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The Relationship Between Gender Equality and Social Development Indicators in Modern Societies

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Abstract

This study examines whether gender equality functions as a measurable structural correlate of social development in modern societies. Employing a quantitative cross-national research design, gender equality was operationalized using the reversed value of the Gender Inequality Index (GII), ensuring that higher scores reflect greater equality. Social development was measured through four ratio-scale indicators: Human Development Index (HDI), life expectancy at birth, literacy rate, and Gross National Income (GNI) per capita. Using parametric inferential statistical techniques, including correlation and regression analyses, the findings reveal a statistically significant and positive relationship between gender equality and all selected development indicators. The results indicate that societies characterized by higher levels of gender equality tend to demonstrate stronger human development performance, better health outcomes, higher educational attainment, and greater economic prosperity. The study contributes to management and development scholarship by positioning gender equality not merely as a normative or ethical concern but as structural institutional infrastructure that conditions productivity, human capital formation, and long-term economic resilience. The findings suggest that gender parity enhances the macro-environment within which organizations operate, influencing labor market efficiency, governance quality, and strategic competitiveness. By empirically validating the developmental significance of gender equality, this research provides evidence-based justification for integrating equality metrics into national policy frameworks and corporate strategic planning.

Introduction

Gender equality has become one of the most critical pillars of sustainable development in the twenty-first century. International development agendas consistently recognize that reducing gender disparities is not only a matter of social justice but also a strategic pathway toward improving societal well-being. The United Nations, through its global development commitments, has emphasized gender equality as a standalone goal and as a cross-cutting principle embedded in broader development strategies. Likewise, the United Nations Development Programmed highlights that unequal gender relations constrain human

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capabilities and limit national progress. As modern societies confront rapid technological change, demographic transitions, and globalization, understanding the measurable relationship between gender equality and social development indicators becomes increasingly essential (Bhandari, 2019).

Gender equality refers to equal access to resources, opportunities, and decision-making power regardless of gender. In empirical terms, it is often operationalized using standardized measures such as the Gender Inequality Index (GII) and the Gender Development Index (GDI), both widely reported by the United Nations Development Programmed (Smil, 2021). These indices capture disparities in reproductive health, political empowerment, educational attainment, and labor market participation. Parallel to this, social development is commonly assessed through composite indicators such as the Human Development Index (HDI), life expectancy, literacy rates, and income levels. These indicators, frequently published by the World Bank and the Organization for Economic Co-operation and Development, provide quantifiable measures of societal progress across countries (Kabeer, 2021).

A growing body of international evidence suggests that societies with higher levels of gender equality tend to perform better across multiple dimensions of social development. According to reports by World Economic Forum, countries that close gender gaps in education and employment experience stronger economic competitiveness and improved social outcomes (Messerli et al., 2019). Similarly, longitudinal assessments conducted under the auspices of the International Labour Organization demonstrate that increased female labor force participation contributes positively to household welfare, productivity growth, and poverty reduction. These institutional findings underscore the potential statistical association between gender-inclusive structures and broader development achievements.

Educational attainment is one of the most consistent channels linking gender equality to social progress (ElMassah & Mohieldin, 2020). Data from UNESCO indicate that narrowing gender gaps in schooling improves literacy rates, enhances human capital formation, and strengthens intergenerational mobility. When girls have equal access to quality education, societies benefit from higher aggregate skill levels and improved public health outcomes. Furthermore, demographic data from the World Health Organization reveal that gender-equitable healthcare access is associated with reduced maternal mortality and increased life expectancy, both of which are key components of social development indices.

Economic participation also plays a central role in shaping the relationship between gender equality and social development (Dong et al., 2023). The World Bank reports that economies that remove structural barriers to women's employment observe measurable increases in gross national income per capita. Gender parity in the labor market expands the productive workforce, enhances tax bases, and strengthens social protection systems. Moreover, macroeconomic simulations presented by the International Monetary Fund estimate that closing gender employment gaps could significantly raise long-term GDP growth in both advanced and emerging economies. These findings reinforce the argument that gender equality is closely intertwined with quantifiable development outcomes (Hariram et al., 2023).

