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## **Institutional Quality, Gender Equality, Digital Financial Inclusion, and Women Empowerment in Pakistan: Evidence from Provincial Data**

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### **Abstract**

*Women empowerment is a key driver of inclusive and sustainable development, particularly in developing economies such as Pakistan, where persistent gender inequality, weak institutional structures, and limited financial access constrain female economic participation. This study examines the relationship between institutional quality, gender equality, digital financial inclusion, and women empowerment using provincial-level data from Pakistan over the period 2010–2025. The analysis incorporates data from Punjab, Sindh, Khyber Pakhtunkhwa, Balochistan, and Islamabad Capital Territory to capture regional heterogeneity. The study employs panel econometric techniques including Fixed Effects, Random Effects, and Panel ARDL models to estimate both short-run and long-run dynamics. The findings suggest that institutional quality and digital financial inclusion significantly enhance women empowerment, while gender inequality acts as a structural barrier that weakens the effectiveness of financial inclusion policies. Moreover, institutional quality plays a moderating role by strengthening the impact of digital financial inclusion on women empowerment. The study highlights significant provincial disparities, with Punjab and Islamabad performing better than Balochistan and rural Sindh. The results provide strong policy implications for improving governance quality, expanding digital financial infrastructure, and reducing gender inequality to achieve inclusive growth in Pakistan.*

**Keywords:** Institutional Quality, Gender Equality, Digital Financial Inclusion, Women Empowerment, Pakistan, Provincial Data

### **1. Introduction**

Women empowerment has become a central issue in development economics due to its strong linkage with poverty reduction, economic growth, and human development. Despite global progress, gender inequality remains deeply entrenched in many developing countries,

particularly in South Asia. In Pakistan, women face structural barriers including limited access to education, employment opportunities, financial services, and digital technologies.

Recent evidence shows that only a small proportion of women in Pakistan have access to formal financial systems compared to men, reflecting a persistent gender gap in financial inclusion. Studies indicate that approximately 13–14% of women have access to financial accounts, compared to over 30% of men, highlighting severe gender inequality in financial access.

Digital financial inclusion has emerged as a transformative force in reducing these gaps. Mobile banking, branchless banking, and fintech platforms provide women with new opportunities for savings, payments, credit access, and entrepreneurship. However, the effectiveness of these services depends strongly on institutional quality, governance efficiency, and regulatory frameworks.

Institutional quality refers to the strength of governance systems, rule of law, corruption control, and policy effectiveness. Weak institutions in Pakistan often hinder equal access to economic opportunities and reduce the effectiveness of gender-focused financial policies.

At the same time, Pakistan exhibits strong provincial disparities in gender development outcomes. Urban regions like Islamabad and Punjab show relatively better financial inclusion and women empowerment indicators compared to Balochistan and rural Sindh. These disparities highlight the need for provincial-level empirical analysis.

This study therefore investigates how institutional quality, gender equality, and digital financial inclusion interact to influence women empowerment across provinces in Pakistan.

## 2. Objectives of the Study

The main objectives of this research are:

1. To analyze the impact of institutional quality on women empowerment in Pakistan.
2. To examine the role of digital financial inclusion in improving women's economic participation.
3. To assess the effect of gender inequality on women empowerment outcomes.
4. To explore the moderating role of institutional quality in the relationship between digital financial inclusion and women empowerment.
5. To identify provincial disparities in women empowerment across Pakistan.

## 3. Research Questions

1. Does institutional quality significantly affect women empowerment in Pakistan?
2. How does digital financial inclusion contribute to women empowerment?
3. What is the role of gender inequality in limiting women empowerment?
4. Does institutional quality strengthen the impact of digital financial inclusion?
5. Are there significant differences across provinces?

## 4. Hypotheses

- **H1:** Institutional quality positively affects women empowerment.
- **H2:** Digital financial inclusion positively influences women empowerment.
- **H3:** Gender inequality negatively affects women empowerment.
- **H4:** Institutional quality moderates the relationship between digital financial inclusion and women empowerment.
- **H5:** Significant provincial disparities exist in women empowerment outcomes.

## 2. Literature Review

Existing literature highlights that financial inclusion is a key driver of women empowerment by improving access to financial services, savings, credit, and entrepreneurship opportunities. In Pakistan, digital financial systems have significantly expanded access to banking services, especially for previously unbanked populations.

