skill enables people to understand their finances better and build self-assurance for making sound monetary decisions. The combination of financial education with digital financial technology enables Asian populations to achieve better access to financial products and services according to Ahsan & Ahmed (2023). The research conducted by Gafoor & Amilan (2024) demonstrated that persons with disabilities who have better financial understanding and knowledge will use banking services and mobile financial systems more frequently because there exists a direct relationship between financial knowledge and inclusion. The way service providers view and understand financial services affects the accessibility of services for PwD. Indian microfinance institutions he discovered that their limited reach resulted from providers' inadequate knowledge and readiness to serve clients with disabilities (Gupta & Suisse, 2014). The research by Tsatsou (2022) demonstrates that digital financial services with inclusive features remove physical obstacles and prejudice that prevents individuals with disabilities from accessing financial products. Economic independence becomes achievable for people through accessible technologies which receive support from literacy programs. The combined evidence demonstrates that integrated policies should unite financial education with complete service delivery systems. Khan et al. (2022) states that financial literacy research continues to grow but most studies originate from developed countries which reveal a shortage of studies focused on low-income and developing economies. Localized research agendas alongside targeted initiatives need to address the real-world challenges faced by PwD. Research supports the following theory about how financial knowledge and awareness drive the financial inclusion of PwD. Taking this into account, following hypothesis is put forward:

H2: Financial knowledge and awareness significantly enhance the financial inclusion of Persons with Disabilities (PwD).

2.3 Institutional Support

The standard of institutions plays a vital role for both financial inclusion and subsequent economic expansion. Multiple academic studies demonstrate how financial services availability depends on institutional frameworks that consist of governance systems, regulatory quality and policy enforcement mechanisms for people without access to them. Developing nations will experience better financial inclusion when institutions exhibit strong governance with clear laws and policies (Zeqiraj et al., 2022). Eldomiaty et al. (2020) supports this connection through international research data which shows regulatory quality and government performance along with rule of law directly impact financial inclusion measurements.

Their analysis reveals that financial institutions which fail to perform well commonly block access to formal financial services thus maintaining financial exclusion. According to Vo (2024) financial inclusion shows a positive correlation with strong institutions in both low and high income countries when using a worldwide dataset. According to him institutions minimize transaction costs while decreasing information gaps and building financial system trust which are critical elements for economic participation expansion. Bongomin et al. (2018) uses social network theory to study the rural situation in Uganda to demonstrate how informal community institutions strengthen official efforts to enhance financial access. The study by (Bongomin et al., 2017) demonstrates institutional framing as the perception-shaping cognitive and normative systems affecting financial inclusion with financial literacy acting as the intervening factor. Ofoeda et al. (2024) demonstrates how good institutions alongside strong financial regulations work together to boost economic development by simplifying access to financial services for all populations. According to the authors institutions that operate well and financial inclusion systems lead to better resource utilization, investment and savings opportunities for individuals. The authors state that effective institutional frameworks together with inclusive financial systems create conditions which allow people to save money, invest money and make better resource utilization decisions. The research demonstrates financial inclusion needs an institutional support system which includes formal mechanisms (e.g., regulatory bodies, governance quality) and informal frameworks (e.g., social networks, trust) to achieve lasting financial inclusion. This study posits the following hypothesis:

H3: Institutional support significantly enhances financial inclusion, which subsequently mediates the relationship between institutional quality and economic growth.

2.4 Technological Support

Financial services now reach everyone including people with disabilities (PWDs) through technology which offers multiple access methods, promotes economic involvement and health benefits. The rapid development of financial technology (FinTech) artificial intelligence (AI) and digital platforms has made money accessibility easier.

According to Gafoor & Amilan (2024) FinTech adoption enables people with disabilities (PWDs) to obtain enhanced financial access and improved monetary knowledge and financial practices. The research showed that these mediating elements work together to build an inclusive financial system which drives economic empowerment. Ozili (2023) extends this perspective by demonstrating how big data and AI enable underserved groups to receive financial services through data-driven credit scoring, customer profiling and customized financial products. He also discusses issues related to data privacy and algorithmic bias as well as digital literacy. The implementation of digital financial services designed for people with disabilities has led to substantial improvements in their economic empowerment and financial independence. According to Handani (2024) mobile banking applications with personalized features, user-friendly digital interfaces and support systems have enabled Indonesian people with disabilities to participate in both society and economy. The digital financial inclusion field is currently exploring Central Bank Digital Currencies (CBDCs) as potential digital instruments. Rachmad (2025) suggests that CBDCs will boost formal financial system participation among marginalized communities because they offer secure and affordable financial services that are accessible to everyone. Hanafi et al. (2025) in Malaysia outline both the potential advantages and ongoing difficulties in designing inclusive finance policies because digital infrastructure exists yet accessibility and awareness barriers prevent PWDs from advancing. A broader scoping review by Puli et al. (2024) synthesizes global evidence on financial inclusion for PWDs and reiterates the importance of cross-sector collaboration and adaptive technologies in building a resilient, inclusive financial ecosystem. These studies collectively affirm the transformative role of technology in promoting inclusive economic growth through financial access. Thus following hypothesis was proposed:

H4: Technology-enabled financial inclusion positively influences the economic empowerment of persons with disabilities, mediated by financial access, financial knowledge, and financial behavior.