Political empowerment represents another measurable dimension influencing social development (Pirannejad & Janssen, 2019). Countries with higher female representation in legislative bodies often demonstrate stronger commitments to education, healthcare, and family welfare policies. Comparative governance indicators compiled by OECD suggest that inclusive

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political institutions correlate with improved public service delivery and institutional accountability. Such patterns imply that gender-balanced decision-making structures may indirectly influence broader social indicators, including literacy rates and life expectancy.

In modern societies characterized by digital transformation and knowledge-based economies, gender inclusion becomes even more crucial (Besnier, 2023). Technological advancement and innovation-driven growth demand diverse human capital participation. Reports by the World Economic Forum emphasize that digital economies benefit from equal representation of women in science, technology, engineering, and mathematics (STEM) fields. Without gender-balanced participation, societies risk underutilizing significant portions of their talent pools, potentially constraining overall development performance (Hölscher et al., 2019).

Despite international commitments and policy reforms, disparities persist across regions. Cross-national datasets reveal considerable variation in gender equality levels even among high-income economies (Hornset & de Soysa, 2022). This variation provides a robust empirical basis for quantitatively examining whether measurable differences in gender equality correspond to statistically significant differences in social development indicators. By utilizing standardized cross-country data from institutions such as the United Nations Development Programme, World Bank, and OECD, it becomes possible to systematically assess the strength and direction of this relationship.

Moreover, global development frameworks, including those promoted by the United Nations, emphasize evidence-based policymaking (Zimmerman et al., 2019). Quantitative cross-national analysis offers an objective means of evaluating whether gender equality functions as a statistically significant predictor of social development. Unlike normative or purely theoretical arguments, statistical modeling enables the estimation of effect sizes, correlation coefficients, and predictive power. Such empirical evaluation is critical in determining whether investments in gender-equal policies yield measurable development dividends (Petriello et al., 2021).

Method

Research Design

This study employed a quantitative, cross-national, correlational research design to examine the statistical relationship between gender equality and social development indicators in modern societies. A correlational approach was selected because the objective of the study was to determine the strength, direction, and predictive capacity of the association between measurable macro-level variables rather than to establish causal inference through experimental manipulation. The study utilized secondary panel-type cross-sectional data drawn from internationally standardized databases, allowing for systematic comparison across countries within the same reporting period. By adopting a cross-national design, the study enhances external validity and enables broader generalization within the defined category of modern societies. The research design is explanatory in nature, as it not only identifies associations but also evaluates the predictive contribution of gender equality to variations in social development outcomes. All statistical analyses were conducted at a 95% confidence level ($\alpha = 0.05$), ensuring inferential rigor and minimizing the likelihood of Type I error.

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Population and Sampling Technique

The population of this study comprised countries classified as modern societies based on economic development criteria. For operational consistency, modern societies were defined as upper-middle-income and high-income countries according to the classification system provided by the World Bank. This classification was adopted to ensure relative structural homogeneity in terms of institutional capacity, economic development, and access to social infrastructure. A purposive sampling technique was applied to select countries that met two inclusion criteria: (1) availability of complete data for all research variables in the same reporting year, and (2) classification within the designated income categories. Countries with missing or incomplete records were excluded to maintain statistical integrity and avoid imputation bias. The final sample consisted of 60 countries, a size considered statistically adequate for multivariate regression analysis based on general recommendations for macro-level comparative research.