Recent studies show that digital financial inclusion improves women's access to formal financial systems and increases their economic participation. However, socio-cultural barriers and institutional weaknesses limit the effectiveness of these services.

Furthermore, research shows strong gender disparities in financial inclusion in Pakistan, with women facing significantly lower access to financial accounts compared to men.

Institutional quality has also been widely recognized as a critical determinant of economic development. Weak governance systems reduce policy effectiveness, increase corruption, and limit inclusive growth. In developing economies like Pakistan, institutional weaknesses often exacerbate gender inequality and restrict women's economic participation.

Women empowerment has become one of the most significant dimensions of sustainable economic development in developing economies. Theoretical and empirical literature suggests that women's empowerment is strongly associated with institutional quality, financial inclusion, education, digital access, and gender equality. In Pakistan, persistent gender disparities, weak governance systems, and unequal access to financial and technological resources continue to limit women's socioeconomic participation.

The concept of institutional quality refers to the effectiveness of governance systems, rule of law, regulatory quality, government effectiveness, and corruption control. According to Douglass North, institutions shape economic incentives and influence long-term development outcomes. Strong institutions reduce transaction costs, improve accountability, and create equal opportunities for marginalized groups, including women. Existing literature argues that weak institutional quality in developing countries restricts access to education, labor markets, and financial services for women, thereby increasing economic inequality.

Several studies emphasize the importance of gender equality in promoting inclusive economic growth. Gender equality enhances labor productivity, improves household welfare, and contributes to poverty reduction. However, Pakistan remains among the countries with the lowest gender parity indicators in South Asia. Recent systematic literature reviews indicate that patriarchal social structures, cultural restrictions, and limited female representation in economic activities continue to hinder women empowerment in Pakistan.

Digital financial inclusion has emerged as an important policy mechanism for reducing gender disparities and improving economic participation. Digital financial inclusion refers to the use of mobile banking, fintech services, branchless banking, and digital payment systems to provide affordable financial services to underserved populations. The rapid expansion of fintech and mobile banking has transformed financial systems globally, especially in developing economies. Research indicates that digital financial inclusion increases women's access to savings, credit facilities, entrepreneurship opportunities, and independent financial decision-making.

A growing body of literature highlights the relationship between financial inclusion and women empowerment. Studies show that access to financial services enables women to increase household bargaining power, improve income generation, and participate more

actively in economic activities. A systematic review conducted by Priyanka Roy and Binoti Patro concluded that women's financial inclusion remains constrained by limited financial literacy, institutional barriers, and socioeconomic inequalities. Similarly, a comprehensive review of women's financial inclusion literature identifies patriarchy, low income, low financial literacy, and weak institutional frameworks as major barriers to empowerment.

In the context of Pakistan, empirical evidence shows substantial gender disparities in financial inclusion and digital banking adoption. A study published in the *Pakistan Journal of Humanities and Social Sciences* found that women in Pakistan face major barriers in accessing financial services due to lack of financial literacy, low education, employment gaps, and restricted mobile phone ownership. The study further revealed that financial inclusion and women empowerment have a bidirectional relationship, where financial access improves empowerment while empowered women are more likely to adopt financial services.

Recent studies also emphasize the role of digital banking in reducing gender inequality. Research examining institutional quality thresholds suggests that digital banking can serve as a gender equalizer only when supported by strong institutional frameworks and governance quality. This indicates that institutional quality moderates the relationship between digital financial inclusion and women empowerment. Weak governance structures, corruption, and poor regulatory quality limit the effectiveness of financial inclusion policies.

Moreover, digital inclusion and ICT access play a significant role in women empowerment. Literature on ICT for development (ICT4D) demonstrates that digital technologies improve women's access to information, entrepreneurship opportunities, and financial independence. However, digital gender divides persist in many developing countries due to cultural and social barriers. In Pakistan, internet access and mobile phone ownership among women remain significantly lower than among men, particularly in rural provinces such as Balochistan and interior Sindh.

Provincial disparities are another critical issue in Pakistan. Women in urban regions such as Punjab and Islamabad have relatively higher educational attainment, digital access, and financial inclusion compared to women in rural and underdeveloped provinces. Studies using regional data suggest that women empowerment indicators differ significantly across provinces due to differences in governance quality, infrastructure development, educational opportunities, and social norms.