2.5 Financial Inclusion, Economic Empowerment and Physical Disability: A Moderation Analysis

Financial inclusion serves as a critical enabler of economic empowerment, particularly for marginalized populations, including individuals with physical disabilities. It promotes access to formal financial services such as banking, credit and insurance thereby enhancing participation in economic activities and reducing reliance on informal systems (Bhatia & Dawar, 2024). Lal (2021) states that financial inclusion provides people with the means to generate income and keep their money safe and become powerful. The link between financial inclusion and empowerment may be impacted by physical impairment because physical disability often creates additional socio-economic challenges that include reduced mobility, digital illiteracy and institutional discrimination (Muuo, 2025). The analysis of moderation helps researchers understand how disability status affects both the size and direction of financial inclusion's relationship with empowerment. Previous research studies have found other variables that influence the process including Sub-Saharan Africa (Bongomin et al., 2018) social networks and female financial literacy. These discussions lead to the assumption of the following hypothesis.

H5: Financial inclusion positively influences economic empowerment among the physically disabled.

H6: Physical disability moderates the relationship between financial inclusion and economic empowerment.

3. Conceptual Framework of the Study

This research study examines the various elements affecting financial inclusion while investigating its impact on the economic empowerment of disabled people. People with physical disabilities face four main independent variables that influence their level of financial inclusion which include Access to Financial Services, Financial Literacy and Awareness, Institutional Support, and Technology Support. Multiple research studies demonstrate that these factors serve as essential components to achieve financial inclusion (Bhatia & Dawar, 2024).

People who have access to financial services that include savings, credit insurance and digital payment platforms can manage risks and invest in money-making opportunities (Pal et al., 2023; OECD, 2020). Policy changes and accessible financial infrastructure alongside regulatory frameworks that help institutions create an inclusive environment represent key elements of institutional assistance (Ofoeda, 2024). The accessibility of financial services through mobile banking and assistive FinTech solutions enables people with physical mobility limitations to achieve better financial opportunities (Prina, 2015). These four elements together form the construct of financial inclusion which is expected to enhance economic empowerment of people with physical disabilities through stable income, financial independence and improved living standards (Bhatia & Dawar, 2024). The study introduces physical disability as a variable which affects the relationship strength or direction between financial inclusion and economic empowerment. People with more severe disabilities may have different effects from efforts to include them financially because of problems with accessibility and adaption (Mitra et al., 2013). Proposed model shown in Figure1 advances the field of inclusive finance through its disability-focused approach and quantitative assessment of financial inclusion strategies that lead to economic empowerment.

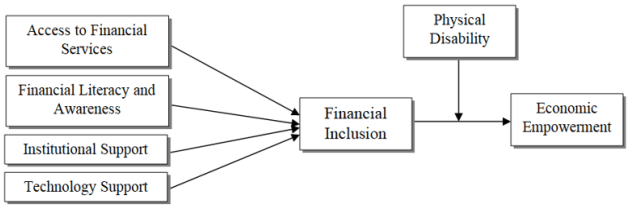

Figure 1: Proposed Model

4. Research Methodology

The research uses quantitative methods to examine how key factors such as Access to Financial Services, Financial Literacy and Awareness, Institutional Support and Technology Support contribute to financial inclusion which subsequently enables economic empowerment for physically disabled people. The research design uses both descriptive and causal approaches to study physically disabled people who live in Delhi-NCR. The research team created a structured questionnaire that served as the study instrument designed on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree),

capturing constructs developed from validated constructs from existing literature studies: Access to financial services (Beck et al., 2007), Financial literacy and awareness (Lusardi & Mitchell, 2014), Institutional support and Technological support (Demirgüç-Kunt et al., 2022), and Economic empowerment (Kabeer, 1999; Bhatia & Dawar, 2024). A pilot study (n = 50) was conducted to ensure clarity, reliability and validity. Reliability is assessed using Cronbach's alpha and Composite Reliability (CR), while validity is examined through Confirmatory Factor Analysis (CFA) to verify convergent and discriminant validity (Hair et al., 2021). After assuring the reliability and validity, a full-scale survey was carried out through purposive sampling, targeting 519 respondents who represented various physical impairment levels in Delhi NCR. Participation was voluntary, with the right to withdraw at any time. Descriptive and exploratory analysis is done using SPSS 22.0 while the study employs a mediation analysis using Structural Equation Modeling (SEM) via Smart-PLS 4.0 software (Sarstedt et al., 2022). This extensive empirical approach delivers substantial findings about how financial inclusion affects the situation of disabled people who face economic marginalization.

