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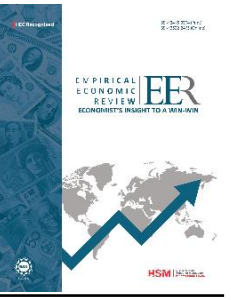

Title: **Gender Dynamics within the Tech-Industry and Financial Services and the Resultant Effects on Gender Inequality**

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Gender Dynamics within the Tech-Industry and Financial Services and the Resultant Effects on Gender Inequality

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Abstract

Due to the widespread adoption of digital technology, the labor market is undergoing a paradigm shift, resulting in its reorganization in terms of employment opportunities. On the other hand, financial development is also affecting the livelihood of individuals. This shift towards a tech-based economy and financial access is also affecting the opportunities available to females. For gender-based inequalities to be fully addressed, it is crucial to comprehend how the digital divide and financial access affect and shape the lives of women. The current study used panel data for 22 developing countries in Asia spanning the time period 2010-2022. Panel ARDL was used and the Hausman test showed that Pooled Mean Group (PMG) is appropriate. The findings showed that female access to credit significantly affects gender inequality in both the short-and long-run. While, women's participation in tech-related jobs affects gender inequality in the long-run only. The current study also suggested policies to reduce gender inequality in the developing economies.

Keywords: financial access, gender inequality, Panel ARDL, poverty, technology

Introduction

The digital economy has experienced significant and rapid growth, leading to a transformation in the way humans connect with each other and conduct worldwide business. This revolution has not only accentuated the gender dynamics and wealth inequity, however, it has also led to a noteworthy transformation in the economic context. The development of digital technology has resulted in substantial transformations in the job sector. The widespread use of digital technology has caused a fundamental change in

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labor markets, resulting in the reorganization of existing vocations and the emergence of new ones.

The advent of digital technology and platforms has facilitated the growth of telecommuting, flexible work hours, a globally interconnected labor market, and interactions with the governments. Consequently, this change has not only stimulated economic expansion, however, it has also brought attention to significant omissions, many of which are related to gender. The Online Cafe has generously rewarded the exceptional performance of its top-performing tools, which have effectively managed their respective areas. These innovations have greatly facilitated the necessary support work.

The technological advancements have facilitated the creation of diverse job opportunities, however, these advancements have also offered unique challenges in promoting the participation of marginalized groups, specifically women. While creating additional possibilities, this has also intensified the preexisting disparities. Although, there has been notable advancement in reducing the disparities between genders in the field of technology, such disparities still exist in terms of digital literacy, access to the Internet, and the underrepresentation of women in high-ranking positions within the businesses.

According to a UNICEF report referenced by Nurk, women are less likely than men to have access to mobile devices, the Internet, and other digital technologies. Women are twice as likely to have low-level technical skills and a third less probability of having advanced digital literacy than men. Hence, they are not being represented in the fields that demand an essential level of these technical skills. This gap of digital skills limits work opportunities for women in the digital sector. It is also one root cause why there are a few women working as data analysts, engineers or pursuing their careers into the IT sector with high pays.

For this reason, women are more often offered jobs with minimum salaries within the digital industry, increasing gender wage gap and equal income inequality. The incapability of women to harness the digital economy is further widened by their lack of awareness on the digital infrastructure and numerous resources, persisting as a gender pay gap (Irene, 2019). Moreover, institutional biases reinforced by socio-cultural norms have a substantial impact on women's lower participation in the

workforce, rather than gender being a barrier to accessing digital occupations (Mariscal et al., 2019).

As women often have to take on more caregiving responsibilities and balance work and family, remote work combined with digital systems has otherwise increased gender disparity. While improved technology has the potential to boost economic growth and create more job opportunities, it has been observed that technical advancements maintain income gaps between genders and deny women equal opportunity in the digital economy.

. Thus, the current study raised the awareness among scholars, policymakers, and advocates to focus on the position of women in the digital sector and its impact on income difference.