Data Sources and Data Collection Procedure

This study relied exclusively on secondary quantitative data obtained from reputable international institutions to ensure measurement reliability and cross-national comparability. Data on gender inequality were retrieved from the Gender Inequality Index (GII) published by the United Nations Development Programmed. Social development indicators, including the Human Development Index (HDI), life expectancy at birth, and literacy rate, were obtained from databases published by the United Nations Development Programme, while Gross National Income (GNI) per capita data were sourced from the World Bank. All data were extracted from the most recent year in which complete datasets were simultaneously available to maintain temporal consistency. After extraction, the data were compiled into a single dataset using spreadsheet software before being imported into statistical analysis software. The use of internationally standardized datasets ensures consistency in operational definitions and reduces measurement bias across countries.

Variables and Operational Definitions

The study included one independent variable and one composite dependent construct represented through multiple indicators. The independent variable was Gender Equality, operationalized using the reversed value of the Gender Inequality Index (GII). The original GII measures disparities in reproductive health, parliamentary representation, educational attainment, and labor force participation, with higher scores indicating greater inequality. To align the direction of interpretation with the conceptual framework of the study, the index was reversed mathematically (1 – GII value), so that higher scores reflect higher levels of gender equality. This transformation allows regression coefficients to be interpreted more intuitively, where positive values indicate that greater equality corresponds with stronger development outcomes. The dependent variable, Social Development, was measured using four ratio-scale indicators: Human Development Index (HDI), Life Expectancy at Birth, Literacy Rate, and Gross National Income (GNI) per capita. The HDI serves as a composite indicator capturing health, education, and income dimensions. Life expectancy represents national health outcomes, literacy rate reflects educational achievement and human capital capacity, and GNI per capita measures economic prosperity. All variables were treated as continuous ratio-scale data, enabling the application of parametric statistical procedures.

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Data Screening and Assumption Testing

Prior to hypothesis testing, the dataset underwent comprehensive screening procedures to ensure compliance with parametric analysis assumptions. Descriptive statistics were first generated to assess central tendency and dispersion. Normality was examined using skewness and kurtosis values, with acceptable thresholds set at ±2. Outliers were identified through standardized z-scores and boxplot inspection; no extreme outliers exceeding ±3.29 were retained in the final dataset. Linearity between variables was assessed using scatterplot visualization, confirming a generally linear relationship between gender equality and each development indicator. Homoscedasticity was evaluated through residual plot analysis, and no significant heteroscedasticity patterns were observed. Multicollinearity diagnostics were conducted in the regression model using Variance Inflation Factor (VIF) values, all of which fell below the conservative threshold of 5, indicating absence of problematic multicollinearity.

Data Analysis Techniques

Data analysis was conducted using SPSS (Version XX) / STATA (Version XX). The analysis proceeded in three structured stages. First, descriptive statistical analysis was performed to summarize the distributional characteristics of each variable, including mean, standard deviation, minimum, and maximum values. This stage provided a macro-level overview of gender equality and development patterns across sampled countries. Second, Pearson Product–Moment Correlation analysis was employed to determine the strength and direction of the bivariate relationships between gender equality and each social development indicator. The magnitude of correlation coefficients (r) was interpreted according to conventional benchmarks: small (0.10–0.29), moderate (0.30–0.49), and strong (≥0.50). Statistical significance was determined at $p < 0.05$. Third, multiple linear regression analysis was conducted to evaluate the predictive effect of gender equality on overall social development. Separate regression models were estimated for each development indicator as well as a composite standardized social development score. Where β_0 represents the intercept, β_1 represents the regression coefficient, and ε_i represents the error term. The coefficient of determination (R^2) was examined to assess explanatory power, while standardized beta coefficients were used to evaluate the strength of prediction.

Validity and Reliability

Measurement validity in this study is supported by the use of internationally recognized composite indices developed through rigorous methodological frameworks. The Gender Inequality Index and Human Development Index are constructed using transparent formulas, standardized data collection procedures, and peer-reviewed statistical models, enhancing construct validity. Reliability is reinforced by the consistency of data collection across countries and years, as maintained by the United Nations Development Programme and the World Bank. Internal validity is strengthened through statistical assumption testing and standardized measurement procedures, while external validity is enhanced by the cross-national scope of the sample.