4.1 Result and Findings

Table 1 presents the demographic characteristics of the respondents, including age, gender, marital and occupational status. In terms of age distribution, the majority of respondents fall within the 22–30 years age group (35.5%, n=184), followed by those aged up to 21 years (31.4%, n=163), 31–40 years (22.4%, n=116) and 41–50 years (10.8%, n=56). Regarding gender, males constitute a significant majority (73.4%, n=381), while females account for 26.6% (n=138) of the sample. Most respondents are married (67.8%, n=352), while 31.2% (n=162) are unmarried and only 1% (n=5) are separated, divorced, or belong to other categories. Occupationally, the largest group is those employed in the private sector (39.1%, n=203), followed by self-employed individuals (19.8%, n=103), students (13.9%, n=72), government employees (13.5%, n=70), unemployed respondents (10.8%, n=56) and a small proportion of retirees (2.9%, n=15). This demographic profile indicates a young, predominantly male and mostly working population.

Table 1: Demographic Characteristics of Respondents (N=519)

Characteristics	Description	Frequency	Percent
Age	Upto 21 Years	163	31.4
	31-30 Years	184	35.5
	31-40 Years	116	22.4
	41-50 Years	56	10.8
Gender	Male	381	73.4
	Female	138	26.6
Marital Status	Unmarried	162	31.2
	Married	352	67.8
	Seperated/Divorced/ Other categories	5	1.0
Occupational Status	Employed (Government)	70	13.5
	Employed (Private)	203	39.1
	Self-employed	103	19.8
	Student	72	13.9
	Unemployed	56	10.8
	Retired	15	2.9

The descriptive statistics presented in Table 2 provide insightful evidence on the dynamics of financial inclusion, physical disability and economic empowerment among 519 respondents. Among all constructs, Financial Literacy and Awareness recorded the highest mean (M = 3.9152, SD = 0.70425), suggesting respondents generally felt well-informed and confident in financial decision-making. Access to Financial Services also scored relatively high (M = 3.8655), with strong factor loadings (e.g., access to loans = 0.951, use of mobile banking = 0.876), reflecting perceived availability and usability of financial resources. However, Technology Support scored lower (M = 3.4573, SD = 1.03776, Variance = 1.077), with higher variability in responses, indicating mixed experiences in using assistive and digital financial technologies. Institutional Support (M = 3.7773, Variance = 0.879) highlighted persistent barriers and exclusion issues, though individual items loaded well (e.g., exclusion from financial programs = 0.933). Interestingly, Physical Disability had the lowest mean (M = 2.1946), indicating significant challenges faced by respondents due to their disability, with factor loadings ranging from 0.701 to 0.880, confirming construct validity. Economic Empowerment (M = 3.7333, SD = 0.48032) showed moderate empowerment levels, with items such as financial independence (0.831) and self-reliance confidence (0.829) reflecting a growing sense of agency, possibly aided by financial inclusion efforts.

Overall, the factor loadings across constructs were robust (>0.70), indicating strong internal consistency and reliability of the measurement model.

Table 2: Descriptive Statistics

	Factor Loading	Mean	Std. Deviation	Variance
Access to Financial Services		3.8655	.73492	.540
Financial Literacy and Awareness		3.9152	.70425	.496
Institutional Support		3.7773	.93752	.879
Technology support		3.4573	1.03776	1.077
Financial Inclusion		3.4239	.67559	.456
Physical Disability	519	2.1946	.48813	.238
Economic Empowerment		3.7333	.48032	.231
Valid N (listwise)	519			

4.2 Measurement Model

The measurement model results indicate good internal consistency and convergent validity across all constructs. Cronbach's Alpha values range from 0.882 to 0.948, suggesting high internal reliability (>0.70). Composite Reliability (rho_c) values are all above 0.90, confirming strong construct reliability. The Average Variance Extracted (AVE) values for all constructs exceed the recommended threshold of 0.50, establishing adequate convergent validity, with the lowest AVE being 0.639 (Economic Empowerment) and the highest 0.812 (Financial Inclusion). Variance Inflation Factor (VIF) values are all well below the critical threshold of 5, except for Economic Empowerment and Institutional Support (4.679 and 4.680), which are near the acceptable upper limit but still not indicative of multicollinearity concerns. Table3 results suggest the measurement model is statistically sound and suitable for further structural analysis.