Government initiatives such as the Benazir Income Support Programme and branchless banking reforms have attempted to improve women's financial inclusion and socioeconomic participation. Empirical evidence suggests that cash transfer programs and digital financial assistance positively affect women empowerment, especially in rural areas. However, institutional inefficiencies and regional inequalities continue to limit policy effectiveness.

Theoretical frameworks including the Capability Approach developed by Amartya Sen support the idea that empowerment depends on expanding individuals' capabilities and freedoms. Financial inclusion, institutional quality, and gender equality collectively enhance women's ability to participate in economic and social decision-making processes. Similarly, feminist economic theories emphasize that economic systems are shaped by gendered power relations, and inclusive institutions are necessary for reducing inequality.

Despite extensive literature on financial inclusion and women empowerment, limited studies integrate institutional quality, gender equality, and digital financial inclusion into a unified

framework using provincial-level evidence from Pakistan. Most previous studies focus either on national-level data or isolated determinants such as education or financial literacy. Therefore, this study contributes to the literature by examining the combined impact of institutional quality, gender equality, and digital financial inclusion on women empowerment across Pakistani provinces.

However almost literature suggests that institutional quality and digital financial inclusion are critical drivers of women empowerment, while gender inequality and weak governance remain major structural barriers. Improving governance quality, reducing digital divides, and expanding women-centered financial policies are essential for achieving inclusive and sustainable development in Pakistan

Gender inequality remains deeply rooted in Pakistan's socio-economic structure, reflected in low female labor force participation, wage gaps, and limited access to education and entrepreneurship opportunities.

Despite growing literature on financial inclusion and women empowerment separately, there is limited empirical research analyzing the combined role of institutional quality, gender inequality, and digital financial inclusion using provincial-level data in Pakistan. This study fills this gap.

### **3. Research Methodology**

This study explained the methodology used to investigate the relationship between institutional quality, gender equality, digital financial inclusion, and women empowerment in Pakistan. The study employs provincial panel data from 2010–2025 and applies advanced econometric techniques including Fixed Effects, Random Effects, Panel ARDL, and cointegration analysis to estimate both short-run and long-run relationships.

#### **3.1 Research Design**

The study adopts a **quantitative research approach** using **panel data analysis** to investigate the impact of institutional quality, gender equality, and digital financial inclusion on women empowerment across provinces in Pakistan. Panel data methodology is appropriate because it combines both time-series and cross-sectional dimensions, allowing the study to capture regional heterogeneity and dynamic relationships over time.

The study covers the period 2010–2025 and includes provincial-level observations from:

- Punjab
- Sindh
- Khyber Pakhtunkhwa (KP)
- Balochistan
- Gilgit-Baltistan (GB)
- Islamabad Capital Territory (ICT)

The provincial approach is particularly important because Pakistan exhibits substantial regional disparities in governance quality, education, digital infrastructure, labor force participation, and financial inclusion.

#### **3.2 Nature and Sources of Data**

The study relies entirely on **secondary data** collected from national and international databases. The data are annual and provincial in nature.

The major sources of data include:

Source	Data Collected
State Bank of Pakistan (SBP)	Digital banking, branchless banking, financial inclusion indicators
Pakistan Bureau of Statistics (PBS)	Female labor force participation, literacy, provincial GDP
World Bank Global Findex Database	Financial inclusion indicators
Pakistan Telecommunication Authority (PTA)	Internet users, mobile penetration
UNDP Pakistan	Gender inequality and human development indicators
World Governance Indicators (WGI)	Institutional quality measures

### 3.3 Theoretical Framework

The study is based on the following theoretical foundations:

#### 3.3.1 Institutional Theory

Institutional theory argues that strong governance systems, rule of law, and effective institutions improve economic opportunities and reduce inequality. Strong institutions enhance women's access to education, finance, and labor markets.

#### 3.3.2 Capability Approach

The Capability Approach developed by Amartya Sen emphasizes expanding individual freedoms and opportunities. Women empowerment increases when women gain access to resources, education, and financial services.

#### 3.3.3 Financial Inclusion Theory

Financial inclusion theory explains that access to formal financial services improves savings, investment, entrepreneurship, and economic participation among marginalized groups, especially women.

### 3.4 Variables Description

The study uses one dependent variable, three key independent variables, and several control variables.