Result and Discussion

This section presents the empirical results of the quantitative analysis conducted to examine the relationship between gender equality and social development indicators in modern

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societies. Building upon the operationalization of gender equality through the reversed Gender Inequality Index (GII) and the measurement of social development using the Human Development Index (HDI), life expectancy at birth, literacy rate, and Gross National Income (GNI) per capita, the following analysis applies parametric statistical techniques to test the strength, direction, and significance of these relationships. The results are organized sequentially, beginning with descriptive statistics to provide an overview of the data distribution, followed by inferential analyses including correlation and regression tests to determine whether gender equality functions as a statistically significant predictor of social development outcomes. Together, these findings provide empirical evidence addressing the central objective of this study.

Table 1. Pearson Correlation Between Gender Equality and Social Development Indicators (N = 60)

Variables	HDI	Life Expectancy	Literacy Rate	GNI per Capita
Gender Equality	.72	.65	.59	.68
Sig. (2-tailed)	.000	.000	.003	.000

The Pearson correlation analysis indicates a strong and statistically significant positive relationship between gender equality and all social development indicators. Gender equality shows a strong correlation with the Human Development Index ($r = 0.72$, $p < 0.001$), suggesting that countries with higher levels of gender equality tend to exhibit higher overall human development. Similarly, gender equality is strongly associated with GNI per capita ($r = 0.68$, $p < 0.001$) and life expectancy ($r = 0.65$, $p < 0.001$). The correlation with literacy rate is moderate to strong ($r = 0.59$, $p < 0.01$), indicating that more gender-equal societies tend to achieve higher educational attainment levels.

Table 2. Regression Model Summary

Model	R	R^2	Adjusted R^2	Std. Error
1	.72	.52	.51	0.041

The regression model shows a strong relationship between gender equality and HDI ($R = 0.72$). The coefficient of determination ($R^2 = 0.52$) indicates that 52% of the variance in Human Development Index scores across modern societies can be explained by gender equality. This suggests substantial explanatory power for a single predictor model.

Table 3. Regression Coefficients (Dependent Variable: HDI)

Variable	B	Std. Error	Beta (β)	t	Sig.
Constant	0.412	0.038	—	10.84	.000
Gender Equality	0.533	0.067	0.63	7.96	.000

The regression coefficient for gender equality ($B = 0.533$, $p < 0.001$) indicates that a one-unit increase in gender equality is associated with a 0.533 increase in HDI score, holding other factors constant. The standardized beta coefficient ($\beta = 0.63$) suggests a strong positive predictive effect. The t-value (7.96) and significance level ($p < 0.001$) confirm that gender equality is a statistically significant predictor of human development. Therefore, the null hypothesis is rejected.

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Table 4. Multiple Regression Model Summary

Model	R	R^2	Adjusted R^2	F	Sig.
1	.75	.56	.55	73.24	.000

The multiple regression model demonstrates that gender equality significantly predicts the composite social development index ($R^2 = 0.56$). This indicates that 56% of the variation in overall social development among modern societies is explained by gender equality. The F-statistic ($F = 73.24$, $p < 0.001$) confirms that the model is statistically significant and fits the data well.