Table 3: Construct reliability and validity

Construct	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)	VIF
Access to Financial Services	0.882	0.863	0.907	0.664	1.013
Economic Empowerment	0.905	0.908	0.925	0.639	4.679
Financial Inclusion	0.941	0.944	0.956	0.812	1.003
Financial Literacy and Awareness	0.922	0.990	0.934	0.741	1.022
Institutional Support	0.918	0.961	0.937	0.748	4.680
Physical Disability	0.914	0.919	0.932	0.664	1.001
Technology support	0.948	1.009	0.954	0.777	1.022

The Fornell-Larcker criterion is used to assess discriminant validity, which is confirmed when the square root of AVE (the diagonal elements) is greater than the inter-construct correlations (off-diagonal elements). As shown in table4 all constructs meet this criterion—for instance, the square root of AVE for Financial Inclusion is 0.901, which is greater than its correlations with Economic Empowerment (0.902) and Physical Disability (–0.908), though these values are close and indicate a strong inverse relationship. Notably, the correlation between Physical Disability and Economic Empowerment (–0.982) and with Financial Inclusion (–0.908) is very high and negative, hinting at a potential conceptual overlap or suppression effect. Still, overall, the square roots of AVE values being greater than the inter-construct correlations suggest satisfactory discriminant validity across constructs. HTMT values below 0.90 typically indicate strong discriminant validity. However, in this analysis, some HTMT ratios, such as Physical Disability and Economic Empowerment (0.903) and Physical Disability and Financial Inclusion (0.973) exceed the recommended threshold, implying potential discriminant validity issues or multicollinearity between these constructs. Other constructs like Technology Support and Institutional Support (0.110) and Access to Financial Services and Financial Inclusion (0.083), remain well below the threshold, affirming their distinctiveness.

Table 5 findings suggest that while most constructs are adequately distinct, careful re-evaluation or potential item refinement may be necessary between closely related variables like Physical Disability and Economic Empowerment/Financial Inclusion to ensure clear construct boundaries.

Table 4: Combined Discriminant Validity Table (Fornell–Larcker & HTMT Matrix)

Constructs	Access to Financial Services	Economic Empowerment	Financial Inclusion	Financial Literacy and Awareness	Institutional Support	Physical Disability	Technology Support	Physical Disability × Financial Inclusion
Access to Financial Services	0.815	0.101	0.083	0.061	0.061	0.103	0.078	0.050
Economic Empowerment	0.101	0.799	0.974	0.050	0.142	0.903	0.125	0.091
Financial Inclusion	0.083	0.974	0.901	0.032	0.163	0.973	0.108	0.034
Financial Literacy and Awareness	0.061	0.050	0.032	0.861	0.052	0.069	0.074	0.183
Institutional Support	0.061	0.142	0.163	0.052	0.865	0.149	0.110	0.103
Physical Disability	0.103	0.903	0.973	0.069	0.149	0.815	0.130	0.067
Technology Support	0.078	0.125	0.108	0.074	0.110	0.130	0.882	0.077
Physical Disability × Financial Inclusion	0.050	0.091	0.034	0.183	0.103	0.067	0.077	—

4.3 Structural Model and Hypothesis Testing

The structural model's fit, as presented in Table 5, demonstrates varying levels of explanatory power and predictive accuracy across constructs. The R-square value for Economic Empowerment is exceptionally high at 0.966, indicating that the model explains 96.6% of the variance in this construct, supported by a strong Q^2predict value of 0.959 and low RMSE (0.203) and MAE (0.171), confirming high predictive relevance and accuracy. In contrast, Financial Inclusion shows a low R-square (0.057) and Q^2predict (0.035), suggesting weak explanatory and predictive power for its associated predictors. Regarding overall model fit, the SRMR of the saturated model (0.075) is below the recommended threshold of 0.08, indicating acceptable fit, although the estimated model SRMR (0.189) exceeds acceptable limits, suggesting potential misspecification. Additionally, the Normed Fit Index (NFI) values of 0.546 (saturated) and 0.520 (estimated) are below the recommended cut-off of 0.90, indicating poor model fit. High Chi-square values and significant discrepancies between d_ULS and d_G also hint at limited global model fit. Overall, while the model performs well in explaining and predicting Economic Empowerment, it shows limitations in model fit and in predicting Financial Inclusion.