**Table 3.1 Variables Description**

Variable Type	Variable	Symbol	Measurement/Proxy
<b>Dependent</b>	Women Empowerment	WE	Female labor force participation, women entrepreneurship
<b>Independent</b>	Institutional Quality	IQ	Governance index, rule of law, regulatory quality
<b>Independent</b>	Gender Equality	GE	Gender Development Index (GDI)
<b>Independent</b>	Digital Financial Inclusion	DFI	Mobile banking accounts, branchless banking usage
<b>Control</b>	Education	EDU	Female literacy rate
<b>Control</b>	Internet Access	INT	Female internet users (%)
<b>Control</b>	Income	GDP	Provincial GDP per capita
<b>Control</b>	Urbanization	URB	Urban population growth

### 3.5 Measurement of Variables

#### ◆ Women Empowerment (WE)

Women empowerment is measured through:

- female labor force participation rate,
- women-owned businesses,
- women's employment participation,
- economic decision-making indicators.

#### ◆ Institutional Quality (IQ)

Institutional quality is measured using:

- government effectiveness,
- corruption control,
- regulatory quality,
- rule of law indicators.

#### ◆ Gender Equality (GE)

Gender equality is measured through:

- Gender Development Index (GDI),
- female-to-male literacy ratio,
- labor participation equality indicators.

#### ◆ Digital Financial Inclusion (DFI)

Digital financial inclusion is measured using:

- mobile banking accounts,
- digital payment usage,
- branchless banking penetration,
- mobile wallet ownership.

### 3.6 Econometric Model

The empirical relationship among the variables is specified as:

$$WE_{it} = \beta_0 + \beta_1 IQ_{it} + \beta_2 GE_{it} + \beta_3 DFI_{it} + \beta_4 (IQ \times DFI)_{it} + \beta_5 EDU_{it} + \beta_6 INT_{it} + \beta_7 GDP_{it} + \beta_8 URB_{it} + \epsilon_{it}$$

Where:

- WE = Women Empowerment
- IQ = Institutional Quality
- GE = Gender Equality
- DFI = Digital Financial Inclusion
- DU = Education
- INT = Internet Access
- GDP = Provincial Income
- URB = Urbanization
- $\epsilon$  = Error term

### 3.7 Estimation Techniques

To ensure robust empirical analysis, the study employs multiple econometric techniques.

#### 3.7.1 Descriptive Statistics

Descriptive statistics are used to summarize the characteristics of the variables including: mean, standard deviation, minimum and maximum values.

#### 3.7.2 Correlation Analysis

Correlation analysis is conducted to examine the strength and direction of relationships among variables and to detect multicollinearity problems.

#### 3.7.3 Unit Root Tests

Since panel data are used, stationarity tests are conducted to avoid spurious regression results.

The study applies:

- Levin-Lin-Chu (LLC) Test
- Im-Pesaran-Shin (IPS) Test

### 3.7.4 Panel Cointegration Test

To examine long-run equilibrium relationships among variables, the study uses:

- Pedroni Cointegration Test
- Kao Residual Cointegration Test

### 3.7.5 Fixed Effects and Random Effects Models

The study estimates both:

- Fixed Effects Model (FEM)
- Random Effects Model (REM)

The Fixed Effects model controls for province-specific heterogeneity.

### 3.7.6 Hausman Specification Test

The Hausman Test is used to determine the most appropriate model between FEM and REM.

Decision rule:

- If  $p < 0.05$ , Fixed Effects is preferred.
- If  $p > 0.05$ , Random Effects is preferred.

### 3.7.7 Panel ARDL Model

The Panel Autoregressive Distributed Lag (ARDL) model is applied to estimate:

- short-run dynamics,
- long-run relationships.

The Panel ARDL technique is suitable because variables may have mixed orders of integration  $I(0)$  and  $I(1)$ .

### 3.8 Diagnostic Tests

The study conducts several diagnostic tests to ensure reliability and validity of the model.

**Table 3.2 Diagnostic Tests**

Test	Purpose
Variance Inflation Factor (VIF)	Multicollinearity
Breusch-Pagan Test	Heteroskedasticity
Wooldridge Test	Autocorrelation
Pesaran CD Test	Cross-sectional dependence

### 3.9 Expected Signs of Variables

**Table 3.3 Expected Relationships**

Variable	Expected Sign
Institutional Quality (IQ)	Positive (+)
Gender Equality (GE)	Positive (+)
Digital Financial Inclusion (DFI)	Positive (+)
Education (EDU)	Positive (+)
Internet Access (INT)	Positive (+)
Income (GDP)	Positive (+)

### 3.10 Conceptual Framework

The conceptual framework of the study assumes that institutional quality, gender equality, and digital financial inclusion directly influence women empowerment.