In contrast, the financial services industry faces a distinct set of challenges in terms of addressing or sustaining gender-based inequality. Women and their ability to participate in economic activities and be economically self-sufficient are positively influenced by their access to; and usage of; basic financial services. These services include banking, credit, and insurance. This inequality, though still prevalent in the world, hinders proper financial inclusion of women and aggravates the already existing gender disparities. It has also been discovered that due to limited financial resources, women have been barred from starting and growing new enterprises. Besides, the lack of sufficiently developed financial services and the products that correspond to their needs, for instance, the conditions for micro and macro credit and flexible savings, also keep women out of the financial arena. Therefore, in the achievement of a more favorable financial environment, a call to tackle these disparities requires the formulation and implementation of fair gendered financial policies including increased financial enfranchisement, improved financial education, and policies encouraging women venturing.

Literature Review

During the past few decades, there have been significant advancements in different economics-related fields. These advancements have resulted in the development of two primary models: an appetite-based model and a statistical model. Due to certain reasons, for instance the nature and the economic repercussions, these models can be differentiated from one another. According to the taste-based preference model, often known as the Becker-type explanation of discrimination, discrimination stems from an

individual's personal taste to discriminate against certain groups (Friedman & Becker, 1957). Thus, those who discriminate against a specific group would avoid contacting them. The fact that the disadvantaged group pays higher loan interest rates suggests this. Thus, lenders charge a higher interest rate to compensate for associating with the disadvantaged group. The decrease in disadvantaged borrowers' loans may also show lending market's prejudice.

There is an uneven distribution of social networks between men and women due to the former having an edge in terms of social capital. Specifically, studies have shown that men typically have larger professional and formal networks, whereas women's social networks are often centered around family and friends (Marsden, 1987; Moore, 1990; Stenbacka & Tillberg Mattsson, 2009). The significant disparity in the number of relatives in the social networks of men and women persist, even after considering other variables, such as occupation, family, and wage. Furthermore, men have a higher likelihood of being the members of significant commercial or economic associations. In contrast, women are more likely to be involved in family and community relationships, as stated by McPherson and Smith-Lovin (1982). Furthermore, there is an empirical support for the existence of gender bias within a network, as individuals tend to voluntarily associate themselves with networks consisting of members of the same sex. For instance, men frequently join organizations that are predominantly male, however, women are more inclined to join associations that are predominantly female (Straits, 1998). The variations in the network architectures of men and women can be attributed to the disparities in their networking capabilities and talents. Moog and Backes-Gellner (2009) found that women invest less in social capital than men. Gender norms, structural position, and minority status may further hamper women's networking capabilities (Timberlake, 2005).

In addition, men derive greater advantages from their networks as compared to women. According to Manolova et al. (2007), networking can enhance the growth potential of Bulgarian businesses owned by men, however, it does not have the same effect on businesses owned by women. Furthermore, there is a favorable correlation between enhanced social capital and the advancement of men's careers, as demonstrated by Dreher and Cox (2000). Entrepreneurial networks may facilitate early advancement for senior men but not for women (Burt, 1998). Nevertheless, evidence

suggests that women could get advantages from diverse networks of men through partnerships between men and women (Godwin et al., 2006). Specifically, female entrepreneurs who collaborate with their male counterparts have the opportunity to expand their networks by establishing connections with a greater number of individuals who are not related to them, such as business associates or individuals of higher social standing. Consequently, female entrepreneurs would gain access to a broader spectrum of knowledge and opportunities that are crucial for them to achieve success in business.

Social capital has been studied in relation to various networks including those involving government officials and bankers, business networks (such as those involving customers, suppliers, or business associations), and social organizations or personal connections with relatives and friends. More corporate associations and network links indicate stronger social integration (Nguyen & Luu, 2013). Network linkages, such as regular communication and interactions can help boost social capital (Davidsson & Honig, 2003).

Financial inclusion is a crucial factor in determining a country's economic success and long-term viability. A study utilizing the Global Findex, encompassing both developed and developing nations, discovered connections between measures of financial inclusion and gross national income (Van der Werff et al., 2013).

