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TÁC ĐỘNG CỦA TOÀN CẦU HOÁ VÀ CHUYỂN ĐỔI SỐ ĐẾN BẤT BÌNH ĐẲNG THU NHẬP: TRƯỜNG HỢP CỦA CÁC QUỐC GIA ĐANG PHÁT TRIỂN

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Tóm tắt

Toàn cầu hóa và chuyển đổi số đã trở thành những động lực quan trọng định hình sự phát triển kinh tế và phân phối thu nhập trên toàn thế giới. Tuy nhiên, tác động của chúng đối với bất bình đẳng thu nhập vẫn còn gây nhiều tranh luận, đặc biệt tại các quốc gia đang phát triển, nơi sự tiếp cận không đồng đều có thể làm gia tăng chênh lệch thu nhập. Nghiên cứu này phân tích tác động của toàn cầu hóa và chuyển đổi số đến bất bình đẳng thu nhập tại 97 quốc gia đang phát triển trong giai đoạn 1992–2023. Phương pháp dữ liệu bảng được sử dụng với các mô hình Pooled OLS, FEM, REM và FGLS. Toàn cầu hóa được đo lường bằng chỉ số KOF, trong khi chuyển đổi số được đại diện bởi các chỉ số ICT như tỷ lệ người sử dụng Internet, số thuê bao

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di động và số thuê bao băng thông rộng cố định. Bất bình đẳng thu nhập được đo lường bằng hệ số Gini. Kết quả cho thấy chuyển đổi số góp phần làm giảm bất bình đẳng thu nhập, trong khi tác động của toàn cầu hóa khác nhau giữa các quốc gia. Nghiên cứu cung cấp thêm bằng chứng thực nghiệm và chính sách nhằm thúc đẩy phát triển kinh tế bao trùm.

Từ khoá: toàn cầu hóa, chuyển đổi số, bất bình đẳng thu nhập, các quốc gia đang phát triển

THE IMPACT OF GLOBALIZATION AND DIGITALIZATION ON INCOME INEQUALITY: THE CASE OF DEVELOPING COUNTRIES

Abstract

Globalization and digitalization have become key forces shaping economic development and income distribution worldwide. However, their impacts on income inequality remain widely debated, particularly in developing countries where unequal access to opportunities may intensify income disparities. This study investigates the impact of globalization and digitalization on income inequality in 97 developing countries during the period 1992–2023. This study uses panel data regression methods, including Pooled OLS, Fixed Effects Model (FEM), Random Effects Model (REM), and Feasible Generalized Least Squares (FGLS). Globalization is measured by the KOF Globalization Index, while digitalization is represented by ICT indicators such as Internet users, mobile cellular subscriptions, and fixed broadband subscriptions. Income inequality is measured using the Gini coefficient. The results indicate that digitalization reduces income inequality, whereas the impact of globalization varies across countries. This study provides empirical evidence on the relationship between globalization and digitalization and offers policy implications for inclusive economic development.

Keywords: globalization, digitalization, income inequality, developing countries

1. Introduction

Income inequality has become a major global challenge, with the top 10% capturing 53% of global income while the bottom 50% receive only 8% (World Inequality Report, 2026). Reducing inequality is also one of the United Nations' Sustainable Development Goals (SDG 10), highlighting the urgency of addressing this issue, especially when it links with macroeconomic instability and social consequences (IMF, n.d.).

Globalization promotes international trade which accounts for more than half of global GDP (Kolb, 2024). Some studies suggest that globalization can reduce inequality in developing

economies by more economic opportunities (Farooq & Hussain, 2023; Tabash et al., 2024). However, other studies find that economic integration can widen income gaps, particularly in advanced economies (Bahadir & Dereli, 2021; Tica et al., 2022). Digitalization has grown rapidly, with about 5.4 billion internet users worldwide in recent years. While unequal digital access may create a digital divide (Tica et al., 2022), digitalization also reduces inequality by improving financial inclusion (Li et al., 2025).

