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Urban Community Welfare and Economic Inequality: The Role of Islamic Social Finance

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ABSTRACT
This study examines economic inequality and welfare trends in Medan City and discusses the redistribution potential of Islamic social finance. A quantitative longitudinal design uses seven annual observations from BPS for 2018–2024, complemented by zakat and infaq collection data from BAZNAS Medan City for 2018–2022. Descriptive statistics, Pearson correlations, ordinary least squares regression, and projections assess changes in the Gini Index, per capita expenditure, poverty, and the Human Development Index (HDI). The Gini Index increased from 0.3140 in 2018 to a peak of 0.4020 in 2021, before declining to 0.3560 in 2024. Meanwhile, expenditure generally increased, poverty declined from 8.25% to 7.94%, and HDI rose annually. None of the Gini Index's bivariate correlations with the welfare indicators reached the 5% significance threshold. Regression estimates indicated positive expenditure and poverty coefficients, although statistical inference remains provisional because of reporting inconsistencies, possible residual autocorrelation, and the small sample. Reported projections suggest an increase in the Gini Index from 0.371 in 2025 to 0.387 in 2027. Zakat and infaq collection increased from IDR 773 million to IDR 2.135 billion, indicating greater funding capacity but not demonstrated welfare effects. The study highlights the importance of assessing welfare achievements alongside distributional outcomes and distinguishing social finance resources from recipient benefits. Household-level evidence and verified model estimates are needed to strengthen policy conclusions.

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1. Introduction

Urban welfare depends on economic resources and opportunities across several dimensions of life, including education and healthcare (Dörffel & Schuhmann, 2022). Research on educational inequality highlights the importance of differences in family circumstances and opportunities (Asadullah et al., 2021), while evidence on health systems emphasises equitable access to high-quality care (Kruk et al., 2018). Economic progress therefore requires assessment alongside the distribution of its benefits, consistent with the inclusive growth framework (Ngepah, 2017). Distributional research further demonstrates why aggregate economic indicators should be examined together with differences across income groups (Piketty et al., 2018), particularly given

the persistence of substantial global inequality (Chancel & Piketty, 2021). In Indonesia, research on interprovincial household wealth inequality reinforces the importance of examining distributional differences within the national economy (Soseco et al., 2024).

Medan City illustrates the need to distinguish improvements in welfare indicators from changes in economic distribution. Its poverty rate declined from 8.00% in 2023 to 7.94% in 2024, while the poverty gap index increased from 0.92 to 1.09 (Badan Pusat Statistik Kota Medan, 2023). These contrasting movements indicate declining poverty incidence alongside increasing poverty depth. This distinction highlights the importance of examining conditions among poorer residents rather than relying only on the proportion below the poverty line, consistent with research assessing whether economic development reaches the poorest (Margitic & Ravallion, 2019). Accordingly, declining poverty alone does not provide a complete picture of urban welfare; assessment should also consider access to essential services and the distribution of development benefits (Page & Pande, 2018).

Assessing urban welfare requires examining economic resources alongside other dimensions of deprivation, with attention to the indicators used to represent welfare (Pasha, 2017). Per capita expenditure, poverty, and human development describe different aspects of living conditions, while the Gini Index measures inequality. Analysing these indicators together can clarify whether welfare improvements coincide with a more equal distribution in Medan City, without assuming that aggregate conditions represent every population group equally (Espinoza-Delgado & Klasen, 2018). Islamic social finance offers a complementary perspective through zakat's potential redistributive role (Tlemsani et al., 2023). However, zakat and infaq collection reflects funding capacity rather than demonstrated welfare gains. Assessment therefore requires examining community needs and distribution priorities (Rahmat & Nurzaman, 2019), as well as whether assistance reaches eligible recipients facing deprivation (B. O. Ahmed et al., 2017). These distinctions motivate an integrated assessment of welfare trends and redistribution potential.

Islamic social finance provides a complementary perspective on redistribution. However, an increase in zakat and infaq collection should be distinguished from evidence of improved recipient welfare or reduced city-level inequality. Collection data indicate available financial resources, while conclusions about programme outcomes require information on distribution, recipient coverage, and changes in living conditions. This study therefore brings together an analysis of inequality and welfare indicators with a clearly bounded assessment of the redistribution potential of Islamic social finance in Medan City.

1.1. Economic Inequality and Welfare: Theoretical Perspectives

The inclusive growth framework provides a basis for examining economic progress together with the distribution of its benefits. Within this framework, improvements in average economic conditions need to be considered alongside participation in economic opportunities and changes in inequality (Ngepah, 2017). Per capita expenditure, the poverty rate, and the Human Development Index (HDI) describe different aspects of welfare, while the Gini Index measures inequality in distribution. Examining these indicators together therefore provides a broader assessment of urban development than relying on a single measure.