A cross-country Asia Pacific study found that financial inclusion was positively correlated with per capita GDP and negatively correlated with poverty (Ambarkhane et al., 2020). Makina and Walle (2019) determined that financial services boosted African economic growth. According to Singh and Kodan (2011), financial inclusion is linked to India's socioeconomic success. Financial services exclusion remains a persistent problem in certain countries and circumstances. While, the Asian region exhibits superior levels of financial inclusion as compared to other developing areas, there are still notable regional discrepancies that need to be resolved (Ayyagari & Beck, 2015).

Regarding India, Iyer (2015) pointed out that low earnings can impede the capacity to save money and make investments. Studies examining the state of financial inclusion for women have consistently found that they are significantly marginalized from the financial system. This exclusion can be

attributed to various factors including limited education, income, and employment opportunities. Additionally, women often lack empowerment pertaining to financial matters. These findings are supported by multiple studies (Demirgüç-Kunt et al., 2014; Fernandes et al., 2014). Nevertheless, experts have widely regarded the swift digitalization of financial services in the contemporary period as a significant means to diminish gender disparities in financial inclusion (Amidzic et al., 2014; Chen et al., 2021). The range of values is from 43-46.

Studies conducted in the past have been examining factors, such as socio-cultural hurdles, employment prospects, access to technology, and digital skills when studying gender gaps in the digital economy. For instance, Smith and Johnson (2018) pondered on the situation where the use of digital technology is still a preserve of women; however, the existing socio-economic vices and cultural factors hinder women from owning and using these important tools. Based on their qualitative approach, it was established that women, especially from the underdeveloped nations, have barriers to both the adoption of technology as well as the digital literacy. Hence, it leads towards the increase of hole between men and women in employment as well as education.

Methodology

Another significant reason that has led to the rise or rather the appearance of the gender gap is the employment rate of women in technology industries. The historical dominance of men in the information technology professions has significantly hindered women from entering or advancing in these fields. According to Saifuddin et al. (2019), women employed in the technical sector face various obstacles including job discrimination, limited chances, and gender bias. These impediments exacerbate the challenges women have to face in securing employment or advancing in their careers. It impedes their possibilities for career growth and perpetuates the gender disparity among top executives, decision-makers, and high earners in the media industry. The low degree of women involvement in technology leads to both the continuation and exacerbation of existing gender disadvantages (Brussevich et al., 2019; Robinson et al., 2015). This underrepresentation also poses a constraining factor in IT possibilities regarding the talents of women available for development and problem-solving as well as the reinforcement of culture-specific attitudes and discriminations. Additionally, if gender representation is still a problem in tech teams, then

products and services may not be designed with different groups' needs and expectations which would slow down the development of technological solutions and society's progress.

Excluding women from formal access to financial institutions results in reduced economic prospects, financial rights, and autonomy for women, hence exacerbating gender inequity. Several nations continue to impose obstacles that hinder women's capacity to save, invest, and accumulate assets including access to credit, financial services, and education. Due to numerous circumstances, individuals are frequently compelled to participate in these informal and precarious credit agreements. This is because they are unable to establish bank accounts or obtain credit, which would allow them to carry out most financial activities and make informed financial choices independently. This not only makes women suffer from poverty, however, it also reinforces gender norms and power imbalances that affect women. Providing women with better financial services may help narrow the income gap between men and women, hence reducing gender inequities. It also empowers women economically, encourages entrepreneurship, and promotes inclusive economic growth (Andriamahery & Qamruzzaman, 2022; Chundakkadan & Sasidharan, 2022). Women who have access to formal banking are more likely to be financially resilient and independent. This is because they can participate in income-generating ventures, manage their money more skillfully, and accumulate assets for future.

