*Research Article*

# The Polarization of Population Growth on the Development of Micro, Small, and Medium Enterprises in the Medan Tuntungan District

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**Abstract:** Micro, Small, and Medium Enterprises (MSMEs) have an important role in supporting economic growth and improving people's income. The development of MSMEs is closely related to population growth and residential settlement patterns, especially in urban areas. This study aims to examine the effect of increasing residential settlements on the development of MSMEs in Medan Tuntungan District. The analysis focuses on the influence of population growth and the number of MSMEs on MSME income, as well as differences in MSME development between densely populated and less populated areas. This research used quantitative descriptive method and multiple linear regression analysis. Primary data are collect through questionnaires and interviews 100 MSME owners in Medan Tuntungan District. Secondary data were obtained from government reports and relevant literature. The independent variables in this study are population growth and the number of MSMEs, while the dependent variable is MSME income. The results show that population growth has positive and significant effect on MSME income. Number of MSMEs also has a positive and significant effect on MSME income. Overall, both variables jointly influence MSME income in Medan Tuntungan District. These findings indicate that the growth of residential settlements can provide opportunities for MSME development when supported by proper government policies and empowerment programs.

**Keywords:** Medan Tuntungan; MSME Income; MSMEs; Population Growth; Residential Settlements.

## 1. Introduction

Micro, Small, and Medium Enterprises (MSMEs) play crucial role in supporting Indonesia's economic growth. According to the Ministry of Cooperatives and MSMEs, this sector employs more than 97% of the national labor force and generates approximately 60% of Indonesia's Gross Domestic Product (GDP).These figures demonstrate the strategic role of MSMEs in sustaining economic activities, particularly in regions with strong economic potential such as North Sumatra (Tambunan, 2008; Sato, 2015). Economic growth, which is generally assessed through GDP, represents a region's ability to generate goods and services and is commonly used as an indicator of public welfare (Sultan et al., 2023). In North Sumatra, economic performance is driven by several key sectors, including agribusiness, manufacturing, tourism, and MSMEs.

The development of MSMEs is closely related to demographic dynamics and spatial changes, particularly population growth and the expansion of residential areas. Rapid population growth in urban and peri-urban regions increases demand for basic goods and services, which in turn creates new market opportunities for MSMEs (Firman, 2014). At the same time, changes in settlement patterns influence the distribution of economic activities, business location choices, and access to consumers (Berry et al., 2001). As a result, population growth and residential development can act as both opportunities and challenges for MSME performance, especially in terms of income generation.

Medan Tuntungan District is one of the most populated areas in Medan City, where population growth has increased demand for essential goods and services, creating

opportunities for MSME development (Tambunan, 2008; Suci, 2017). Nevertheless, a significant number of MSMEs in this area continue to experience constraints, such as low productivity levels, limited production scale, and restricted market reach, which ultimately affect their income generation. These challenges underline the importance of developing effective strategies to improve MSME performance as a means of supporting local economic growth and enhancing community welfare.

Previous studies on MSMEs in Indonesia have primarily focused on issues related to access to financing, technology adoption, and government support policies (Nugroho et al., 2018; Hardilawati, 2020). However, empirical research that specifically examines the relationship between population growth, the number of MSMEs, and MSME income at the local or subdistrict level remains limited. Understanding this relationship is important, as local demographic and spatial conditions often shape business performance more directly than national-level factors (Berry et al., 2001).

Therefore, this study aims to analyze the effect of population growth and the number of MSMEs on MSME income in Medan Tuntungan District. By employing a quantitative approach and multiple linear regression analysis, this research seeks to provide empirical evidence on how demographic growth and MSME concentration influence income levels among MSME actors. The findings of this study are expected to contribute to the existing literature on MSME development and to provide practical insights for local governments in designing policies and empowerment programs that support sustainable MSME growth in rapidly growing residential areas.