Table 5: R-square, Q^2predict and Model Fit Summary

	R-square	R-square adjusted	Q^2predict	RMSE	MAE
Economic Empowerment	0.966	0.966	0.959	0.203	0.171
Financial Inclusion	0.057	0.050	0.035	0.986	0.827
Model Fit Summary					
	Saturated model	Estimated model			
SRMR	0.075	0.189			
d_ULS	4.577	29.417			
d_G	7.843	8.872			
Chi-square	14535.625	15391.687			
NFI	0.546	0.520			

The structural model results (figure 2 and table5) reveal several statistically significant relationships. The path coefficient (β) from Access to Financial Services to Financial Inclusion is 0.104 with a t-value of 2.006 and p = 0.045, indicating a significant but modest positive effect. Financial Inclusion significantly enhances Economic Empowerment (β = 0.065, t = 3.295, p = 0.001). However, Financial Literacy and Awareness does not significantly influence Financial Inclusion (β = 0.016, t = 0.255, p = 0.799). In contrast, Institutional Support (β = 0.188, t = 5.309, p = 0.000) and Technology Support (β = 0.148, t = 3.508, p = 0.000) both show significant positive effects on Financial Inclusion. Notably, Physical Disability has a strong and highly significant negative effect on Economic Empowerment (β = -0.922, t = 50.976, p = 0.000) and the interaction term (Physical Disability × Financial Inclusion) shows a significant positive moderating effect (β = 0.034, t = 3.620, p = 0.000), suggesting that Financial Inclusion helps mitigate the adverse impact of disability on empowerment. Overall, most hypothesized relationships are statistically significant, except for the effect of Financial Literacy and Awareness.

Table 6: Structural Model and Hypothesis Testing

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Access to Financial Services -> Financial Inclusion	0.104	0.115	0.052	2.006	0.045
Financial Literacy and Awareness -> Financial Inclusion	0.016	0.007	0.062	0.255	0.799
Institutional Support -> Financial Inclusion	0.188	0.195	0.035	5.309	0.000
Technology support -> Financial Inclusion	0.148	0.158	0.042	3.508	0.000
Financial Inclusion -> Economic Empowerment	0.065	0.066	0.020	3.295	0.001
Physical Disability -> Economic Empowerment	-0.922	-0.921	0.018	50.976	0.000
Physical Disability x Financial Inclusion -> Economic Empowerment	0.034	0.034	0.009	3.620	0.000

4.4 Moderation Analysis

The structural model results indicate that Financial Inclusion has a positive and statistically significant effect on Economic Empowerment (β = 0.065, t = 3.295, p = 0.001), suggesting that increased access to financial services contributes to the empowerment of individuals. In contrast, Physical Disability shows a strong negative impact on Economic Empowerment (β = -0.922, t = 50.976, p < 0.001), highlighting that higher levels of disability significantly reduce empowerment levels. Importantly, the interaction effect (moderation) between Physical Disability and Financial Inclusion is positive and significant (β = 0.034, t = 3.620, p < 0.001), indicating that Financial Inclusion moderates the negative effect of disability on empowerment. (Figure 2 and Table 6) This suggests that the negative impact of physical disability on economic empowerment can be alleviated to some extent through effective financial inclusion interventions, thereby confirming the significance of the moderation analysis.

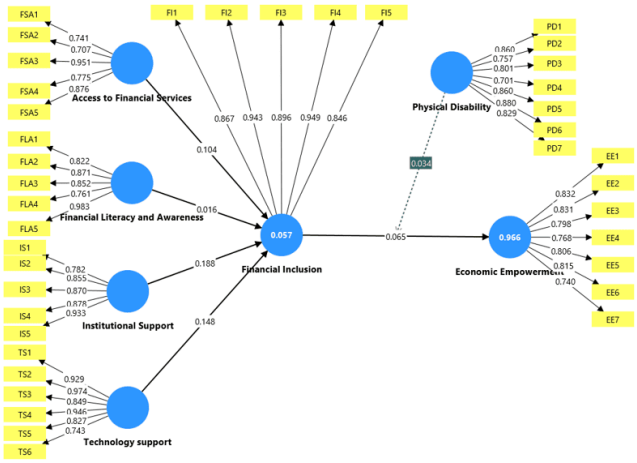

Figure 2: Structural model

5. Discussions

The structural model and hypothesis testing outcomes elucidate numerous crucial findings regarding the factors influencing financial inclusion and its subsequent impact on economic empowerment among individuals with physical disabilities. The beneficial impact of access to financial services, institutional support and technological assistance on financial inclusion corresponds with the existing literature that highlights the importance of infrastructural and institutional facilitators in promoting inclusive financial systems,