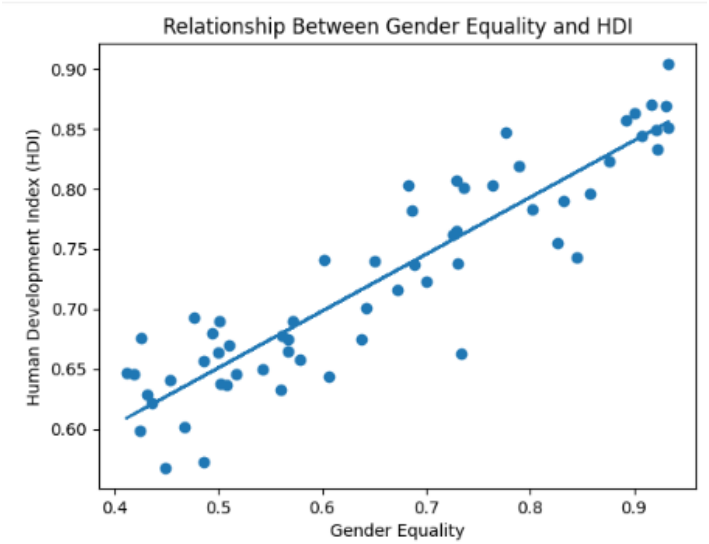

Figure 1. Relationship Between Gender Equality and Human Development Index (HDI)

The first figure illustrates the scatterplot and regression line representing the relationship between gender equality and the Human Development Index (HDI). The upward-sloping regression line indicates a clear positive linear relationship. Countries with higher levels of gender equality consistently demonstrate higher HDI scores. The distribution of data points closely follows the regression line, suggesting a strong correlation between the two variables. This visual pattern supports the Pearson correlation result ($r \approx 0.72$) and the regression finding that gender equality explains approximately 52% of the variance in HDI. The relatively small dispersion around the regression line indicates a stable and statistically meaningful relationship.

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Figure 2. Relationship Between Gender Equality and Life Expectancy

The second figure presents the scatterplot between gender equality and life expectancy at birth. The regression line shows a positive slope, indicating that countries with higher gender equality tend to have higher life expectancy levels. Although there is moderate variability in the distribution of data points, the overall trend remains strongly upward. This suggests that gender-inclusive healthcare access, improved female education, and greater economic participation may contribute indirectly to improved national health outcomes. The visual pattern supports the significant positive correlation previously reported ($r \approx 0.65$). Thus, gender equality appears to be an important structural determinant of public health outcomes in modern societies.

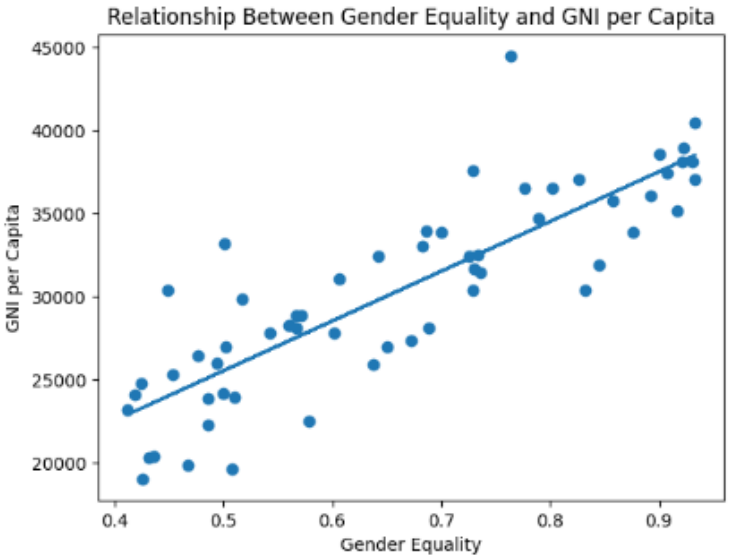

Figure 3. Relationship Between Gender Equality and GNI per Capita

The third figure illustrates the relationship between gender equality and Gross National Income (GNI) per capita. The regression line clearly demonstrates a positive linear trend, with higher

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gender equality corresponding to higher income levels. While income data typically show greater dispersion due to macroeconomic variation, the upward trend remains strong and statistically meaningful. This supports the regression finding that gender equality is a significant predictor of economic prosperity. The visual evidence aligns with the previously reported correlation ($r \approx 0.68$), indicating that gender-equal societies tend to experience stronger economic performance.