Administratively, Medan Tuntungan District consists of nine urban villages, namely Tanjung Selamat, Simalingkar B, Simpang Selayang, Kemenangan Tani, Laucih, Namo Gajah, Sidomulyo, Ladang Bambu, and Mangga.

| Number of Residents per Subdistrict Medan Tuntungan District | |
| --- | --- |
| Sub-district Name | Total population |
| Bamboo Field | 5,522 |
| Sidomulyo | 2,850 |
| Lau Cih | 2,369 |
| Name of Elephant | 3,200 |
| Farmers' Victory | 5,763 |
| Simalingkar B | 8,516 |
| Selayang Intersection | 21,897 |
| Cape Selamat | 16,945 |
| Mango | 32,122 |
| **Total** | **99,184** |

**Figure 1.** Population in Medan Tuntungan Subdistrict.
Source: *Medan City Population and Civil Registry Service (2023)*

## 2. Preliminaries or Related Work or Literature Review
### Definition of MSMEs

Micro, Small, and Medium Enterprises (MSMEs) are economic entities that operate on a relatively small scale and are independently owned and managed by individuals or small business groups. These enterprises are established to conduct productive activities in various sectors, including trade, manufacturing, and services, with the primary objective of generating income and supporting livelihoods. MSMEs generally rely on limited capital, a small workforce, and simple organizational structures, which distinguish them from large-scale enterprises (Sato, 2015; UNDP, 2015).

The classification of MSMEs is commonly based on quantitative indicators such as the value of business assets, annual turnover, and the number of employees. These criteria are used to differentiate micro, small, and medium enterprises according to their operational capacity and economic scale (Tambunan, 2008; Zahra, 2022). While the specific thresholds may vary across countries and regulatory frameworks, the fundamental characteristics of MSMEs include operational flexibility, close interaction with local markets, and a strong dependence on the surrounding socio-economic environment.

In the context of developing economies, MSMEs played vital role promoting inclusive economic growth by creating employment opportunities, supporting income distribution, encouraging entrepreneurship at the grassroots level (Suci, 2017). Their adaptability allows

MSMEs to respond quickly to changes in consumer demand, particularly in areas experiencing population growth and residential expansion. Consequently, MSMEs are widely recognized as an essential component of local and national economic development.

**Supporting and Inhibiting Factors for MSMEs**

The success of business actors is influenced by various interrelated factors, and MSMEs possess considerable potential for growth and development. These factors play an important role in strengthening business capacity and supporting the sustainability of MSMEs. Access to financing, particularly the availability of credit or loans from non-bank financial institutions, enables MSMEs to expand their operations (Pamungkas & Hidayatulloh, 2019; Nugroho et al., 2018). In addition, broad and easily accessible markets provide greater opportunities for MSMEs to distribute and promote their products. Furthermore, the ability to adopt modern technologies allows MSMEs to improve operational efficiency and reduce production costs, thereby enhancing overall business performance.

Despite their strong potential, MSMEs also face various obstacles that can hinder business growth and sustainability. These constraining factors often make it difficult for MSMEs to survive and compete in increasingly competitive markets. Previous studies (Siahaan et al., 2020; Febriani et al., 2022; Ompusunggu et al., 2023) identify several key challenges faced by MSMEs. Limited access to capital remains one of the most significant barriers, restricting business expansion and innovation activities. In addition, some MSMEs experience difficulties in adopting new technologies that could improve production efficiency and product quality. Furthermore, inadequate managerial skills, particularly in financial management, marketing, and operational planning, also limit the overall performance and competitiveness of MSMEs.

**MSME Issues**

In operating their businesses, MSME actors are confronted with a range of practical challenges. Several fundamental constraints are experienced by MSMEs in Klampok Urban Village, including limited capital, low sales performance, difficulties in obtaining raw materials, marketing constraints, labor issues, weak managerial practices, and inadequate bookkeeping systems. Capital constraints are largely associated with high bank interest rates, which increase borrowing costs and require MSME owners to be more cautious in seeking external financing. In addition, information related to financing schemes, as well as the institutional frameworks and operational procedures of banking and non-banking financial institutions, remain complex and difficult to understand. Given the human resource capacity of business owners in Klampok Urban Village, not all MSMEs are able to fully comprehend and comply with the procedures required by financial institutions.

**MSME Empowerment**

MSME empowerment refers to a series of initiatives designed to provide business opportunities for individuals or organizations that comply with legal regulations governing small enterprises, while strengthening their capacity to manage and optimize available resources. These efforts aim to enhance human resources and improve the effective utilization of business assets so that MSMEs can fully realize their potential. MSME empowerment policies are implemented to achieve specific development objectives, including stimulating economic growth, expanding employment opportunities, and improving business competitiveness. In particular, empowerment programs for small enterprises tend to focus on increasing the income levels of low-income communities (Suyatna, 2010; UNDP, 2015). Klampok Urban Village hosts a variety of MSME activities across different sectors, encompassing both small- and medium-scale enterprises that continue to operate and develop.