Sen's capability approach offers a complementary perspective by evaluating welfare through people's real opportunities to achieve valued ways of living, while recognising the importance of social relationships in shaping those opportunities (Hoffmann & Metz, 2017). Empirical applications distinguish resources from capabilities and show how personal and contextual conditions influence the conversion of resources into opportunities (Ahonen et al., 2025). Inequalities may also differ across dimensions and population groups, making a single aggregate economic indicator insufficient to represent individual well-being (Espinoza-Delgado & Klasen, 2018). In this study, the approach guides the interpretation of expenditure, poverty, and human development as related but distinct aspects of welfare. However, these aggregate indicators do not directly measure individual capabilities or establish whether opportunities are equally available; such assessment requires indicators designed to capture relevant opportunities and access to services (Yucel, 2022). Together with the inclusive development framework, this perspective supports distinguishing average

achievements from their distribution (Dörffel & Schuhmann, 2022). These frameworks guide the interpretation of descriptive findings and projections, while regression examines the conditional relationships of per capita expenditure and poverty with the Gini Index. They therefore serve as interpretive perspectives rather than comprehensive theoretical models tested by the available data.

1.2. Per Capita Expenditure and Economic Inequality

Per capita expenditure represents the average level of spending in a population, whereas the Gini Index describes the degree of inequality in distribution. An increase in average expenditure does not necessarily imply that households experience similar improvements. Research on growth, inequality, and poverty highlights the importance of differences in welfare gains beneath aggregate averages and the role of distribution in shaping outcomes for poorer groups (Ravallion, 2001).

Different distributional patterns can accompany rising average expenditure, highlighting the distinction between aggregate economic progress and the distribution of its benefits (Dörffel & Schuhmann, 2022). If expenditure increases by the same proportion across all households, average expenditure rises while the Gini Index remains unchanged. If gains are concentrated among higher-expenditure households, inequality may increase, consistent with the importance of examining growth across the distribution rather than relying on averages alone (Piketty et al., 2018). Conversely, larger relative gains among lower-expenditure households may reduce inequality, reflecting the distributional concern central to inclusive growth (Ngepah, 2017). These possibilities suggest that the relationship depends on how gains are distributed, while historical evidence illustrates that economic development can coexist with persistent inequality (Chancel & Piketty, 2021). Research on individual poverty dynamics further shows that aggregate changes can conceal different experiences across population groups (Lo Bue & Palmisano, 2020). The present study therefore examines whether per capita expenditure is related to the Gini Index after accounting for the poverty rate. Because average expenditure alone does not determine the distribution of gains, no positive or negative direction is specified. The first hypothesis is:

H_1: Per capita expenditure is related to economic inequality in Medan City, controlling for the poverty rate.

1.3. Poverty Rate and Economic Inequality

Poverty and inequality describe different features of economic conditions. The poverty rate measures the proportion of people living below a specified poverty line, whereas the Gini Index summarises inequality across the distribution. Distinguishing development achievements from their distribution is therefore important when assessing welfare (Dörffel & Schuhmann, 2022). Changes in average living standards do not necessarily reveal how gains are distributed among population groups, as distributional research demonstrates (Piketty et al., 2018). A reduction in poverty may consequently occur alongside increasing inequality if some households move above the poverty line while higher-expenditure groups experience larger gains. Research on growth and poverty further highlights that aggregate improvements can conceal different experiences among individuals (Lo Bue & Palmisano, 2020), while persistent inequality can limit the benefits of economic growth for poorer groups (Page & Pande, 2018). Poverty and inequality may also decline together, as illustrated by evidence from Brazil (Sotomayor, 2019). Similarly, an unchanged poverty rate can coexist with changes in inequality among households above or below the poverty line. Consequently, neither the existence nor the direction of a linear relationship should be assumed solely from the definitions of these indicators.

The regression analysis therefore examines whether the poverty rate is related to the Gini Index after accounting for per capita expenditure. A non-directional hypothesis is proposed because these distributional possibilities do not establish a uniform direction for the conditional relationship in Medan City. The second hypothesis is:

H_2: The poverty rate is related to economic inequality in Medan City, controlling for per capita expenditure.

1.4. Islamic Social Finance and Redistribution Potential

Islamic social finance provides a complementary framework for examining resource redistribution to eligible recipients and communities in need, with zakat offering a mechanism for promoting fairer allocation (Tlemsani et al., 2023). ZISWAF instruments differ in their collection, management, and allocation arrangements; their contribution therefore requires attention to distribution priorities and recipients' circumstances. Research on identifying eligible zakat recipients highlights the importance of assessing deprivation beyond income alone (Ahmed et al., 2017), while a study of 1,300 recipients in West Java demonstrates the relevance of examining poverty and distributional outcomes separately for male- and female-headed households (Ayuniyyah et al., 2022). The capability approach further distinguishes resources from opportunities, recognising that personal and contextual conditions influence how resources translate into capabilities (Ahonen et al., 2025). Assistance for basic needs and productive activities can thus be considered potential channels for supporting welfare, but assessment requires evidence on community needs, programme delivery, and recipient outcomes rather than collection totals alone (Rahmat & Nurzaman, 2019). In this study, institutional data cover only zakat and infaq collection, supporting a descriptive assessment of funding capacity and a conceptual discussion of redistribution potential. No additional hypothesis is proposed for ZISWAF because its relationship with inequality is not statistically tested. Similarly, HDI remains within the descriptive and correlation analyses and is excluded from hypothesis testing in the final regression model. Accordingly, this study examines economic inequality and selected welfare indicators in Medan City during 2018–2024, presents projections for 2025–2027, and discusses the potential contribution of Islamic social finance using zakat and infaq collection data for 2018–2022. The study addresses four research questions:

RQ1: How did economic inequality, per capita expenditure, and the poverty rate change in Medan City during 2018–2024?