(Demirgüç-Kunt et al., 2022; Sarma, 2016). The analysis demonstrates that institutional backing together with technological resources play an essential role in removing barriers to access for disadvantaged groups. The study reveals that financial awareness does not lead to financial inclusion because it contradicts traditional views and shows that knowledge alone does not translate to effective action without useful tools and simple services (Grohmann et al., 2018). The research demonstrates that financial inclusion produces positive effects on economic empowerment which supports the idea that financial instrument access and utilization leads to better autonomy and economic resilience (Bhatia & Dawar, 2024). The strong moderating effect of financial inclusion on physical disability and economic empowerment demonstrates its ability to reduce structural barriers thus supporting targeted inclusion strategies for vulnerable groups. The findings validate the idea that system-level technological and policy-based initiatives have a stronger impact on economic empowerment of people with disabilities than individual knowledge-based approaches. The minimal relationship between financial literacy and financial inclusion ($\beta = 0.016$, SD = 0.062, $t = 0.255$, $p = 0.799$) indicates that basic financial understanding does not automatically translate into active financial system participation especially for vulnerable groups including physically disabled individuals. The research findings challenge the prevailing assumption that financial education stands as the main driver for financial inclusion (Grohmann et al., 2018). The structural and contextual barriers including inaccessible banking infrastructure and missing tailored financial products and socio-cultural stigma could prevent inclusion even when individuals have sufficient understanding (Demirgüç-Kunt et al., 2022). Financial behavior is influenced by factors which extend beyond cognitive understanding including institutional trust, digital accessibility and past financial experiences (Xu & Zia, 2012). Financial literacy programs alone are insufficient to achieve inclusion because they need to address the institutional, physical and technical barriers that prevent access. These results show that we need a comprehensive and inclusive approach that combines financial education with supportive rules and service design that works for everyone.

6. Theoretical Managerial Implications

This research substantially enhances the theoretical framework concerning financial inclusion and economic empowerment by emphasising the influence of physical impairment as a moderating variable in the financial inclusion-empowerment relationship. Previous research has predominantly examined the advantages of inclusive finance for entrepreneurs and marginalised communities; however, there has been insufficient empirical investigation into the specific obstacles encountered by physically challenged individuals. This study enhances the theoretical comprehension of the intersection between systemic, contextual difficulties and financial inclusion mechanisms by incorporating structural, behavioural and technological drivers within a moderated framework. The results contest the conventional belief that financial literacy is the sole catalyst for inclusion, highlighting the significance of institutional support, technological accessibility and inclusive service design. Moreover, the moderation analysis enhances current empowerment theories by demonstrating how financial inclusion can serve as a compensatory mechanism, mitigating the adverse effects of physical handicap on economic agency. Consequently, the study addresses a significant deficiency in the literature by providing a thorough, disability-centric perspective on financial inclusion theory.

The results have many practical implications for politicians, banks and development agencies who want to promote inclusive finance. First, institutions need to understand that just teaching individuals with disabilities about money isn't enough to make them feel included; they also need to make sure that physical, digital and attitudinal accessibility is improved. Financial service providers ought to allocate resources towards assistive technologies, accessible mobile banking interfaces and training programs tailored for those with diverse levels of physical ability. Also, legislators need to go beyond general rules for financial inclusion and establish rules that meet the specific requirements of people with disabilities. Prioritise institutional assistance, which includes things like outreach initiatives, microfinance schemes that are open to everyone and rules that make services more accessible.

Lastly, as financial inclusion has been found to lessen the negative effects of physical handicap on empowerment, stakeholders should see it as a strategic tool not only for economic growth but also for improving social equity and human rights.

7. Conclusion, Limitations and Future Scope of the Study

The research demonstrates that financial inclusion stands as a vital factor which enhances economic empowerment for people with physical disabilities. People gain empowerment through financial access, institutional support and technological advancements yet physical impairment remains a significant obstacle to empowerment. Financial inclusion acts as a transformative tool to reduce structural disparities because it counteracts the negative effects of physical impairment. The study challenges the overemphasis on financial literacy because it demonstrates that such education has limited impact when there is no complete infrastructure and support systems in place. The research findings require financial inclusion programs to evolve from awareness-based approaches toward integrated accessibility-focused frameworks. This research provides both theoretical improvements and practical guidance to enhance financial justice for disadvantaged groups which leads to more inclusive economic development.