**Criteria for MSMEs**

Medium-sized enterprises are independent business entities that carry out productive economic activities and are operated by individuals or legal organizations. These enterprises are not subsidiaries or branch offices of larger companies and are neither directly nor indirectly owned or controlled by medium- or large-scale firms. Their classification is based on specific thresholds related to net worth or annual revenue, as stipulated by applicable regulations.

**Improvement of Residential Areas**

According to Law No. 1 of 2011 on housing and settlement areas, a settlement is defined as a residential environment consisting of more than one housing unit that is supported by infrastructure, public utilities, and facilities that enable various social and economic activities.

Settlements may be located in both urban and rural areas and function as organized living spaces that support community life.

In general terms, population refers to individuals or groups of people who reside or are domiciled within a specific national territory for a certain period of time. From a sociological perspective, population is understood as a collection of human beings occupying a particular geographic area and social space, forming interactions within that environment.

According to Neil J. Smelser and James A. Davis, the study of demographic growth began to develop during the 17th and 18th centuries, when it was known as political arithmetic. Measuring population growth requires comprehensive statistical approaches, particularly through systematic data recording and population census methods, which provide essential information for demographic analysis and policy planning.

## 3. Materials and Method

This research applies multiple linear regression techniques to analyze the influence of population growth and the number of MSMEs on MSME income in Medan Tuntungan District. This method is utilized to assess the relationship between a single dependent variable and multiple independent variables simultaneously.

The regression model applied in this study Sugiyono, 2011):

$$Y = a + b1X1 + b2X2 \tag{1}$$

where $Y$ represents MSME income, $a$ denotes the constant term, and $b_1$ and $b_2$ are the regression coefficients. The independent variables include population growth ($X_1$) and the number of MSMEs ($X_2$). This model is used to assess the extent to which changes in population growth and MSME development influence MSME income in the study area.

## 4. Results and Discussion

### Classical Assumption Test

Before conducting hypothesis testing in this study, classical hypothesis testing was first conducted to verify whether the multiple linear regression test tool used was appropriate or not for hypothesis testing. If the classical prediction test was satisfied, the multiple linear regression statistical test tool currently in use could be used.
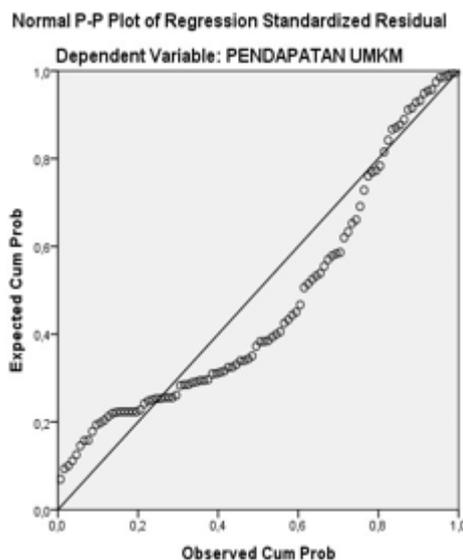
### Data Nomality Test



**Figure 2.** Grafik P-P Normal Regresi Residu Standar.

Based on the histogram and normal pp plot above, it can be seen that this survey has a normal distribution, as shown in the histogram above with a normal, convex distribution, balanced in the middle, and can be seen in the normal image with the PP graph. Since the points are not far from the diagonal line, it can be concluded that the data distribution is normal.

**Multicollinearity Test**

| | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| Model | | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| 1 | (Constant) | -,819 | ,855 | | -,958 | ,341 | | |
| | POPULATION GROWTH | ,342 | ,136 | ,265 | 2,518 | ,013 | ,374 | 2,672 |
| | Minimum WageM | ,603 | ,116 | ,546 | 5,186 | ,000 | ,374 | 2,672 |