RQ2: How are per capita expenditure, the poverty rate, and related to economic inequality in Medan City?

RQ3: What are the projected levels of economic inequality and selected welfare indicators in Medan City for 2025–2027, based on data from 2018–2024?

RQ4: What potential contribution could Islamic social finance make to reducing economic inequality and improving welfare in Medan City, as discussed using zakat and infaq collection data?

2. Methods

This study adopts a quantitative approach with a non-experimental longitudinal design based on secondary annual data from Medan City for 2018–2024. The analysis combines descriptive statistics, correlation analysis, multiple linear regression, and forecasting to examine economic inequality and welfare indicators. The Gini Index represents economic inequality, while per capita expenditure, the poverty rate, and the Human Development Index (HDI) represent selected dimensions of welfare. As the study uses observational data without experimental intervention, the estimated relationships are interpreted as statistical associations rather than causal effects. The study variables, their operational definitions, and data sources are presented in Table 1.

Table 1. Operational Definitions and Data Sources of Study Variables

Variable	Code	Role in the analysis	Operational definition and measurement	Data source
Gini Index	Y	Dependent variable in the regression model	Degree of inequality in expenditure distribution, expressed on a scale from 0 to 1; higher values indicate greater inequality.	BPS Medan City
Per capita expenditure	X_1	Independent variable in the regression model	Per capita expenditure as reported by BPS, expressed in Indonesian rupiah (IDR).	BPS Medan City
Poverty rate	X_2	Independent variable in the regression model	Percentage of the population living below the poverty line (%).	BPS Medan City

Human Development Index (HDI)	X_3	Indicator included in descriptive and correlation analyses	Composite index covering health, education, and standard of living, expressed on a scale from 0 to 100.	BPS Medan City

Source: Authors' compilation based on BPS Medan City
Note: All variables cover 2018–2024. HDI is included in the descriptive and correlation analyses but is excluded from the final regression model.

Descriptive analysis examines changes in each indicator over the seven-year observation period. Tables and graphical presentations summarise overall trends, annual fluctuations, and differences between the beginning and end of the period. Pearson correlation analysis examines pairwise linear relationships among the four indicators. This analysis provides an initial assessment of the direction and strength of their relationships and is distinguished from the conditional relationships estimated through multiple regression.

Multiple linear regression examines the relationships of per capita expenditure and the poverty rate with economic inequality. The Gini Index is the dependent variable, while per capita expenditure and the poverty rate are the explanatory variables in the final model. Each regression coefficient represents the relationship between one explanatory variable and the Gini Index while holding the other explanatory variable constant. HDI is included in the descriptive and correlation analyses but is not included in the final regression model. The regression analysis tests the following non-directional hypotheses:

H_1: Per capita expenditure is related to economic inequality in Medan City

H_2: The poverty rate is related to economic inequality in Medan City

For each hypothesis, the null hypothesis states that the corresponding population regression coefficient equals zero. The alternative hypothesis states that the coefficient differs from zero. Hypothesis testing uses a two-sided significance level of 5%. Coefficient estimates, standard errors, test statistics, and p-values are reported alongside model fit statistics. Regression diagnostics assess multicollinearity, heteroscedasticity, residual autocorrelation, and residual normality. Given the seven annual observations, statistical inference requires particular caution, and diagnostic results are interpreted with recognition of their limited power in a small sample.

Forecasting provides estimates of the Gini Index, per capita expenditure, and the poverty rate for 2025–2027 using the historical series. This component addresses the prospective development of the indicators rather than testing the regression hypotheses. The projected values are interpreted as conditional estimates whose reliability depends on the forecasting methods, assumptions, and available data. The short observation period limits the assessment of longer-term patterns and forecasts uncertainty.

A complementary descriptive and conceptual analysis examines the potential role of Islamic social finance through ZISWAF in supporting redistribution and welfare improvement. Its empirical basis consists of zakat and infaq collection data from BAZNAS Medan City for 2018–2022. The analysis describes changes in available funding and discusses potential channels through which assistance for basic needs and productive economic support may benefit eligible recipients. Because these data cover collection rather than distribution or recipient outcomes, this component does not test a statistical hypothesis concerning the effects of ZISWAF on welfare or inequality. Its conclusions are therefore limited to potential contributions, with empirical findings restricted to the zakat and infaq instruments represented in the data.