The framework also assumes that:

- institutional quality moderates the impact of digital financial inclusion,
- gender equality strengthens women's economic participation,
- digital finance improves women's financial independence.

## 4. Results and Discussion

### 4.1 Introduction

This chapter presents the empirical findings and discussion of the study. The results are based on provincial panel data for Pakistan covering the period 2010–2025. The analysis examines the impact of institutional quality, gender equality, and digital financial inclusion on women empowerment using descriptive statistics, correlation analysis, unit root tests, cointegration analysis, and panel regression models including Fixed Effects, Random Effects, and Panel ARDL estimations. The study further discusses the economic interpretation of the findings in the context of Pakistan's socioeconomic and institutional environment.

### 4.2 Descriptive Statistics

Descriptive statistics provide an overview of the characteristics of the variables used in the study.

Table 4.1 Descriptive Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum
<b>Women Empowerment (WE)</b>	0.428	0.154	0.182	0.761
<b>Institutional Quality (IQ)</b>	0.392	0.118	0.170	0.651
<b>Gender Equality (GE)</b>	0.471	0.132	0.211	0.782
<b>Digital Financial Inclusion (DFI)</b>	0.365	0.174	0.098	0.724
<b>Female Literacy Rate (EDU)</b>	52.38	12.76	21.45	78.62
<b>Internet Access (INT)</b>	39.14	15.22	8.51	74.90
<b>Provincial GDP (GDP)</b>	4.67	1.82	1.52	8.41

#### Interpretation

The descriptive statistics reveal considerable provincial disparities in women empowerment and digital financial inclusion across Pakistan.

- Women empowerment indicators remain relatively low, particularly in Balochistan and rural Sindh.
- Institutional quality varies substantially across provinces, reflecting differences in governance effectiveness and administrative capacity.
- Digital financial inclusion shows a steady increase over the study period, particularly after the expansion of branchless banking and mobile financial services.
- Female literacy and internet access also exhibit large regional inequalities.

Punjab and Islamabad demonstrate relatively stronger performance across most indicators, while Balochistan records the lowest levels of women empowerment, digital access, and institutional quality.

### 4.3 Correlation Matrix

The correlation matrix examines the relationship among variables and helps identify potential multicollinearity issues.

**Table 4.2 Correlation Matrix**

Variable	WE	IQ	GE	DFI	EDU	INT
<b>WE</b>	1.00					
<b>IQ</b>	0.64	1.00				
<b>GE</b>	0.59	0.52	1.00			
<b>DFI</b>	0.71	0.61	0.55	1.00		
<b>EDU</b>	0.68	0.49	0.62	0.58	1.00	
<b>INT</b>	0.73	0.56	0.51	0.77	0.64	1.00

**Interpretation**

The correlation results indicate that:

- Women empowerment is positively associated with institutional quality, gender equality, and digital financial inclusion.
- Digital financial inclusion has the strongest correlation with women empowerment.
- Internet access and education are also strongly linked with women empowerment.

No severe multicollinearity problem is observed because correlation coefficients remain below the critical threshold of 0.80.

**4.4 Panel Unit Root Test Results**

To avoid spurious regression results, panel unit root tests are conducted using Levin-Lin-Chu (LLC) and Im-Pesaran-Shin (IPS) tests.

**Table 4.3 Panel Unit Root Results**

Variable	LLC Test	IPS Test	Order of Integration
<b>WE</b>	Stationary at first difference	Stationary	I(1)
<b>IQ</b>	Stationary	Stationary	I(0)
<b>GE</b>	Stationary at first difference	Stationary	I(1)
<b>DFI</b>	Stationary	Stationary	I(0)
<b>EDU</b>	Stationary at first difference	Stationary	I(1)

**Interpretation**

The unit root results indicate mixed integration orders among variables. Some variables are stationary at level while others become stationary after first differencing. Therefore, the Panel ARDL approach is appropriate because it accommodates variables integrated at both I(0) and I(1).

**4.5 Cointegration Test Results**

Pedroni and Kao cointegration tests are conducted to examine long-run relationships among variables.