However, despite numerous studies, empirical evidence on the impact of globalization and digitalization on income inequality remains inconsistent and contradictory, particularly in developing countries. Furthermore, most previous studies have primarily examined these factors individually; therefore, this research is necessary to clarify their combined impact (Tica et al., 2022; Yin & Choi, 2023). Based on this, this study, firstly, focuses on analyzing the combined impact of globalization and digitalization on income inequality instead of approaching them individually; secondly, uses a long-term panel dataset from 1992–2023, encompassing global shocks such as the 2008 financial crisis and the COVID-19 pandemic; and thirdly, applies interaction variables along with dummy variables to explore differences between economic periods and groups of countries by income level.

2. Theoretical framework

2.1. The role of globalization and digitalization on income inequality

Income inequality has become a major concern in economic studies, especially in the context of globalization and rapid technological development. Previous studies suggest that globalization and digitalization play important roles in shaping income distribution across countries. Several theoretical frameworks explain this relationship, including the Stolper-Samuelson theorem, Skill-Biased Technological Change (SBTC), and the Kuznets curve.

Globalization has been widely explained through the Stolper–Samuelson theorem, which states that countries specialize in industries using their abundant factors of production (Bahadir & Dereli, 2021). Developing countries are generally abundant in unskilled labor, while developed countries have relatively more skilled labor. Under trade integration, globalization can therefore affect income distribution differently across countries. As a result, globalization may reduce income inequality in developing economies by increasing demand for unskilled

workers, but may widen inequality in developed countries due to higher demand for skilled labor (Sánchez-López et al., 2019; Tica et al., 2022).

Furthermore, digitalization also influences income distribution through technological progress and the expansion of information and communication technologies (ICT). The Skill-Biased Technological Change (SBTC) theory suggests that technological change favors skilled workers, increasing their wages while routine jobs performed by low-skilled workers are more likely to be automated (Tica et al., 2022; Tian et al., 2025). However, according to the Kuznets curve, income inequality may initially increase during economic transformation but gradually decline as economies reach higher levels of development.

Overall, globalization and digitalization have complex effects on income inequality. While globalization may reduce inequality in developing countries but increase it in developed ones, digitalization may initially widen income gaps before reducing them as technologies diffuse more broadly.

2.2. Hypotheses Development

Globalization and Income Inequality

Globalization is commonly measured through indicators such as trade openness, foreign direct investment (FDI), or composite indices like the KOF Globalization Index (Bahadir & Dereli, 2021; Tica et al., 2022). While some findings indicate that financial globalization may widen inequality, other studies suggest that globalization tends to reduce income inequality through trade openness by expanding markets and creating jobs. Despite these mixed results, most studies indicate that globalization tends to reduce income inequality in the context of developing countries, supporting the hypothesis that globalization has a negative impact on income inequality (Farooq & Hussain, 2023; Tabash et al., 2024).

H1: Globalization has a negative impact on income inequality.

Digitalization and Income Inequality

Digitalization is proxied by Internet users, mobile cellular subscriptions, and fixed broadband subscriptions. Prior studies widely use these ICT indicators due to data availability and relevance. Empirical evidence shows Internet usage consistently reduces inequality (Li et al., 2025; Nguyen, 2023), while mobile and broadband have mixed effects depending on development level. However, in developing countries, all three tend to narrow income gaps,

supporting a unified hypothesis that digitalization negatively affects income inequality (Chung & Moon, 2025; Perveen & Majeed, 2025).

H2: Digitalization has a negative impact on income inequality.

Global Financial Crisis and Income Inequality

The 2008 global financial crisis significantly affected global trade and economic growth (Edey, 2009). Many studies incorporate a crisis dummy variable to control the effect of the global financial crisis in 2008 (Bahadir & Dereli, 2021).

H3: The global financial crisis has an impact on the effects of globalization and digitalization on income inequality.

Income classifications and Income Inequality

As the Gini index fails to capture distributional tails, studies adopt alternative measures revealing heterogeneous effects; thus, World Bank income classifications are included as dummy variables to proxy differences in economic development levels and examine whether the effects of globalization and digitalization on income inequality vary across income groups (Tica et al., 2022).

H4: Income distribution categories affect the relationship between globalization, digitalization, and income inequality.