3. Results

3.1. Trends in Economic Inequality and Welfare Indicators, 2018–2024

Table 2 presents four main patterns in Medan City during 2018–2024: the Gini Index fluctuated and peaked in 2021, per capita expenditure generally increased, poverty declined overall, and the Human Development Index (HDI) rose annually. The Gini Index increased from 0.3140 in 2018 to 0.3519 in 2019, declined to 0.3199 in 2020, and reached its highest value of 0.4020 in 2021. It subsequently decreased for three consecutive years to 0.3560 in 2024. Nevertheless, the final value remained above its 2018 level. Per capita expenditure increased overall from IDR 14,845,000 in

2018 to IDR 15,753,000 in 2024. A temporary decline occurred in 2020, followed by annual increases from 2021 onwards.

Table 2. Annual Economic Inequality and Welfare Indicators in Medan City, 2018–2024

Years	Index Gini (Y)	Per Capita Expenditure (Rp)	Percentage Of Poor Population (%)	Human Development Indek (HDI)
2018	0,3140	14.845.000	8,25	80,65
2019	0,3519	15.033.000	8,25	80,97
2020	0,3199	14.890.000	8,08	80,98
2021	0,4020	14.999.000	8,34	81,21
2022	0,3990	15.503.000	8,07	81,76
2023	0,3730	15.674.000	8,00	82,61
2024	0,3560	15.753.000	7,94	83,23

Source: Processed by Researchers, 2025

The poverty rate remained at 8.25% in 2018–2019 and declined to 8.08% in 2020. After reaching 8.34% in 2021, it decreased annually to 7.94% in 2024, representing an overall reduction of 0.31 percentage points. Meanwhile, the HDI increased every year, rising from 80.65 to 83.23, a gain of 2.58 points. During 2021–2024, expenditure and HDI increased while poverty and inequality declined. These descriptive results identify changes over time but do not establish causal relationships or explain the factors underlying the observed movements. They also do not identify differences in outcomes across individual households.

Descriptive Statistical Analysis of Research Variables

Descriptive analysis summarises changes in per capita expenditure, the poverty rate, and the Human Development Index (HDI) in Medan City during 2018–2024.

Per Capita Expenditure

Per capita expenditure generally increased from IDR 14,845,000 in 2018 to IDR 15,753,000 in 2024. Following a temporary decline in 2020, expenditure increased each year from 2021 onwards. In 2022, it rose from IDR 14,999,000 to IDR 15,503,000, representing an annual increase of approximately 3.36%.

Poverty Rate

The poverty rate declined overall from 8.25% in 2018 to 7.94% in 2024, a reduction of 0.31 percentage points. However, this decline was not continuous. The rate remained unchanged in 2019, decreased to 8.08% in 2020, and increased to 8.34% in 2021. It subsequently declined for three consecutive years.

Human Development Index

The HDI increased every year, rising from 80.65 in 2018 to 83.23 in 2024, an overall increase of 2.58 points. The largest annual increase occurred between 2022 and 2023, when the index rose by 0.85 points.

Combined Indicator Trends

Over the full observation period, expenditure and HDI increased while the poverty rate declined. The Gini Index nevertheless remained higher in 2024 than in 2018, despite decreasing after its 2021 peak. During 2021–2024, all four indicators moved towards higher expenditure and human development, lower poverty, and lower inequality. These patterns describe annual aggregate changes and do not identify differences among households or establish relationships between the indicators.

3.2. Analysis of Variable Development Trends

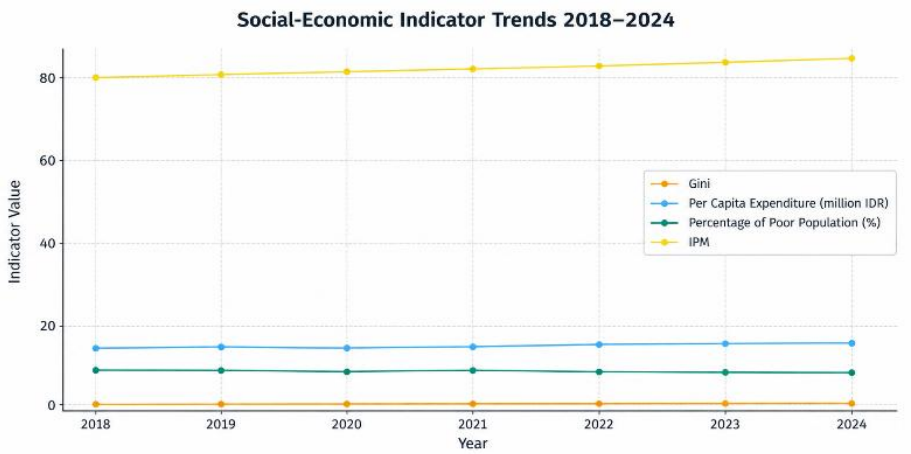


Figure 1. Trends in Socioeconomic Indicators in Medan City, 2018–2024

Figure 1 illustrates different patterns across the four indicators. The Gini Index fluctuated, reaching a peak of 0.4020 in 2021 before declining to 0.3560 in 2024. Per capita expenditure decreased temporarily in 2020 and increased annually thereafter. The poverty rate rose to 8.34% in 2021 before declining to 7.94% in 2024. Meanwhile, the HDI increased throughout the observation period. During 2021–2024, expenditure and HDI increased while both poverty and inequality declined.