Poverty affects gender inequality among households. Due to the interaction of societal standards and economic hardships, gender inequalities are more common in dwellings, leading towards poverty. Women are more likely to suffer from uneven access to healthcare, education, and employment prospects due to the lack of resources. Due to financial limitations, women are forced to get indulged in caregiving and household duties. This reinforces conventional gender norms and prolongs their economic reliance. Poverty only serves to solidify women's disadvantage in society by increasing their susceptibility to assault, discrimination, and exploitation. Low literacy rates also exacerbate disparity among genders. This is because conventional gender roles are still in place and women have fewer chances. Moreover, discrimination based on gender is also more common where there is a low level of literacy. Women who lack literacy face greater barriers to knowledge, education, and

employment which perpetuates their status as second-class members of the family and community. This is because they might not have the abilities and information to effectively advocate their interests and rights. Women with low literacy rates frequently have less autonomy and decision-making authority in their homes. Additionally, due to societal expectations and financial limitations, women frequently receive less education than men which contributes to gender inequalities in education. Thus, the model of the study is as follows;

Gender inequality =f (women's labor force participation in Tech-related jobs, female access to credit, poverty, literacy rate)

The econometric form of the model takes the following form:

$$GI_{it}=\alpha_0 + \alpha_1 WPT_{it} + \alpha_2 FAC_{it} + \alpha_3 Pov_{it} + \alpha_4 Lit_{it} + \varepsilon_{it} \quad (1)$$

where, GI is gender inequality, WPT is women's labor force participation in Tech-related jobs, FAC is female access to credit, Pov is poverty, Lit is literacy rate, and ε is the error term. The current study used panel data for 22 developing countries in Asia from the time period (2010-2022). Data on gender inequality index was collected from United Nations Development Programme (UNDP) human development reports and its value lied between 0 and 1 with values closer to 0 showing low inequality and values closer to 1 showing high inequality between genders. Data on women in tech-related jobs was gathered from ILO, data on the percentage of women having bank accounts was taken from the Global Findex database. While, data on the rest of the variables was collected from the WDI database.

In order to analyze the effect of financial access and women's labor force participation in tech-related jobs on gender inequality, this study employed the Panel ARDL model.

Before utilizing the Panel unit root assessment, cross-sectional relationships were evaluated across sample nations using Pesaran's (2004) Cross-sectional Dependency (henceforth, CD) test. Pesaran (2007) claimed that the significant distortions and incorrect findings arise when cross-sectional dependency is ignored while reviewing the unit root test. For the CD test, the null hypothesis states that there is no cross-sectional dependence, and the test statistic utilized is as follows

$$CD= \sqrt{\frac{2T}{N(N-1)}} \left(\sum_{i=1}^{N-1}\sum_{j=i+1}^{N} \widehat{\delta_{ij}}\right) \sim N(0,1) \quad (2)$$

In equation (2), $\widehat{\delta_{ij}}$ are the cross-sectional correlation coefficients. Cross-sectional dependency was addressed using the CADF and CIPS unit root tests. The following regression was used to produce the CADF statistic:

$$\Delta Y_{it} = \alpha_i + \gamma_i Y_{it} + \delta_i \overline{Y}_{t-1} + \sum_{j=0}^{k} \delta_{ij} \Delta \overline{Y}_{i,t-j} + \sum_{j=0}^{k} \theta_{ij} \Delta Y_{i,t-j} + \varepsilon_{it} \quad (3)$$

However, the estimates from CADF regression were used to construct the CIPS statistic;

$$CIPS=\frac{1}{N}\sum_{i=1}^{N} CADF \quad (4)$$

The Westerlund (2007) cointegration test was used in this study to determine the long-term relationship between variables. While, the Westerlund cointegration test assumes cross-sectional independence, other tests, such as the Pedroni and Kao cointegration tests, do not. Even, in the presence of cross-sectional dependence, the Westerlund test yields reliable findings. Utilizing the formula mentioned below, the Westerlund method verifies the null hypothesis that no cointegration exists based on two-panel and two-group data;

$$\Delta Y_{it} = \acute{\delta} d_t + \propto_i \left(Y_{i,t-1} - \beta_i x_{i,t-1}\right) + \sum_{j=1}^{\rho_i} \alpha_{ij} \Delta Y_{i,t-j} + \sum_{j=-q}^{\rho_i} \gamma_{ij} \Delta x_{i,t-j} + \varepsilon_{it} \quad (5)$$