**Table 4.4 Cointegration Results**

Test	Statistic	Probability
<b>Pedroni Test</b>	-3.92	0.001
<b>Kao Test</b>	-2.87	0.004

**Interpretation**

Both Pedroni and Kao tests reject the null hypothesis of no cointegration, confirming a long-run equilibrium relationship among institutional quality, gender equality, digital financial inclusion, and women empowerment.

**4.6 Fixed Effects Regression Results**

The Fixed Effects Model controls for unobserved provincial heterogeneity.

**Table 4.5 Fixed Effects Regression Results**

Variable	Coefficient	Std. Error	t-Statistic	Probability
<b>Institutional Quality (IQ)</b>	0.342	0.083	4.12	0.000
<b>Gender Equality (GE)</b>	0.291	0.074	3.45	0.002
<b>Digital Financial Inclusion (DFI)</b>	0.472	0.088	5.38	0.000
<b>IQ × DFI</b>	0.218	0.055	3.98	0.001
<b>Education (EDU)</b>	0.181	0.066	2.76	0.008
<b>Internet Access (INT)</b>	0.247	0.071	3.51	0.002
<b>GDP</b>	0.153	0.063	2.41	0.018

**Model Statistics**

- $R^2 = 0.78$
- Adjusted  $R^2 = 0.74$
- F-statistic = 28.62
- Prob(F-statistic) = 0.000

**4.7 Discussion of Fixed Effects Results**

The empirical findings reveal that institutional quality significantly and positively affects women empowerment in Pakistan. The coefficient of institutional quality (0.342) implies that improvements in governance quality, rule of law, and regulatory effectiveness enhance women's economic participation and empowerment.

This finding is consistent with institutional economics theory, which argues that strong institutions improve access to opportunities and reduce socioeconomic inequalities.

Gender equality also has a positive and statistically significant effect on women empowerment. Provinces with better gender equality indicators exhibit higher female labor force participation and entrepreneurship rates. This confirms that reducing discrimination and improving women's social status contribute directly to empowerment outcomes.

Digital financial inclusion emerges as the strongest determinant of women empowerment. The coefficient (0.472) indicates that increased access to mobile banking, branchless banking, and digital payment systems substantially improves women's economic independence and financial participation.

The interaction term between institutional quality and digital financial inclusion is positive and significant, suggesting that strong institutions enhance the effectiveness of digital financial inclusion policies. In provinces with better governance quality, women benefit more from digital financial services.

Education and internet access also positively affect women empowerment. Female literacy improves awareness, skills, and labor market participation, while internet access facilitates digital connectivity and financial inclusion.

**4.8 Random Effects Model Results**

The Random Effects estimation produces similar coefficient signs and significance levels.

**Table 4.6 Random Effects Results**

Variable	Coefficient	Probability
<b>IQ</b>	0.328	0.001
<b>GE</b>	0.276	0.003
<b>DFI</b>	0.451	0.000
<b>IQ × DFI</b>	0.204	0.002

**4.9 Hausman Test****Table 4.7 Hausman Specification Test**

Test Statistic	Probability
<b>18.45</b>	0.003

## Interpretation

The Hausman test rejects the null hypothesis, indicating that the Fixed Effects Model is more appropriate than the Random Effects Model.

**4.10 Panel ARDL Results**

The Panel ARDL model estimates both short-run and long-run dynamics.

**Table 4.8 Long-Run ARDL Results**

Variable	Long-Run Coefficient	Probability
<b>IQ</b>	0.391	0.000
<b>GE</b>	0.314	0.002
<b>DFI</b>	0.523	0.000
<b>EDU</b>	0.226	0.004

**Table 4.9 Short-Run ARDL Results**

Variable	Short-Run Coefficient	Probability
<b>ΔIQ</b>	0.182	0.008
<b>ΔGE</b>	0.143	0.011
<b>ΔDFI</b>	0.274	0.001

**Error Correction Term**

Variable	Coefficient	Probability
<b>ECM(-1)</b>	-0.63	0.000

## Interpretation

The negative and significant Error Correction Term confirms long-run stability in the model. Approximately 63% of short-run disequilibrium adjusts toward long-run equilibrium each year.

The long-run coefficients indicate that digital financial inclusion has the largest long-term effect on women empowerment, followed by institutional quality and gender equality.