3.3. Correlations among Economic Inequality and Welfare Indicators

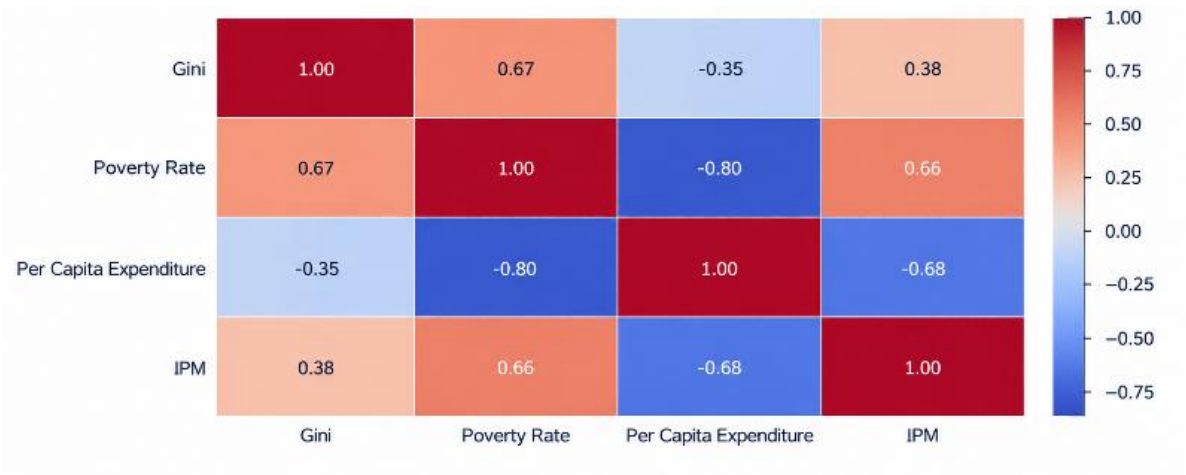


Figure 2. Correlation Matrix of Socioeconomic Indicators

Figure 2 summarises the direction and magnitude of the pairwise correlations. As reported in Table 3, per capita expenditure and HDI are strongly positively correlated, while the poverty rate is negatively correlated with both indicators. The correlations between the Gini Index and the three welfare indicators do not reach the 5% significance threshold. These findings describe bivariate relationships across seven annual observations and do not establish causal effects.

Figure 2 and Table 3 present the Pearson correlations among the four socioeconomic indicators across seven annual observations during 2018–2024. Per capita expenditure was strongly positively correlated with HDI ($r = 0.9557$, $p = 0.0008$). The poverty rate was negatively correlated with both per capita expenditure ($r = -0.7982$, $p = 0.0314$) and HDI ($r = -0.8096$, $p = 0.0273$).

Table 3. Pearson Correlations among Economic Inequality and Welfare Indicatiors

Variable Pair	Pearson r	p-value
Gini Index – Per Capita Expenditure	0.4654	0.2926
Gini Index – Poverty Rate	0.0347	0.9411
Gini Index – HDI	0.3507	0.4406
Per Capita Expenditure – HDI	0.9557	0.0008
Per Capita Expenditure – Poverty Rate	−0.7982	0.0314
HDI – Poverty Rate	−0.8096	0.0273

Note: HDI = Human Development Index. Values are reproduced as provided.

The Gini Index showed positive correlations with per capita expenditure (r = 0.4654, p = 0.2926), the poverty rate (r = 0.0347, p = 0.9411), and HDI (r = 0.3507, p = 0.4406). None of these three correlations met the 5% significance threshold. Overall, the strongest correlations were observed among the welfare indicators, while the evidence for linear relationships between these indicators and the Gini Index was limited. These exploratory results describe relationships across annual aggregate observations and do not establish causal effects.

3.4. Regression Estimates and Model Diagnostics

3.4.1. Model Diagnostics and Inference

Table 4 summarises the model diagnostics. VIF values of 2.73 for both predictors indicate no severe multicollinearity. The Breusch–Pagan test (p = 0.525) and Jarque–Bera test (p = 0.371) does not reject homoscedasticity and residual normality, respectively. However, the Durbin–Watson statistic of 0.88 suggests possible positive residual autocorrelation. These findings should be interpreted cautiously given the seven annual observations; non-significant diagnostic tests do not establish that all model assumptions are satisfied.

Table 4. Regression Model Diagnostics

Diagnostic	Test or measure	Statistic	P-value	Conclusions
Multikolinearitas	VIF	2.73	-	No multicollinearity issue exists.
Heteroskedastisitas	Breusch-Pagan	Heteroscedasticity is absent.	0.525	No multicollinearity issue exists.
Autokorelasi	Durbin-Watson	0.88	-	Positive autocorrelation exists.
Normalitas	Jarque-Bera	-	0.371	Normally distributed residuals

Source: Authors' calculations.