To assess the long-run and short-run influence of independent variables on gender inequality index, the Panel ARDL model is used and the equation of ARDL is as follows;

$$GI_{it}=\vartheta_i+\sum_{j=1}^{p} \mu_{ij}\, GI_{i,t-j}+\sum_{j=0}^{q} \beta_{1ij}\, WPT_{i,t-j}+\sum_{j=0}^{q} \beta_{2ij}\, FAC_{i,t-j} + \sum_{j=0}^{q} \beta_{3ij}\, Pov_{i,t-j} +\sum_{j=0}^{q} \beta_{4ij}\, Lit_{i,t-j}+\varepsilon_{it} \quad (6)$$

To determine the ideal latency to apply, the Akaike Information Criterion (AIC) was utilized. The aforementioned model's error correction form is expressed as follows:

$$\Delta GI_{it}=\vartheta_i+\sum_{j=1}^{p-1} \mu_{ij}\, \Delta GI_{i,t-j}+ \sum_{j=0}^{q-1} \beta_{1ij}\, \Delta WPT_{i,t-j} + \sum_{j=0}^{q-1} \beta_{2ij}\, \Delta FAC_{i,t-j}+ \sum_{j=0}^{q-1} \beta_{3ij}\, \Delta Pov_{i,t-j}+ \sum_{j=0}^{q-1} \beta_{4ij}\, \Delta Lit_{i,t-j} + \varphi_i ET_{i,t-1} + \varepsilon_{it} \quad (7)$$

where,

$$ET_{i.t-1} = GI_{i,t-1} - \pi_{1i}WPT_{i,t-1} - \pi_{2i}FAC_{i,t-1} - \pi_{3i}Pov_{i,t-1} - \pi_{4i}Lit_{i,t-1} \quad (8)$$

While, the long-run coefficients are π_1i, π_2i, π_3i, π_4i, π_5i, and π_6i, the speed of adjustment coefficient, φ_i, is a significant and negative number that indicates integration between variables. Both the PMG (pooled mean group) and MG (mean group) estimations have been used. The PMG technique of Pesaran et al. (1999) in Panel ARDL models is predicated on the notion that there is variability in the short-term duration coefficients and that the long-run coefficients πi are similar across cross-sections. The Hausman test was used to choose the best technique, while the MG method by Pesaran and Smith (1995) is the most flexible and assumes heterogeneity of all factors.

Results and Discussion

The current study employed a cross-sectional dependency test to verify the stationarity of variables before applying the unit root test. Cross-sectional reliance in panel data can arise for a number of reasons including shared borders, ethnic or cultural similarities, and trade agreements. Controlling these cross-sectional effects is therefore, crucial to avoiding biased and inconsistent outcomes. Table 1 presents the cross-sectional dependency test results. The null hypothesis was rejected since the results showed that all the variables' *p*-values were less than 0.05, indicating the absence of cross-sectional dependency.

Table 1
Results of CD-tests

Variables	Pesaran CD Test statistic	*p*-value
GI	10.34	0.000
WPT	6.96	0.000
FAC	5.99	0.000
Pov	11.98	0.000
Lit	7.53	0.000

The stationarity of variables was tested using Pesaran's (2007) CIPS and CADF unit root tests, as the CD-test indicated that the cross-sections were dependent. The cross-sectional dependency across panels was controlled using the CIPS and CADF tests (Danish et al., 2018). Table 2 displays the results of both tests.

Table 2
CIPS and CADF Results

Variables	CIPS		CADF	
	Level	1st difference	Level	1st difference
GI	-1.047	-4.218***	-2.011	-4.129***
WPT	-1.623	-5.887***	-2.650**	-4.989***
FAC	-3.512**	-4.297***	-2.449**	-3.914***
Pov	-2.956***	-5.065***	-3.765***	-4.830***
Lit	-3.153***	-7.421***	-3.602***	-6.671***

Note. ***, **, * indicate 1, 5, and 10% significance level, respectively

The results of CIPS test indicate that female access to credit, poverty, and literacy rate are all stationary at a level. On the other hand, it is discovered that other variables are stationary at the 1st difference. However, according to the CADF test, all other variables are stationary at first difference, with the exception of gender inequality which is stationary at a level.