aDependent Variable: MSME Income

**Figure 3.** Multicollinearity Test Results.

Referring to the results shown in the table, the tolerance values of all independent variables population growth and the number of MSMEs satisfy the criteria for the multicollinearity test. The values fall within acceptable ranges, suggesting the absence of strong correlations among the explanatory variables. Moreover, the Variance Inflation Factor (VIF) for each variable is below the commonly accepted threshold of 10.0, indicating that the regression model does not suffer from multicollinearity issues.
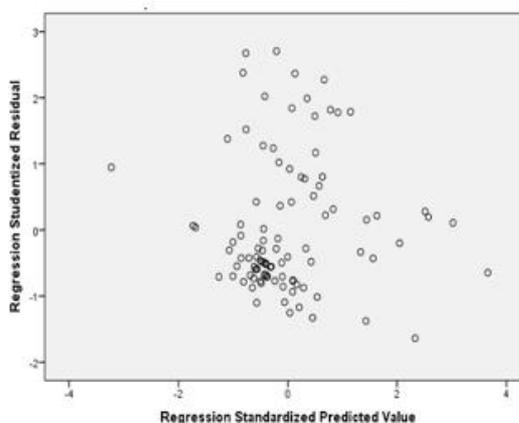
**Heteroscedasticity Test**



**Figure 4.** Scatterplot of Income.

The scatterplot shows that the data points are spread randomly without forming a distinct pattern or trend and are distributed evenly around the zero line. This random dispersion indicates that the residuals have constant variance across observations. Consequently, the regression model does not suffer from heteroskedasticity and satisfies the assumption of homoscedasticity.

**Multiple Linear Regression**

*Multiple Linear Regression*

| | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| Model | | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| 1 | (Constant) | -,819 | ,855 | | -,958 | ,341 | | |
| | POPULATION GROWTH | ,342 | ,136 | ,265 | 2,518 | ,013 | ,374 | 2,672 |
| | Minimum WageM | ,603 | ,116 | ,546 | 5,186 | ,000 | ,374 | 2,672 |

aDependent Variable: MSME Income

**Figure 5.** Multiple Linear Regression Results.

Based on the table above, the results of multiple linear regression are as follows:

$Y = a+b1X1+b2X2$

$Y = 2.777+(0.342)X1+(0.603)X2$ (2)

Several conclusions can be derived from the estimated multiple linear regression results. The constant term (a) is positive at 7.725, which implies that when population growth and the number of MSMEs are assumed to be constant or equal to zero, MSME income is predicted to be 7.725. In addition, the population growth variable has a positive regression coefficient of 0.342, indicating that a 1% increase in population growth is expected to raise MSME income by 0.342, holding other variables constant. Likewise, the coefficient for the number of MSMEs is positive at 0.603, meaning that a 1% increase in the number of MSMEs is associated with a 0.603 increase in MSME income, assuming other factors remain

unchanged. Overall, the positive coefficients demonstrate that ndependent variables have positive and direct effect on MSME income.

**T-test (Partial Hypothesis Test)**

The t-test is applied to assess the partial effect of each independent variable (X) on the dependent variable (Y). In this research, the test is conducted to evaluate the proposed hypotheses. The decision-making process is based on the selected significance level and the comparison between the computed t-statistic and the critical t-value. An independent variable is considered to have a statistically significant impact on the dependent variable when the significance probability is less than 0.05 or when the calculated t-value exceeds the corresponding critical value. Conversely, if the significance probability is greater than 0.05, the variable is deemed to have no significant effect. The critical t-value is obtained using the formula $t(\alpha/2; n - k - 1)$, which yields a t-table value of 1.999.

| | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| Model | | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| 1 | (Constant) | -,819 | ,855 | | ,958 | ,341 | | |
| | POPULATION GROWTH | ,342 | ,136 | ,265 | 2,518 | ,013 | ,374 | 2,672 |
| | Minimum WageM | ,603 | ,116 | ,546 | 5,186 | ,000 | ,374 | 2,672 |

aDependent Variable: MSME Income

**Figure 6.** T-test (Partial Hypothesis Test) Results.

The findings presented in the table lead to several key conclusions. First, population growth is shown to have a statistically significant effect on MSME income. This is evidenced by a calculated t-value of 2.518, which exceeds the critical t-value of 1.999, and a significance level of 0.013, which is lower than the 0.05 criterion. Therefore, the alternative hypothesis ($H_1$) is accepted, while the null hypothesis ($H_0$) is rejected, indicating that population growth exerts a meaningful influence on MSME income. Second, the MSME variable also exhibits a significant impact on MSME income. This is demonstrated by a t-statistic of 5.186, which is greater than the t-table value of 1.999, and a significance probability of 0.000, well below the 0.05 threshold. Consequently, the alternative hypothesis is accepted and the null hypothesis is rejected, confirming that MSMEs have a significant effect on MSME income.