3.4.2. Regression Estimates and Hypothesis Tests

This analysis employs multiple linear regression to examine the correlationof the following variables on the Gini Index, a measure of economic inequality in Medan City:
The employed regression model is as follows:

$$Indeks\ Gini = \beta_0 + \beta_1 Per\ Capita\ Expenditure + \beta_2 Poverty\ Percentage + \varepsilon$$

Table 5 reports the OLS estimates for the relationships of per capita expenditure and the poverty rate with the Gini Index. Per capita expenditure has a positive coefficient (β = 1.865918; reported p = 0.027), while the poverty coefficient is also positive but does not meet the 5% significance threshold (β = 0.261896; reported p = 0.052). Under the reported p-values, H_1 is supported and H_2 is not supported. These decisions remain provisional pending verification of the statistical output and the treatment of residual autocorrelation.

Table 5. OLS Regression Estimates for the Gini Index

Predictor	Coefficient (β)	Std. Error	t-Stat	p-value
Intercept (β0)	-32.631	11.406	-2.861	0.045
Per Capita Expenditure (β1)	1.865	0.645	2.890	0.027
Poverty Percentage (β2)	0.261	0.110	2.375	0.052

Notes: N = 7 annual observations, 2018–2024. The dependent variable is the Gini Index. Coefficients are unstandardised. Statistics are reproduced as reported and require consistency checks before final publication.

Source: Authors' calculations.

The model has a reported R^2 of 0.6765 and adjusted R^2 of 0.5148. The overall F-test does not meet the 5% significance threshold (F = 4.183; reported p = 0.1046). Coefficient magnitudes require interpretation according to the measurement scales and transformations specified in Methods. The estimates describe conditional relationships and do not establish causal effects.

3.5. Projections of Economic Inequality and Welfare Indicators, 2025–2027

Table 6. Projection of Economic Inequality in Medan City (2025-2027)

Years	Projection Index Gini	Per Capita Expenditure Projection	Projection of Poverty Percentage (%)
2025	0.371	Rp 16.040.000	7.80%
2026	0.379	Rp 16.430.000	7.60%
2027	0.387	Rp 16.830.000	7.40%

Source: Projection based on BPS Medan City data (Data is processed, 2025)

The Gini Index is projected to increase from 0.371 in 2025 to 0.387 in 2027, representing an increase of 0.016 over the projection period. Per capita expenditure is projected to rise from IDR 16,040,000 to IDR 16,830,000, while the poverty rate is projected to decline from 7.80% to 7.40%, a decrease of 0.40 percentage points. Thus, the projections indicate rising average expenditure and declining poverty alongside increasing economic inequality. These values are point projections rather than observed outcomes. Their interpretation remains subject to the projection methods and assumptions, particularly given the seven annual observations available for estimation.

3.6. Zakat and Infaq Collection by BAZNAS Medan City, 2018–2022

In Medan City, the collection of Zakat, Infaq, and Sadaqah (ZIS) funds has shown a significant upward trend in recent years. Based on the ZIS collection reports from Badan Amil Zakat Nasional (BAZNAS) Kota Medan, the total revenue from zakat and infaq funds during the period of 2018–2022 experienced a considerable increase, as shown in the Table 10.

Table 7. ZIS Fund Collection by BAZNAS Medan City (2018–2022)

Year	Zakat (Rp)	Infaq (Rp)	Total ZIS (Rp)
2018	708,759,592	64,250,000	773,009,592
2019	310,816,859	129,610,914	440,427,773
2020	653,352,697	125,202,117	778,554,814
2021	738,399,810	109,713,000	848,112,810
2022	1,737,062,598	398,014,670	2,135,077,268

Table 7 presents zakat and infaq collection by BAZNAS Medan City during 2018–2022. Total collection decreased from IDR 773,009,592 in 2018 to IDR 440,427,773 in 2019, before increasing to IDR 778,554,814 in 2020 and IDR 848,112,810 in 2021. The largest annual increase occurred in 2022, when total collection reached IDR 2,135,077,268, the highest value recorded during the reporting period. Zakat accounted for the larger share of collection in every year. Zakat receipts declined from IDR 708,759,592 in 2018 to IDR 310,816,859 in 2019, then increased each year to reach IDR 1,737,062,598 in 2022. Infaq receipts followed a different pattern, increasing in 2019,

declining in 2020 and 2021, and rising to IDR 398,014,670 in 2022. Overall, both components recorded higher collection values in 2022 than in 2018.