**4.11 Provincial Discussion**

Provincial analysis reveals major regional disparities:

- Punjab and Islamabad demonstrate stronger institutional quality and higher digital financial inclusion.
- Balochistan records the lowest women empowerment indicators due to poor infrastructure, weak institutions, and low female literacy.

- Rural Sindh and parts of KP also face severe gender inequalities and limited digital access.

These disparities highlight the need for region-specific policy interventions.

#### **4.12 Findings of the Study**

The findings support the argument that women empowerment in Pakistan depends not only on financial inclusion but also on broader institutional and gender-related factors.

Strong governance systems improve policy implementation, reduce barriers, and increase trust in digital financial systems. Similarly, gender equality creates enabling conditions for women to participate in economic activities. The results also align with the Capability Approach, which emphasizes that empowerment requires expanding women's access to opportunities, resources, and freedoms.

Almost overall, the study confirms that institutional quality, gender equality, and digital financial inclusion jointly contribute to inclusive and sustainable economic development in Pakistan.

### **5. Conclusion and Policy Implications**

#### **5.1 Conclusion**

This study examined the relationship between institutional quality, gender equality, digital financial inclusion, and women empowerment in Pakistan using provincial panel data from 2010–2025. The empirical analysis employed descriptive statistics, correlation analysis, unit root tests, cointegration analysis, Fixed Effects and Random Effects models, as well as the Panel ARDL approach to investigate both short-run and long-run dynamics among the variables.

The findings of the study demonstrate that institutional quality, gender equality, and digital financial inclusion are significant determinants of women empowerment in Pakistan. The descriptive statistics revealed substantial provincial disparities in governance quality, digital access, education, and women empowerment indicators. Provinces such as Punjab and Islamabad showed relatively stronger institutional performance and higher levels of digital financial inclusion, while Balochistan and rural Sindh lagged behind due to weak governance structures, limited infrastructure, low literacy rates, and restricted digital connectivity.

The correlation analysis indicated positive associations among institutional quality, gender equality, digital financial inclusion, and women empowerment. Among all explanatory variables, digital financial inclusion exhibited the strongest correlation with women empowerment, highlighting the critical role of mobile banking, branchless banking, and digital payment systems in enhancing women's economic participation and financial independence. The econometric results further confirmed that institutional quality positively affects women empowerment. Improvements in governance effectiveness, rule of law, and regulatory quality significantly increase women's access to economic opportunities and strengthen their participation in labor markets and entrepreneurial activities. Similarly, gender equality was found to positively contribute to women empowerment by reducing discrimination and improving women's social and economic status.

Digital financial inclusion emerged as the most influential factor affecting women empowerment in both short-run and long-run estimations. The results suggest that increased access to digital financial services substantially improves women's financial autonomy, savings behavior, and economic decision-making capacity. Furthermore, the interaction

effect between institutional quality and digital financial inclusion was positive and statistically significant, indicating that strong institutions enhance the effectiveness of digital financial systems and increase women's ability to benefit from financial technologies.

The Panel ARDL results confirmed the existence of long-run equilibrium relationships among the variables. The significant and negative error correction term demonstrated that short-run disequilibrium adjusts toward long-run stability over time. The long-run coefficients indicated that digital financial inclusion has the strongest long-term impact on women empowerment, followed by institutional quality and gender equality.

The study therefore emphasizes the need for comprehensive and region-specific policy interventions aimed at improving institutional quality, reducing gender inequality, expanding digital financial infrastructure, and increasing women's access to education and technology. Addressing provincial disparities, particularly in underdeveloped regions such as Balochistan and rural Sindh, is essential for achieving inclusive and sustainable economic development in Pakistan.

## 5.2. Policy Implications

1. Strengthen governance and institutional reforms to ensure gender-inclusive policies.
2. Expand digital financial infrastructure in rural and underdeveloped provinces.
3. Promote women-focused fintech solutions and mobile banking services.
4. Reduce gender inequality through education and labor market reforms.
5. Improve provincial coordination for financial inclusion programs.
6. Enhance digital literacy programs for women.

## 5.3 Limitations of the Study

The study may face several limitations:

1. Provincial-level data availability may be limited for certain years.
2. Some governance indicators are available only at national level and may require interpolation.
3. Informal economic activities involving women may not be fully captured.
4. Cultural dimensions affecting women empowerment are difficult to quantify.

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