**F-Test (Simultaneous Hypothesis Test)**

| | ANOVA^a | | | | | |
|---|---|---|---|---|---|---|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 1321.962 | 2 | 660,981 | 72,001 | ,000^b |
| | Residual | 890,478 | 97 | 9,180 | | |
| | Total | 2212.440 | 99 | | | |

aDependent Variable: MSME Income

b. Predictors: (Constant), MSMEs, POPULATION GROWTH

**Figure 7.** F-Test (Simultaneous Hypothesis Test) Result.

Based on the results shown in the table, the null hypothesis ($H_0$) is rejected, while the alternative hypothesis ($H_1$) is accepted. This conclusion is supported by an F-statistic of 72.001 with a significance probability of 0.000, which is lower than the 0.05 significance level. Therefore, the multiple regression model is considered appropriate for further analysis, and the independent variables population growth and the number of MSMEs jointly have a statistically significant effect on MSME income.

**D-Test**

| | MModel | | | | | |
|---|---|---|---|---|---|---|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson | |
| 1 | ,773^a | ,598 | ,589 | 3,02988 | 1,716 | |

a. Predictors: (Constant), MSMEs, POPULATION GROWTH

bDependent Variable: MSME Income

**Figure 8.** D-Test Result.

The adjusted R-squared value obtained is 0.589, or 58.9%, indicating that variations in MSME income can be explained by the independent variables included in the model, namely population growth and the number of MSMEs. This result suggests that these variables provide a strong explanatory power and are relevant determinants of MSME income in Medan Tuntungan District.

## 5. Conclusion and Recommendations
### Conclusion

This research analyzes the association between population growth, the number of Micro, Small, and Medium Enterprises (MSMEs), and MSME income in Medan Tuntungan District. The results of the multiple linear regression analysis indicate that population growth and the number of MSMEs both exert a positive and statistically significant influence on MSME income. These results suggest that demographic dynamics and the intensity of entrepreneurial activity are key factors in determining income levels among MSME operators at the local scale.

The partial test results show that population growth contributes significantly to increased MSME income, suggesting that a growing population creates higher demand for goods and services, which can be absorbed by local MSMEs. Similarly, the number of MSMEs is found to have a strong and significant influence on income, reflecting the importance of business density, market interaction, and economic activity in supporting MSME performance. When considered simultaneously, both variables demonstrate a substantial combined effect on MSME income, confirming the suitability of the proposed regression model.

Cefficient of determination indicates that a considerable proportion from variations in MSME income can be explained by population growth and the number of MSMEs included in the model. Nevertheless, a portion of income variation remains influenced by other factors that were not examined in this study, such as access to capital, managerial capability, technology adoption, and government support programs. This suggests the need for future research to incorporate additional variables in order to provide a more comprehensive understanding of MSME income determinants.

From a policy perspective, the results of this study imply that population growth and residential development can become valuable drivers of MSME income when accompanied by appropriate support measures. Local governments are encouraged to strengthen MSME empowerment programs through improved access to financing, business training, and infrastructure development in rapidly growing residential areas. By aligning demographic dynamics with targeted MSME development strategies, sustainable local economic growth and improved community welfare can be more effectively achieved.

### Recommendations

Based this study, several recommendations can be proposed for policymakers, MSME practitioners, and future researchers. First, local governments are encouraged to integrate population growth and residential development planning with MSME development strategies. As increasing population density creates higher demand for goods and services, policies should focus on facilitating MSME access to strategic business locations within residential areas, supported by adequate infrastructure and public facilities.

Efforts to improve MSME income should not be limited to increasing the number of business units but should also emphasize enhancing business quality and productivity. Government agencies and related institutions are advised to provide continuous training programs in financial management, marketing, and business planning, particularly for MSMEs operating in densely populated areas. Strengthening managerial capacity can help MSME actors respond more effectively to growing market demand.

Future studies are recommended to include additional variables that may influence MSME income, such as technology adoption, labor productivity, business experience, and government support programs. Expanding the scope of analysis to other districts or cities would also allow for comparative studies and enhance the generalizability of research findings related to MSME development and demographic dynamics.

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