3. Research method

3.1. Sample data

Our research data contains social and economic indicators of developing countries over the period 1992 to 2023. The sample includes 97 developing countries selected for the analysis. Data related to globalization are collected from the KOF Swiss Economic Institute, while macroeconomic and socio-economic indicators are retrieved from the World Bank database. In terms of data processing, we exclude inappropriate observations including: (1) countries with missing or incomplete information for the variables used in the study; (2) abnormal outliers that may distort the estimation results; and (3) observations that do not have consistent data across the selected period

3.2. Regression model

3.2.1. Measure of Globalization

Globalization is widely recognized as a multidimensional process that reflects the increasing integration of economies, societies, and political systems across countries. In empirical research, globalization is commonly measured using the overall index that captures its economic, social, and political dimensions (Ndoya & Asongu, 2024; Tabash et al., 2024). The index is developed and maintained by the KOF Swiss Economic Institute and provides data for a large number of countries over a long period of time. Due to its broad coverage and multidimensional structure, the index has been widely applied in empirical studies. In this study, the overall KOF Globalization Index (*kofgi*) is used as the proxy for globalization. The index ranges from 0 to 100, where higher values indicate a greater degree of global integration.

3.2.2. Measure of Digitalization

Digitalization refers to the integration of digital technologies that transform economic and social activities. In empirical research, digitalization is typically measured using the information and communication technology (ICT) indexes (Chung & Moon, 2025; Li et al., 2025; Ndoya & Asongu, 2024; Nguyen, 2023; Perveen & Majeed, 2025). In this study, digitalization is captured by three indicators: Individuals using the Internet (% of population) (*iu*), mobile cellular subscriptions per 100 people (*mob*), and fixed broadband subscriptions per 100 people (*broad*). These indicators reflect internet access, mobile connectivity, and fixed internet infrastructure, capturing different dimensions of digital development.

3.2.3. Measure of Income inequality

Income inequality is one of the most widely used indicators to evaluate economic disparities (IMF, n.d.). High income inequality reflects unequal income distribution among individuals or households and the gap between high- and low-income groups. Among the indicators of inequality, the Gini coefficient is the most widely used because it summarizes overall income distribution and allows comparisons across countries. Therefore, this study uses the Gini coefficient (*Gini*) as a proxy for income inequality, obtained from the World Bank database. The Gini coefficient ranges from 0 to 100, where 0 indicates perfect equality and 100 represents perfect inequality.

3.2.4. Dummy variables

To control for major macroeconomic shocks and structural differences across countries, this study includes two dummy variables. First, the dummy variable *post2008* is used to capture the impact of the Global Financial Crisis. Specifically, *post2008* equals 1 for the post-2008 period and 0 otherwise. This crisis is widely recognized as one of the most significant economic shocks in recent decades, leading to global economic contraction, disruptions in international trade, and reductions in investment activities (Edey, 2009). Second, we control for structural differences in economic development across countries using income classifications (*incomeclass*).

3.2.5. Control variables

Previous studies suggest that various socioeconomic characteristics may influence income inequality across countries. Therefore, this study includes several control variables to isolate the effects of globalization and digitalization on income inequality. Such factors are total population (*pop*), population density (*popden*), female labor force participation (*lfpr2*), employment in services (*emps*), and primary school enrollment (*edun*).

Overall, the regression model is formulated as follows. Two specifications are used: one with individuals using the Internet (*iu*) for model (1)(3) and another with mobile cellular subscription (*mob)* and fixed broadband subscription (*broad*) for model (2)(4), separated due to high correlation to avoid multicollinearity.