This study provides significant insights; nonetheless, it possesses certain drawbacks. The study predominantly utilises data from a particular demographic and geographic context, thus constraining the applicability of the results to other people or places. The cross-sectional design of the study limits the capacity to deduce long-term causal links between financial inclusion and economic empowerment. The model's inadequate fit indicates the potential existence of other, unassessed variables affecting financial inclusion outcomes, like cultural views, institutional trust, or intersecting identities (e.g., the combination of gender and disability). Subsequent research may utilise longitudinal methodologies to monitor empowerment trajectories over time or broaden the investigation across various areas and disability classifications for a more comprehensive comparative examination.

Additionally, investigating the influence of psychological and behavioural characteristics, such as risk aversion, financial self-efficacy and trust in digital platforms could enhance the comprehension of financial behaviour in individuals with disabilities.

References

[1] Ahsan, N., & Ahmed, M. (2023). Empowering communities: enhancing financial literacy and inclusion across Asia. In: *Financial Inclusion Across Asia: Bringing Opportunities for Businesses,* 97-107. Emerald Publishing Limited.

[2] Ajide, F. M. (2020). Financial inclusion in Africa: does it promote entrepreneurship?. *Journal of Financial Economic Policy, 12*(4), 687-706.

[3] Akanfe, O., Bhatt, P., & Lawong, D. A. (2025). Technology advancements shaping the financial inclusion landscape: Present interventions, emergence of artificial intelligence and future directions. *Information Systems Frontiers*, 1-24.

[4] Allen, F., Demirgüç-Kunt, A., Klapper, L., & Peria, M. S. M. (2016). The foundations of financial inclusion: Understanding ownership and use of formal accounts. *Journal of Financial Intermediation, 27*, 1–30.

[5] Arun, S., Annim, S. K., & Arun, T. (2013). Overcoming household shocks: Do asset-accumulation strategies matter?. *Review of Social Economy, 71*(3), 281-305.

[6] Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Finance, inequality and the poor. *Journal of Economic Growth, 12*(1), 27–49.

[7] Bhatia, S., & Dawar, G. (2024). The impact of financial inclusion on social and political empowerment: Mediating role of economic empowerment. *Journal of the Knowledge Economy, 15*(3), 13727–13744.

[8] Bongomin, G. O. C., Munene, J. C., Ntayi, J. M., & Malinga, C. A. (2018). Analyzing the relationship between institutional framework and financial inclusion in rural Uganda: A social network perspective. *International Journal of Emerging Markets, 13*(4), 606–630.

[9] Bongomin, G. O. C., Ntayi, J. M., & Munene, J. C. (2017). Institutional framing and financial inclusion: Testing the mediating effect of financial literacy using SEM bootstrap approach, (12), 1727–1744.

[10] Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2022). *The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19*. World Bank Publications.

[11] Dos Santos, P. L., & Harvold Kvangraven, I. (2017). Better than cash, but beware the costs: electronic payments systems and financial inclusion in developing economies. *Development and Change, 48*(2), 205-227.

[12] Eldomiaty, T., Hammam, R., & El Bakry, R. (2020). Institutional determinants of financial inclusion: Evidence from world economies. *International Journal of Development Issues, 19*(2), 217–228.

[13] Gafoor, A., & Amilan, S. (2024). Fintech adoption and financial well-being of persons with disabilities: the mediating role of financial access, financial knowledge and financial behaviour. *International Journal of Social Economics, 51*(11), 1388–1401.

[14] Grohmann, A., Klühs, T., & Menkhoff, L. (2018). Does financial literacy improve financial inclusion? Cross country evidence. *World Development, 111*, 84–96.

[15] Gupta, V., & Suisse, C. (2014). *Making microfinance accessible to persons with disabilities: awareness and attitudes among Indian microfinance institutions*.Center for Financial Inclusion, Accion, USA.

[16] Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2021). *Multivariate data analysis*. (8^{th}). Cengage Learning.

[17] Hanafi, H. B., Abdullah, N. B., & Safu'an, M. N. A. B. (2025). Financial inclusion: Policies and challenges for people with disability in Malaysia. *J. Asian L., 26*, 55.

[18] Hasan, R., Ashfaq, M., Parveen, T., & Gunardi, A. (2023). Financial inclusion–does digital financial literacy matter for women entrepreneurs?. *International Journal of Social Economics, 50*(8), 1085-1104.

[19] Jiya, A. N., et al. (2022). Achieving financial inclusion for persons with disabilities: Exploring preparedness and accessibility in Malawi. *Journal of Disability Policy Studies, 33*(2), 92–102.

[20] Kabeer, N. (1999). Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Development and Change, 30*(3), 435–464.

[21] Kadaba, D. M. K., Aithal, P. S., & KRS, S. (2023). Impact of Digital Financial Inclusion (DFI) initiatives on the self-help group: For sustainable development. *International Journal of Management, Technology, and Social Sciences (IJMTS), 8*(4), 20-39.