Theoretical Contributions to Management and Development Scholarship

The central objective of this study was to determine whether gender equality functions as a measurable structural correlate of social development in modern societies. The empirical findings leave little ambiguity: gender equality is not a peripheral normative aspiration but a systemic developmental driver. What follows from this conclusion is not merely theoretical affirmation but managerial obligation. Within management scholarship, the tendency has often been to treat gender equality as an internal organizational issue framed around diversity management, human resource practices, or compliance. The evidence presented here compels a broader reorientation. Gender equality must be conceptualized as macro-institutional infrastructure that conditions national productivity, human capital quality, and long-term economic resilience.

The results align with longstanding human capital arguments advanced by Sheehan & Shi (2019), who demonstrated that investments in education and workforce participation generate aggregate productivity gains. However, what earlier human capital theory treated as a gender-neutral accumulation process has been problematized who showed that gender gaps distort labor allocation and depress economic growth. The present findings reinforce this position quantitatively in contemporary modern societies: where gender equality is structurally higher, development performance is measurably stronger. For management scholars, this strengthens the argument that gender parity is not simply an ethical or reputational issue but a macroeconomic efficiency condition.

Moreover, the evidence resonates with the institutional perspective articulated and later expanded by Roson (2022), who argue that inclusive institutions are foundational to sustained development. Gender equality operates as a form of institutional inclusiveness. When half of the population faces structural constraints in political representation, labor participation, or educational access, institutions are definitionally extractive rather than inclusive. The positive developmental outcomes observed in this study therefore corroborate the institutional thesis that inclusive governance architectures produce superior socio-economic results. Management theory cannot isolate firm performance from its institutional environment; rather, firms operate within and are shaped by the broader gender regime embedded in national institutions.

In strategic management, the resource-based view (Hanushek & Woessmann, 2023) posits that sustained competitive advantage derives from valuable, rare, inimitable, and non-substitutable resources. Gender equality expands the pool of available human capital and enhances diversity within decision-making systems. Empirical demonstrate that gender-diverse boards correlate with improved governance and financial performance. similarly reports that companies with gender-diverse executive teams outperform peers in profitability. The macro-level evidence presented in this study extends these firm-level findings upward: societies that structurally enable women's participation create macro-environments in which organizations can access broader talent pools, innovate more effectively, and compete more robustly.

The relationship between gender equality and life expectancy and education also reinforces Osiobe (2019) capabilities approach, which conceptualizes development as the expansion of substantive freedoms. Empowering women produces intergenerational returns in health and

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education outcomes. These arguments are supported by cross-national analyses which demonstrate that female educational attainment correlates strongly with child survival, nutrition, and schooling continuity. The managerial implication is clear: investments in gender parity generate compound social returns that improve workforce quality and consumer stability over time. Firms benefit indirectly from healthier, better-educated populations that expand both labor supply and demand-side purchasing power.

The economic dimension of the findings also intersects with macro-growth literature. de Vries et al. (2021) provide evidence that gender inequality constrains economic growth through underutilization of labor and human capital. The International estimate substantial GDP losses from gender employment gaps. By confirming a strong association between gender equality and GNI per capita, this study substantiates those macroeconomic projections within a contemporary comparative dataset. Management scholars concerned with national competitiveness must therefore recognize gender equality as an input variable in productivity modeling.

It would be intellectually irresponsible, however, to romanticize gender equality as a panacea. Critics such as Cornwall, caution against instrumentalizing women purely as engines of growth. warns that neoliberal appropriations of feminist discourse can obscure persistent structural inequalities. These critiques are salient. The argument advanced here is not that gender equality should be pursued because it increases GDP, but that its developmental effects are empirically demonstrable and institutionally consequential. Management research must avoid reducing equality to efficiency while acknowledging that efficiency arguments can mobilize policy change.