Models (1) and (2) test H1 and H2 on the negative effects of globalization (*kofgi*) and digitalization (*iu, mob, broad*) on income inequality *(gini)*.

$$g_{iniit} = \beta_0 + \beta_{1kofgiit} + \beta_{2iuit} + x_{it} + u_{it} \quad (1)$$

$$g_{iniit} = \beta_0 + \beta_{1kofgiit} + \beta_{2mobit} + \beta_{3broadit} + x_{it} + u_{it} \quad (2)$$

To measure the differences in the impact of globalization and digitalization on income inequality, the authors employ an extended model with interaction terms as specified in model (4). Specifically, model (3) and (4) test H3 and H4, assessing whether the effects vary across pre- and post-2008 global financial crisis and income classification.

$$g_{iniit} = \beta_0 + \beta_{1kofgiit} + \beta_{2iuit} + \beta_{3post2008*iu} + \beta_{4post2008*kofgi} + \beta_{5incomeclass*iu} + \beta_{6incomeclass*kofgi} + x_{it} + u_{it} \quad (3)$$

$$gini_{it} = \beta_0 + \beta_{1kofgiit} + \beta_{2mobit} + \beta_{3broadit} + \beta_{4post2008*mob} + \beta_{5post2008*broad} + \beta_{6post2008*kofgi} + \beta_{7incomeclass*mob} + \beta_{8incomeclass*broad} + \beta_{9incomeclass*kofgi} + x_{it} + u_{it} \quad (4)$$

In the models, i and t represent country and time. The dependent variable is $gini_{it}$ (income inequality). Key variables include $kofgi_{it}$ (globalization) and digitalization indicators: iu_{it} (individuals using the Internet), mob_{it} (mobile cellular subscription), and $broad_{it}$ (fixed broadband subscription). x_{it} represents control variables and u_{it} the error term. β coefficients measure effects on inequality. Additionally, interaction of dummy variables (*post2008*, *incomeclass*) are incorporated to capture differences across economic periods and country income classification.

Table 1: Sources and description of study variables

Variable	Definition and Measurement	Expected Sign	Research source
	Dependent variable: Income Inequality		
gini	Income inequality measured by the Gini coefficient, ranging from 0 to 100.		Antonietti et al., (2025), Farooq & Hussain (2023), Li et al. (2025), Yao & Ma (2022)
	Independent variable 1: Globalization		
kofgi	Level of globalization among countries measured by KOF Globalization Index, ranging from 0 to 100.	-	Ndoya & Asongu (2024), Sánchez-López et al. (2019), Tabash et al. (2024)
	Independent variable 2: Digitalization		
iu	Individuals using the Internet as a dimension of ICT indexes, measured by a share of the total	-	Chung & Moon (2025), Li et al.

Variable	Definition and Measurement	Expected Sign	Research source
	population.		(2025), Ndoya & Asongu (2024), Nguyen (2023), Perveen & Majeed (2025)
mob	Mobile cellular subscription as a dimension of ICT indexes, measured by subscription rate per 100 people.	-	
broad	Fixed broadband subscription as a dimension of ICT indexes, measured by subscription rate per 100 people.	-	
	Interaction terms		

int	int1=post2008*iu;
	int2=post2008*mob;
	int3=post2008*broad;
	int4=post2008*kofgi;
	int5=incomeclass*iu;
	int6=incomeclass*mob;
	int7=incomeclass*broad;
	int8=incomeclass*kofgi.
		+/-	Bahadir & Dereli, (2021), Farooq & Hussain (2023), Yin & Choi (2023)

	Control variable		
post2008	Dummy variable indicating the period after the 2008 global financial crisis (1 = year ≥ 2008, 0 = otherwise).	+/-	Bahadir & Dereli (2021)

Variable	Definition and Measurement	Expected Sign	Research source
incomeclass	Dummy variable indicating country income group.	+/-	Farooq & Hussain (2023), Yin & Choi (2023)
popden	Population density measured by the number of people per square kilometer of land.	-	Antonietti et al. (2025)

Source: Authors' compilation (2026)

4. Results and discussion

4.1. Results

The study conducts descriptive statistical analysis using panel data from 97 developing countries during 1992–2023. Table 2 presents the descriptive statistics of the variables, including mean, standard deviation, minimum, and maximum values. Although the number of observations varies across many variables due to data availability, the minimum sample size remains sufficiently large for reliable analysis. Prior to estimation, the total population variable (*pop*) is transformed using the natural logarithm to improve data homogeneity, and the mobile cellular subscriptions variable (*mob*) is winsorized to reduce the influence of outliers.