4. Discussion

4.1. Trends in Economic Inequality and Welfare Indicators in Medan City, 2018–2024.

The findings indicate that improvements in welfare indicators did not consistently coincide with a more equal economic distribution in Medan City during 2018–2024. This distinction is important because inclusive growth concerns both economic progress and how its benefits are distributed across society (Ngepah, 2017). The Gini Index increased from 0.3140 in 2018 to 0.4020 in 2021 before declining to 0.3560 in 2024, suggesting that the subsequent improvement had not fully reversed the earlier increase in inequality. Meanwhile, per capita expenditure generally rose from IDR 14,845,000 to IDR 15,753,000, despite a temporary decline in 2020; the poverty rate fell from 8.25% to 7.94%, following an increase to 8.34% in 2021; and the HDI increased annually from 80.65 to 83.23. These patterns require a distinction between the overall period and its later years: welfare indicators improved alongside higher inequality between the two endpoints, whereas expenditure and HDI increased while both poverty and inequality declined during 2021–2024. Such differences support a multidimensional assessment of growth experiences rather than reliance on a single indicator (Kjøller-Hansen & Lindbjerg Sperling, 2020). Viewed through the inclusive growth framework, these findings highlight the need to assess both development achievements and their distribution, while making the criteria for inclusion explicit (Johnson & Eccleston, 2023). However, higher expenditure should not automatically be interpreted as increased purchasing power without confirming its price basis and adjustment for inflation, particularly because households can face different rates of price increases (Kaplan & Schulhofer-Wohl, 2017).

Sen's capability approach deepens this interpretation by distinguishing economic resources from people's real opportunities to achieve valued ways of living, while recognising that social relationships can enable or constrain those opportunities (Hoffmann & Metz, 2017). Higher average expenditure and a rising HDI suggest progress in aggregate conditions, but they do not establish that all groups gained equal access to education, healthcare, or economic opportunities. Research on the spatial distribution of human development further highlights the importance of examining regional differences alongside aggregate achievements (Liu et al., 2021). Similarly, a lower poverty rate indicates that a smaller proportion of residents remained below the poverty line, while the Gini Index captures a different dimension: inequality across the distribution. Improvements in these indicators therefore need not occur at the same pace or in the same direction. Together, the two perspectives support evaluating development through both wider opportunities and a more equitable distribution of benefits. Nevertheless, the aggregate descriptive data cannot identify which households or areas benefited most, establish the causes of the observed changes, or demonstrate policy effectiveness. The findings consequently support continued attention to poverty reduction and equitable access to essential services and productive opportunities, while household-level and spatial evidence is needed to assess how broadly these improvements were experienced.

4.2. Relationships of Per Capita Expenditure and Poverty Rate with Economic Inequality in Medan City

Per capita expenditure has a positive coefficient of 1.865918, indicating a positive relationship with the Gini Index after accounting for the poverty rate. This finding suggests that higher average expenditure may occur alongside greater economic inequality. Average improvements can conceal differences in welfare gains across population groups (Ravallion, 2001), highlighting the importance of examining distribution rather than aggregate economic progress alone (Piketty, 2015). However, the numerical interpretation of the coefficient depends on the measurement scale and any transformation used in the model. Logarithmic transformations require particular care when interpreting relationships and translating estimates back to the original scale (Manning, 1998) (Manning, 1998). Therefore, the coefficient cannot be directly interpreted as the change in the Gini Index resulting from a 1% increase in expenditure without confirming the model specification, since percentage interpretations depend on how logarithms and scaling are applied (Cole, 2000).

The positive expenditure coefficient highlights the distinction between average economic conditions and the distribution of economic resources. An increase in average expenditure does not necessarily mean that all households experience similar improvements, as distributional research shows that aggregate growth can conceal substantial differences across income groups (Piketty et al., 2018). Unequal gains across population groups offer one possible explanation for the estimated relationship, consistent with evidence that economic development can occur alongside persistent inequality (Chancel & Piketty, 2021). However, the aggregate data used in this study do not identify which groups benefit most, and aggregate relationships should not be directly interpreted as household-level patterns because of the risk of ecological fallacy (Forcina & Pellegrino, 2019). Furthermore, the regression does not establish a causal relationship, since causal interpretation requires explicit assumptions about confounding and the processes linking the variables (Rohrer, 2018).

The poverty rate has a positive coefficient of 0.261896 after accounting for per capita expenditure. Nevertheless, its reported p-value of 0.052 does not meet the study's 5% significance threshold. Based on the reported p-values, H_1 receives statistical support, whereas H_2 does not under this decision rule. However, this distinction should not be treated as a sharp boundary between the presence and absence of a relationship, particularly when a p-value is close to the threshold (Wasserstein et al., 2019). These conclusions remain provisional because the consistency of the reported t-statistics, degrees of freedom, and p-values requires verification, reflecting the importance of checking statistical-reporting inconsistencies (Nuijten & Wicherts, 2024). The treatment of residual autocorrelation must also be confirmed because reliable inference in time-series regression requires appropriate standard errors and testing procedures (Lazarus et al., 2018). Finally, the positive poverty coefficient should not be presented as evidence that poverty directly causes greater inequality without an explicit causal framework and justified identification assumptions (Hernán, 2018).

The estimates suggest that improvements in average expenditure should be considered alongside changes in poverty and economic distribution. Policies aimed at improving welfare may combine support for basic needs with wider access to education, healthcare, and productive employment. However, the effectiveness of these policies is not tested by the model. Given the limited number of annual observations, the results are best interpreted as preliminary evidence of relationships within the study period.