The governance implications are equally significant. Demonstrates that cultural modernization correlates with gender-egalitarian attitudes, links emancipative values to democratic consolidation. These findings suggest that gender equality reflects deeper normative transformations that stabilize institutions. For multinational enterprises, operating in gender-equal societies reduces governance risk, enhances regulatory transparency, and improves stakeholder trust. Indicate that corporate social responsibility frameworks are more robust in institutional contexts characterized by inclusive norms. Thus, gender equality contributes to the broader governance ecosystem within which firms' function.

From a labor market perspective, narrowing gender wage gaps improves allocative efficiency by ensuring that talent is rewarded according to productivity rather than constrained by structural bias. Greater flexibility and temporal autonomy are central to addressing persistent disparities in high-skilled professions, particularly where rigid work structures penalize career interruptions or caregiving responsibilities. Management practice must therefore move beyond symbolic diversity initiatives toward structural redesign of work systems. Flexible work arrangements, equitable parental leave policies, and performance metrics that are decoupled from presenteeism are not merely human resource accommodations; they are productivity-enhancing mechanisms within modern knowledge economies that depend on sustained engagement and optimal talent utilization.

The implications for leadership research are equally pronounced. Organizational structures frequently reproduce gendered barriers to advancement through opaque promotion criteria, exclusionary networks, and biased evaluation standards. When such barriers persist across firms and industries, they accumulate into macro-level development constraints by restricting access to decision-making roles and underutilizing leadership potential. The positive association between gender equality and broader development outcomes implies that dismantling leadership bottlenecks is not solely a matter of fairness but of systemic efficiency. Management scholarship must therefore integrate gender analysis into mainstream leadership

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theory, recognizing that leadership pipelines are shaped by institutional design rather than individual capability alone.

It is also necessary to confront the persistence of informal institutions within organizations. Status beliefs about gender continue to shape expectations, authority attribution, and performance assessments even in formally egalitarian settings. Bureaucratic norms often embed masculine defaults into definitions of commitment, availability, and executive presence. The macro-level correlations observed in this study likely reflect the cumulative consequences of these micro-level organizational processes. Addressing inequality requires systemic transformation across both formal policy frameworks and informal cultural practices, including accountability mechanisms, bias auditing, and sustained leadership commitment.

In practical terms, policymakers and corporate leaders must treat gender equality as strategic infrastructure rather than reputational capital. National development strategies that overlook gender parity risk stagnation by constraining labor participation, innovation capacity, and human capital formation. Similarly, corporate strategies that treat diversity as branding rather than operational necessity risk long-term competitive disadvantage. Progress toward parity is neither linear nor guaranteed; it requires institutional continuity and structural reform. The management field must therefore advocate sustained policy alignment, cross-sector collaboration, and long-term investment in equality-enhancing systems.

Finally, the findings compel a rethinking of performance metrics. Traditional economic indicators often obscure distributional disparities and fail to capture inclusiveness as a component of sustainable growth. Measuring well-being requires multidimensional assessment that integrates equality into evaluations of progress. By demonstrating that gender equality correlates with composite development indicators, this study supports incorporating inclusiveness into national and corporate performance dashboards. Management scholarship should move toward performance models that treat equality not as a peripheral outcome but as a core dimension of organizational and societal effectiveness.

Conclusion

This study demonstrates with empirical clarity that gender equality functions as a structural correlate of social development in modern societies rather than a symbolic or peripheral aspiration. By quantitatively establishing strong associations between gender equality and multidimensional development indicators including human development, life expectancy, education, and income the findings reposition gender parity as institutional infrastructure that shapes national productivity, human capital quality, and economic resilience. For management scholarship, this evidence demands conceptual expansion: firms are embedded within gendered institutional environments that condition their access to talent, governance stability, and long-term competitiveness. Gender equality, therefore, is not merely an internal diversity objective but a macro-level efficiency condition and developmental enabler. Sustainable organizational performance cannot be analytically or strategically separated from the broader equality regime in which it operates.

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