[22] Khan, F., Siddiqui, M. A., & Imtiaz, S. (2022). Role of financial literacy in achieving financial inclusion: A review, synthesis and research agenda. *Cogent Business & Management, 9*(1), 2034236.

[23] Lal, T. (2021). Impact of financial inclusion on economic development of marginalized communities through the mediation of social and economic empowerment. *International Journal of Social Economics, 48*(12), 1768-1793.

[24] Lara-Rubio, J., et al. (2024). Analysing credit risk in persons with disabilities as an instrument of financial inclusion. *Journal of Social and Economic Development*, 1–23.

[25] Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *American Economic Journal: Journal of Economic Literature, 52*(1), 5-44.

[26] Mitra, S., Posarac, A., & Vick, B. (2013). Disability and poverty in developing countries: A multidimensional study. *World Development, 41*, 1-18.

[27] Ofoeda, I., Amoah, L., Anarfo, E. B., & Abor, J. Y. (2024). Financial inclusion and economic growth: What roles do institutions and financial regulation play? *International Journal of Finance & Economics, 29*(1), 832–848.

[28] Ofori-Okyere, I., Edghiem, F., & Kumah, S. P. (2023). Marketing inclusive banking services to financially vulnerable consumers: a service design approach. *Journal of Services Marketing, 37*(2), 232-247.

[29] Ozili, P. K. (2023). Big data and artificial intelligence for financial inclusion: benefits and issues. In: *Artificial Intelligence, Fintech, and Financial Inclusion,* 1–10. CRC Press.

[30] Pal, M., Gupta, H., & Joshi, Y. C. (2022). Social and economic empowerment of women through financial inclusion: empirical evidence from India. *Equality, Diversity and Inclusion: An International Journal, 41*(2), 294-305.

[31] Prina, S. (2015). Banking the poor via savings accounts: Evidence from a field experiment. *Journal of Development Economics, 115*, 16–31.

[32] Puli, L., Layton, N., Bell, D., & Shahriar, A. Z. (2024). Financial inclusion for people with disability: a scoping review. *Global Health Action, 17*(1), 2342634.

[33] Rachmad, Y. E. (2025). *Digital financial inclusion: How CBDCs can be the solution*. The United Nations and the Nobel Peace Prize Awards.

[34] Reserve Bank of India (2024). *Handbook of statistics on Indian economy 2023-24*. Appendix Table IV.12.

[35] Reserve Bank of India. (2017). *Banking facilities for persons with disabilities*.

[36] Sarker, D., & Khan, M. A. (2024). Microfinance and economic and social empowerment of people with disabilities: Lessons from Bangladesh. *Development Policy Review, 42*(5), e12799.

[37] Sarma, M. (2016). Measuring financial inclusion for Asian economies. In: *Financial Inclusion in Asia: Issues and Policy Concerns,* pp. 3-34. London: Palgrave Macmillan UK.

[38] Tsatsou, P. (2022). Vulnerable people's digital inclusion: intersectionality patterns and associated lessons. *Information, Communication & Society, 25*(10), 1475-1494.

[39] Vo, D. H. (2024). Does institutional quality matter for financial inclusion? International evidence. *PLOS ONE, 19*(2), e0297431.

[40] Wann, C. R., & Burke-Smalley, L. (2023). Differences in financial inclusion by disability type. *International Journal of Bank Marketing, 41*(5), 1104–1135.

[41] Xu, L., & Zia, B. (2012). Financial literacy around the world: An overview of the evidence with practical suggestions for the way forward. *World Bank Policy Research Working Paper,* (6107).

[42] Zeqiraj, V., Sohag, K., & Hammoudeh, S. (2022). Financial inclusion in developing countries: Do quality institutions matter?. *Journal of International Financial Markets, Institutions and Money, 81*, 101677.

[43] Handani, N. D. (2024). User experience of mobile banking application in Indonesia: New technology of banking. *Global Business & Finance Review (GBFR), 29*(2), 127-141.

[44] Muuo, S. W., Virendrakumar, B., Okello, G., Chege, M., Angwenyi, V., Gichohi, K., ... & Jolley, E. (2025). Financial inclusion for persons with disabilities: Experiences of providers and users of financial products and services in Kenya. *PloS one, 20*(4), e0321493.

[45] Sarstedt, M., Hair, J. F., Pick, M., Liengaard, B. D., Radomir, L., & Ringle, C. M. (2022). Progress in partial least squares structural equation modeling use in marketing research in the last decade. *Psychology & Marketing, 39*(5), 1035-1064.