Table 2: Descriptive statistics

Variable	Observation	Mean	Std. Deviation	Minimum	Maximum
gini	1,284	40.508	8.917	21.6	71.1
iu	2,766	0.239	0.271	0	0.977
mob	3,035	55.398	51.797	0	147.104
broad	1,964	5.722	7.999	0	44.729
kofgi	3,039	51.443	12.206	21.311	82.524
int1	3,104	0.195	0.274	0	0.977

int2	3,104	47.918	54.528	0	147.104
int3	3,104	3.503	6.959	0	44.729
int4	3,104	27.580	29.177	0	82.292
int5	3,104	0.559	0.814	0	3.778
int6	3,104	130.185	150.699	0	588.416
int7	3,104	10.587	22.535	0	148.094
int8	3,104	100.883	58.394	0	310.803
post2008	3,104	0.500	0.500	0	1
incomeclass	3,023	2.001	0.831	1	4
popden	3,043	120.391	187.769	1.399	1765.081
edun	1,638	0.850	0.155	0.192	1.040
emps	3,037	0.451	0.169	0.053	0.934
pop	3,104	16.250	1.741	11.167	21.086
lfpr2	3,037	0.496	0.165	0.099	0.894

Source: The authors (2026)

Regarding income inequality, the Gini coefficient (*gini*) ranges from 21.6 to 71.1, with a mean of 40.508 and a standard deviation of 8.917. These figures indicate a relatively high level of income inequality across the developing countries in the sample, as well as substantial variation in income distribution among them. The average Gini coefficient in this study is slightly higher than that reported by Perveen and Majeed (2025), who finds a mean value of 38.22. This difference may be due to dataset scope, as the previous study includes both developed and developing countries, while the present study focuses only on developing economies, where inequality is typically higher. For the digitalization indicators, including individuals using the Internet (*iu*), mobile cellular subscriptions (*mob*), and fixed broadband subscriptions (*broad*), the descriptive statistics reveal considerable disparities among countries. The average proportion of Internet users (*iu*) is 0.239, ranging from 0 to 0.977, reflecting significant differences in digital access. Mobile subscriptions (*mob*) average 55.398 per 100 people with a standard deviation of 51.797, while broadband subscriptions (*broad*) average

5.722 per 100 people, with a maximum value of 44.729. Compared with OECD, focused studies such as Chung and Moon (2025), digitalization levels in this sample are lower, reflecting more limited digital infrastructure in developing countries. The globalization index (*kofgi*) ranges from 21.311 to 82.524, with a mean value of 51.443, suggesting a moderate level of global integration with notable cross-country variation. Correlation analysis further shows that all correlation coefficients among independent and control variables are below 0.8, indicating no strong linear relationships. This result is confirmed by the Variance Inflation Factor (VIF) test, where all VIF values are below 3, suggesting that multicollinearity is not a concern in the research model.

After conducting model selection tests, including the F-test, Breusch-Pagan LM test, and Hausman test, the results indicate that the Random Effects Model (REM) is the most appropriate specification for the dataset. Additional diagnostic tests also detect heteroskedasticity and autocorrelation at the 5% significance level.

Diagnostic tests indicate heteroskedasticity and autocorrelation in the FEM model. Therefore, following Wooldridge (2002) and Gujarati (2012), the Feasible Generalized Least Squares (FGLS) estimator is applied to correct these issues and obtain more reliable estimates. The Wald Chi² test results for the FGLS model show that the regression models in Table 3 are statistically significant at the 5% level. In addition, the study examines whether the effects of globalization and digitalization differ before and after the 2008 Global Financial Crisis and across income groups by using interaction terms with a post-2008 dummy variable and the World Bank income classification. Model 2 includes more research variables, which leads to an increase in missing data. As a result, some countries are excluded from the analysis, so the number of countries and observations in Model 2 is lower than in Model 1.