The cointegration test, established by Westerlund (2007), was used to assess whether there is a possible long-run equilibrium connection between variables, since it produces accurate findings even with small sample sizes. The Westerlund cointegration test is also used since it permits cross-sectional dependence and controls a significant amount of variation among panels in the long and short terms. Table 3 provides the Westerlund cointegration test results. At a 1% significance level, the group statistic value was significant, thus the null hypothesis was rejected that there is no cointegration.

Table 3
Outcome of Westerlund Cointegration Test

Statistic	Value	*z*-value	*p*-value
Gt	4.556	4.110	0.001***
Ga	0.788	5.170	1.000
Pt	5.854	3.482	0.493
Pa	0.982	3.669	1.000

The panel ARDL technique was used to evaluate the short- and long-term effects of female access to credit, women participation in tech-related jobs, as well as poverty and literacy rate on gender inequality. Using the

AIC, the ideal lag length was chosen. Table 4 displays the Panel ARDL estimate results. Both PMG and MG estimators were used. However, to select one of these two estimators, the Hausman test was used. The probability value for the Hausman statistic is 0.530 which has the value of 3.41. The PMG estimator is deemed efficient and consistent as the probability value exceeds 0.05, hence allowing to reject the homogeneity limitation null hypothesis.

To have a meaningful long-term correlation between variables, the error-correction term (ECT) value needs to be both significant and negative. At a 1% significance level, the results show that the ECT value in the MG and PMG models is negative and significant. The PMG model's ECT value of 21% indicates that 21% of the disequilibrium is rectified yearly. In the MG model, on the other hand, the ECT value is -0.29, indicating that approximately 29% of the imbalance is rectified each year.

Table 4

Results of Panel ARDL (1,0,0,1,1)

Variable	Mean Group (MG) estimator		Pooled Mean Group (PMG) estimator	
	Short-run	Long-run	Short-run	Long-run
ECT	-0.2922***		-0.2092***	
ΔWPT	0.1591		-0.3021	
ΔFAC	-0.2791*		-0.2830*	
ΔPov	0.0129		0.1093*	
ΔLit	-0.0399*		-0.0634**	
WPT		-0.4141***		-0.1207***
FAC		-0.7569*		-0.4034**
Pov		0.2822**		0.6231***
Lit		-0.4531*		-0.9098***
Constant	4.832**		0.982***	
Hausman test	2.49		*p*-value	0.438
Observations			286	

Note. ***, **, * indicate 1, 5 and 10 percent significance level respectively.

Discussion

Upon entering the workforce, women frequently encounter systematic prejudice and barriers that impede their advancement and full participation.

Gender biases in recruitment, advancement, and remuneration can restrict women's access to lucrative employment and leadership roles, thereby exacerbating existing gaps in opportunities and income.

When women first enter the workforce, they frequently encounter institutionalized discrimination and roadblocks that prevent them from advancing and participating fully. Women's access to high-paying employment and leadership roles may be restricted by gender biases in recruitment, advancement, and remuneration which may exacerbate the already-existing inequities in opportunities and income. However, women's employment in tech-related fields has a long-term, significantly detrimental impact on gender disparity. As the number of women employed in the IT sector increases, the sector's character and culture undergo changes due to their entry and success. The increased participation of women in the technology industry may lead to the implementation of new and effective work organization norms or regulations that promote gender equality in the workplace. This may necessitate efforts to enhance work-life balance rules, eliminate gender bias in staffing and promotions, and foster more inclusive and supportive work cultures for women.

Both in the short-run and in the long-run, the coefficient of women's access to credit is considerable and negative across the entire time period. The availability of credit for women has a substantial impact on the elimination of gender inequality both in the short-term and long-term. This is because having access to credit has revolutionary implications for the economic empowerment and autonomy of women. Access to credit provides women with the opportunity to immediately invest in businesses that create money, significantly improving their living standards and supporting their financial independence. When women have access to financial resources, they are capable to invest in their families, their education, healthcare, as well as develop or expand businesses and purchase assets. Due to the fact that women would have more control over their resources and the decisions they make regarding their finances, it is possible that they could experience a reduction in economic vulnerability and inequality. In the long-run, the availability of credit for women has even more substantial benefits on reducing gender imbalance. This is because it encourages social transformation and sustained economic growth. Women with greater access to credit are capable to make investments in their own

and their children's futures. Moreover, they are also less vulnerable to the effects of economic changes.