5. Projections or trends in economic inequality and urban welfare in Medan City in the future based on trends in the last five years

The projected increase in Medan City's Gini Index from 0.371 in 2025 to 0.387 in 2027 suggests that economic inequality may increase despite rising per capita expenditure and a declining poverty rate. Within the inclusive growth framework, economic progress should be assessed by how widely its benefits reach different groups in society, with attention to both development achievements and equity (Dörffel & Schuhmann, 2022). An increase in average expenditure, therefore, does not necessarily indicate that development benefits are distributed equally, as aggregate improvements can hide differences in welfare gains across population groups (Ravallion, 2001). These projections suggest a possible gap between improvements in average welfare and a more equal distribution of economic resources.

Amartya Sen's capability approach provides further insight by viewing welfare in terms of people's real opportunities to lead lives they value. Under this approach, economic resources are a means to expand capabilities, but their benefits depend on the personal, social, and environmental conditions that allow people to convert resources into valued opportunities (Bartolomei et al., 2024). Access to education, healthcare, employment, and basic services is therefore important when assessing welfare. Thus, per capita expenditure may increase while some groups continue to face limited opportunities. However, because the projection model does not directly measure capabilities, this explanation remains a theoretical interpretation that requires further evidence. The projected decline in the poverty rate from 7.80% to 7.40% should also be distinguished from a more equal distribution of economic resources. Some people may move above the poverty line while the gap

between groups continues to widen. Therefore, declining poverty and a rising Gini Index are not necessarily conflicting outcomes. They indicate that poverty reduction and inequality reduction are related development goals that require different policy responses.

Based on these two perspectives, development policies in Medan City should expand economic opportunities for low-income groups and promote a more equal distribution of development benefits. Well-targeted social assistance can be combined with productive assets, training, coaching, and access to health services, as evidence from six countries shows that integrated support can produce lasting improvements in poor households' livelihoods (Banerjee et al., 2015). Better access to education, healthcare, and infrastructure should complement these efforts. Support for micro, small, and medium enterprises (MSMEs) can also include business training adapted to participants' needs, which can improve business practices and performance (McKenzie, 2021). Policy success should be assessed through changes in economic distribution and access to opportunities, alongside average expenditure and poverty rates. This assessment can include reductions in deprivation across several dimensions, rather than relying only on monetary indicators (Alkire & Foster, 2011). These policy implications remain forward-looking because they are based on projections whose reliability depends on the methods and assumptions used.

6.The Role of Islamic Finance in Reducing Economic Inequality and Improving Welfare

Within the Islamic economic redistribution framework, social finance instruments channel resources to people in need to support basic needs and expand economic opportunities. Zakat is obligatory and has specific rules regarding eligible recipients, while infaq, sadaqah, and waqf have different management and allocation arrangements. In this study, the increase in zakat and infaq collection by BAZNAS Medan City from IDR 773,009,592 in 2018 to IDR 2,135,077,268 in 2022 indicates greater resources that could support redistribution. However, the amount collected does not show how widely the funds have reached recipients or whether they have reduced economic inequality.

Amartya Sen's capability approach extends this discussion by viewing welfare in terms of people's real opportunities to lead lives they value. From this perspective, financial assistance is a means to expand opportunities, while its benefits depend on recipients' personal circumstances and the social conditions that help them use available resources (Robeyns, 2003). Assistance for basic needs can be combined with productive assets, health support, training, and mentoring to improve poor households' livelihoods (Banerjee et al., 2015). Business training adapted to participants' needs may further improve management practices and business performance, supporting income-generating activities (McKenzie, 2021). Programme benefits should therefore be assessed through recipients' actual achievements and reductions in deprivation across several dimensions, including education, health, and living standards, rather than through financial indicators alone (Alkire & Foster, 2011).

Together, these perspectives suggest that the potential contribution of Islamic social finance depends on how effectively institutions manage available funds and translate them into programme outputs (Djaghballou et al., 2018). Assistance should also address recipients' short-term needs and longer-term financial goals, rather than focusing only on the amount collected (H. Ahmed & Salleh, 2016). Accurate targeting is important because different selection methods can identify different groups of poor households, as demonstrated by experimental evidence from Indonesia (Alatas et al., 2012). Continued mentoring may support income-generating activities, although evidence from microenterprises in Kenya suggests that its benefits can decline when mentoring relationships end (Brooks et al., 2018). Evaluation should therefore examine changes in recipients' circumstances, including poverty and income distribution, rather than treating fund collection as evidence of welfare improvement (Ayuniyyah et al., 2022). For programmes serving mustahik, or eligible zakat recipients, relevant outcomes may include basic needs, changes in income, access to essential services, and the continued operation of recipients' businesses.

In Medan City, the available collection data provide a basis for discussing redistribution potential, but they do not demonstrate reduced inequality or improved recipient capabilities. The data also cover only zakat and infaq, so the empirical conclusions cannot be extended to all ZISWAF

instruments. Increased collection can therefore be understood as an opportunity to strengthen social protection and economic empowerment. Whether this opportunity produces actual benefits requires further assessment using data on fund distribution, recipient coverage, and changes in recipients' welfare.

6. References

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