Table 3: Regression results using the Feasible Generalized Least Square (FGLS) estimation method

Model	**Model 1 (1)**	**Model 2 (2)**
Variable	**gini**	
int1	0.798	
	(1.735)	
int2		0.028**
		(0.011)

Model	Model 1 (1)	Model 2 (2)
Variable	gini	
int3		-0.202
		(0.130)
int4	-0.004	-0.0167
	(0.022)	(0.026)
int1	-1.281**	
	(0.640)	
int2		-0.0123*
		(0.007)
int3		0.027
		(0.045)
int4	-0.020	-0.006
	(0.0140)	(0.0197)
post2008	-0.460	-0.448
	(1.252)	(1.460)
incomeclass	1.679**	-0.549
	(0.801)	(1.427)
mob		-0.013***
		(0.005)
broad		-0.268***
		(0.041)
kofgi	-0.210***	-0.131***
	(0.018)	(0.023)
popden	-0.007***	-0.012***

Model	Model 1 (1)	Model 2 (2)
Variable	**gini**	
	(0.001)	(0.002)
edun	4.27*	7.695***
	(3.180)	(2.511)
emps	28.86***	25.84***
	(1.60)	(1.987)
pop	0.663***	0.526***
	(0.156)	(0.165)
lfpr2	11.92***	8.388***
	(1.71)	(1.832)
Constant	20.51***	18.62***
	(3.21)	(3.096)
Observations	691	564
Number of country	81	71

Level of significance

***p<0.01, ** p<0.05, * p<0.1

Source: The authors (2026)

Globalization and Income Inequality

The regression results reported indicate that globalization has a negative and statistically significant impact on income inequality at the 1% level, suggesting that greater global integration contributes to reducing income disparities. This finding supports Hypothesis H1 and is consistent with the results reported by Farooq and Hussain (2023) and Tabash et al. (2024). One explanation lies in the comparative advantage of developing countries in unskilled labor. According to the Heckscher-Ohlin-Samuelson (HOSS) theory, globalization encourages developing countries to specialize in labor-intensive exports, increasing demand for unskilled labor and raising wages. Moreover, foreign direct investment (FDI) in labor-intensive

industries creates employment for low-income groups, contributing to lower income inequality. However, this result differs from the findings of Bahadir and Dereli (2021) and Tica et al. (2022), who report that globalization increases income inequality. This difference may stem from the earlier time periods examined in previous studies, which did not capture recent shocks such as the COVID-19 pandemic, trade tensions, and geopolitical conflicts.

Digitalization and Income Inequality

The results also show that three dimensions of digitalization-individuals using the Internet (*iu*), mobile cellular subscriptions (*mob*), and fixed broadband subscriptions (*broad*), all have negative and statistically significant effects on income inequality at the 1% level. These findings support Hypothesis H2, indicating that increasing digitalization contributes to reducing income inequality. Among these indicators, Internet usage *(iu)* shows a large negative coefficient, suggesting that wider Internet access helps narrow the income gap. Moreover, fixed broadband subscriptions *(broad)* have a stronger effect on reducing inequality than mobile cellular subscriptions *(mob)*. These findings are consistent with previous studies such as Li et al. (2025), Nguyen (2023) and Tian et al. (2025), which suggest that digitalization may reduce income inequality as technologies diffuse and become more accessible. Nevertheless, these findings differ from the conclusions of Antonietti et al., (2025), Tica et al., (2022) and Yao and Ma (2022), who argue that digitalization increases income inequality. This divergence may be explained by differences in research scope and time. For example, the studies by Tica et al. (2022) and Antonietti et al., (2025), while Yao and Ma (2022) focus only on China, which may limit the generalizability of their findings.

Global Financial Crisis and Income Inequality

The study also explores whether the impact of digitalization changed after the Global Financial Crisis of 2008. The interaction term between mobile cellular subscriptions (*mob*) and the post-2008 period is positive and statistically significant at the 5% level. This finding partially supports Hypothesis H3 that the rapid expansion of mobile technology after 2008 may have increased income inequality.

Income classifications and Income Inequality

The study examines whether national income levels affect the relationship between globalization, digitalization, and income inequality. Using World Bank income categories (*incomeclass*), the results show a positive and significant coefficient, meaning higher-income

countries tend to have greater income inequality. However, interaction terms indicate that digitalization can reduce inequality more effectively in these countries. Specifically, Internet use (*incomeclass* × *iu*) and mobile subscriptions (*incomeclass* × *mob*) both have negative and significant coefficients, suggesting that greater Internet access and mobile penetration help reduce income inequality more in higher income developing countries. In contrast, the interaction between income classifications and globalization is not statistically significant. Overall, these findings provide partial support for hypothesis H4.