In both the short- and long-run regressions, the coefficient of poverty exhibits a positive and statistically significant relationship. Due to the greater incidence of poverty among women and girls, poverty perpetuates cycles of suffering and consequently exacerbates long-term gender inequality. The immediate consequences include a decrease in women's access to economic opportunities, healthcare, and education which, in turn, hinders their ability to improve their social status and economic mobility. Furthermore, poverty perpetuates the established gender hierarchy in which men are granted privileges and bestowed with power over all resources and decisions, thereby rendering women susceptible to mistreatment, prejudice, and exploitation. Over time, poverty keeps women in successive periods of adversity. This is because it prevents them from having the means and chances to make investments on themselves and their children's education.

The coefficient of literacy rate is significant and negative in both the long and short-run. Gender disparity may be reduced in short and long-terms by increasing literacy rates, regardless of gender. Short-term improvements in literacy rates pave the way for societies with greater equality by facilitating people's access to economic opportunities, education, and information. Literacy gives people the power to read, write, and learn, enabling both men and women to make educated decisions regarding their lives, particularly pertaining to their money, health, and participation in society. Long-term increase in literacy rates support more extensive social and economic growth by creating a workforce that is knowledgeable and competent, encouraging entrepreneurship and innovation, and enabling more civic engagement. Furthermore, an increase in literacy among all age groups would help eliminating deeply embedded gender norms and prejudices, opening the door to gender-equitable communities where men and women may reach their full potential.

Conclusion

The current study aimed to assess the effect of digital divide and women’s access to credit on gender inequality. The Panel ARDL technique was used to evaluate the short- and long-term effects of women’s access to credit, women’s participation in tech-related jobs, poverty, and literacy rate on gender inequality. The CD test showed that there is dependency across

cross section and cointegration test rejected the hypothesis of no cointegration. The Hausman test showed that PMG results were appropriate. The results indicated that women labor force participation in tech-related industries reduced gender inequality significantly in the long-run, while its effect in the short-run remained insignificant. Additionally, it was determined that granting women the chance to invest in profitable endeavors through expanding their access to financial services lowers gender inequality over the long-and-short-terms. On the other hand, poverty increases gender inequality since it disproportionately affects women and girls, while literacy rate reduces gender inequality in both short- and long-run.

Policy Implications

Since providing financial access to women reduces gender inequality significantly, governments in developing economies need to execute focused financial inclusion initiatives with the goal of enhancing women's credit and banking accessibility. To support women in rural and underserved regions, financial institutions should be encouraged to extend their services by providing incentives, trainings on financial literacy, and the establishment of women-focused microfinance organizations. On the other hand, to mitigate the digital divide and increase women participation in tech-related jobs, government should encourage women's engagement in STEM (Science, Technology, Engineering, and Mathematics) programs in order to increase the number of women working in technology industries. This may entail changing the curriculum to stimulate women's interest in STEM, offering grants and scholarships to female students seeking STEM degrees, and forming alliances with tech firms to provide mentorship and internship opportunities.

Future Directions

To ensure that gender-based inequalities are fully addressed, the understanding of how digital divide and financial access impact women’s lives is imperative. Hence, the current study aimed to provide an analysis of the gender dimensions in the digital economy and financial system with a specific focus on gender disparities. This study also contributed to the existing literature by paving the path for evidence-based policy interventions that boost gender-inclusive economic growth and promote a more equitable and sustainable digital economy by tackling the barriers

encountered by women in accessing the financial services and participating in the digital workforce. The knowledge gained from the study at hand would also help stakeholders and policymakers build a more equitable and inclusive digital and financial system for everyone.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

Data associated with this study will be provided by corresponding author upon reasonable request.

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