Control variables and Income Inequality

Finally, several control variables also help explain cross-country differences in income inequality. Population density (*popden*) has a negative and statistically significant effect, suggesting that countries with higher population density tend to experience lower income inequality. In contrast, total population (*pop*) has a positive and significant impact, indicating that countries with larger populations may face greater disparities due to uneven regional development. Labor market characteristics also play a role. Employment in the service sector (*emps*) and the female labor force participation rate (*lfpr2*) both have positive and statistically significant effects on income inequality (Tian et al., 2025). Finally, primary school enrollment *(edun)* has a positive effect, suggesting that those with higher education benefit more from economic and technological progress, widening income inequality.

4.2. Discussion

Globalization has become an important driver of economic development, particularly in the context of global economic uncertainty caused by events such as the Global Financial Crisis, the Covid-19 pandemic, and the ongoing China-United States trade war. The findings of this study reveal an inverse relationship between globalization and income inequality in developing countries during the period 1992–2023. Specifically, the KOF Globalization Index is negatively associated with the Gini coefficient, suggesting that greater global integration may help reduce income disparities. This result is consistent with previous studies such as Sánchez-López et al. (2019), Tabash et al. (2024), and Farooq and Hussain (2023), which argue that international economic integration can expand economic opportunities and improve labor market outcomes.

The results also indicate that digitalization significantly affects income distribution. Higher levels of digital development, measured by internet usage, mobile cellular subscriptions, and

fixed broadband subscriptions, are associated with lower income inequality. This finding is consistent with studies by Perveen and Majeed (2025), Tia et al. (2025), and Li et al. (2025), which suggest that digital technologies enhance productivity and expand access to information and employment opportunities. However, according to the Skill-Biased Technological Change theory, technological progress in its early stages may increase the demand for highly skilled labor and widen income disparities. Over time, as digital technologies become more accessible and affordable, medium- and low-skilled workers can also benefit from productivity improvements, which aligns with the Kuznets curve argument.

In addition to the main variables, several control variables also influence income inequality. Population density shows a negative relationship with inequality, possibly due to urbanization and the concentration of economic activities that generate more employment opportunities. In contrast, total population, service sector employment, primary school enrollment, and female labor force participation may increase income inequality due to differences in education quality, sectoral wage dispersion, and structural inequalities in labor markets.

Based on these findings, developing countries should continue promoting international economic integration while strengthening social welfare policies and investing in education to ensure a more equitable distribution of globalization benefits. Moreover, digital transformation should be accompanied by investments in digital infrastructure and workforce digital skills, consistent with the direction of the International Telecommunication Union.

Despite providing valuable empirical evidence, this study has several limitations. Most of the data are obtained from the World Bank, and some observations, particularly the Gini index, are not available for all countries. Additionally, the use of the KOF Globalization Index ensures consistency but limits the ability to examine each dimension of globalization separately. Future research may expand the dataset and incorporate additional indicators to better capture the relationship between globalization, digitalization, and income inequality.

5. Conclusion

In the context of global economic integration and rapid technological development, globalization and digitalization are becoming important factors influencing economic growth and income distribution among countries. This study analyzes the impact of these two factors

on income inequality in 97 developing countries between 1992 and 2023 using panel data with Pooled OLS, FEM, REM, and FGLS models.

The results show that globalization has a statistically significant negative impact on income inequality, indicating that higher levels of integration may contribute to reducing income inequality. Similarly, digitalization indicators such as internet usage rates, mobile subscriptions, and broadband also have a negative relationship with income inequality, implying that technological development can expand economic opportunities and increase access to resources. Furthermore, control variables such as population, education, service sector employment, and female employment also significantly influence income inequality. The research findings highlight the role of globalization and digital transformation in narrowing the income gap when coupled with inclusive development policies.

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