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Analysis of The Effect of Education, Health And Dependent Burden on People's Purchasing Power In Medan City

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Abstract. This study aims to determine the influence of education, health, and dependents on the purchasing power of people in Medan City. The data used were primary data through questionnaires distributed to 100 families. The data were analyzed using multiple linear regression equations, t tests, F tests and regression coefficients with data processing using e-view 12. The results obtained y = 11.313 + 1.422X1 + 2.016X2 + 4.546X3, if education, health, dependent expenses remain then people's household consumption is in a fixed state or there is no change , of 11,313 items of staple goods. Based on the value of the t test and f test, it is obtained that education, health, dependent expenses have a significant effect on the purchasing power of the people in the city of Medan. The test result of the coefficient of determination 2 (R-Square) is 0.988 or 98.8%, while the remaining 1.2% is influenced by other variables.

Keywords: Dependent Burden, Purchasing Power, Education, Health.

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1. Introduction

Medan City is the capital of North Sumatra Province, this city is the third largest city in Indonesia after DKI Jakarta and Surabaya. Based on data from the Central Statistics Agency (BPS) Medan City by sub-district and gender (soul), (2020-2022) has a population of 2,494,512 people and this will continue to increase. Although Medan City is a big city, the city of Medan also faces economic problems both in the aspects of education, infrastructure, floods, unemployment to the overall welfare of the community who continue to strive to meet the basic needs of quality education and do not suffer from hunger. Every human being is very dependent on basic needs which are mandatory parts that must be fulfilled to continue daily activities, this happens because humans need adequate nutrition in meeting these basic needs, factors that meet the needs of the community in addition to supplies are also influenced by market prices, which are related to people's purchasing ability. The price of basic necessities often experiences significant price increases. This price increase has been happening since the beginning of 2023 and is likely to continue until the end of the year. This price increase occurs in various types of staple foods, such as fallow.

Purchasing power is the ability of people to buy goods and services using the income they have. People's purchasing power is influenced by various factors, one of which is education, health, and dependents. Education is also able to increase people's purchasing power through increasing work productivity. People who have higher education tend to have better skills and knowledge, so they can produce more goods and services. This can increase people's income which in turn can increase their purchasing power. Health is also one of the important things with a healthy and strong body able to have a positive impact on the continuity of the work process and allows no time and cost out for treatment. In addition, healthy people also tend to be more productive in running their businesses. The burden of

dependents can reduce people's purchasing power.

The purpose of this study is to provide accurate information to the public about the influence of education, health, dependents on purchasing power so that it can be more careful and precise in increasing purchasing power and also this can provide advice and assist the government in formulating policies to increase people's purchasing power.

2. Literature Review

In this study, researchers adopted the Pretest-Posttest Control Group Design. The process of processing test data begins with analyzing the results of the creative thinking ability test. To assess whether there was a difference between the abilities of students in the experimental group and the control group, a comparison test of two averages was conducted. Before proceeding to the difference test of the two averages, the initial step is to check whether the creative thinking ability test data from both groups meet the assumptions of normality and homogeneity.

Education is one of the strategic ways to make changes in human resources for the better, educate the lives of new generations and realize the civilization of the nation. According to Law No. 20 of 2003, education is a conscious and planned effort to create a learning atmosphere and learning process to develop one's potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and necessary skills.

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Table 1. Number of Employed population by Educationhighest in Medan

Higher Education by Educational Attainment **(1)**	**Male** **(2)**	**Female** **(3)**	**Total** **(4)**
No Schooling/ Not Yet Completed Primary School/ Primary School	67.188	42.998	110.186
Junior High School	103.333	52.570	155.903
Senior High School	220.883	133.252	354.135
Vocational High School	112.133	61.319	173.452
Diploma I/ II/ III/ Academy	21.030	21.320	42.340
Diploma IV/ University Diploma IV/ Academy	114.171	81.582	195.753
Amount Total	**638.728**	**393.041**	**1.031.769**

Source: BPS-National Labor Force Survey, August 2022

Which all human beings have and is not something that is the focus of life goals that must be achieved because it focuses not only on a fit physique but also on a healthy soul that can be tolerant and able to accept differences. According to Settles (Sussman and Steinmetz, 1987) the family is an abstraction of ideology characterized by a romantic image, a process, as a unit of intervention action, as a connection and a final goal. The family is called the smallest unit in society, the family has an obligation to meet the needs of each child which includes religion, psychology, eating and drinking and so on. This shows the influence on people's purchasing power. People who have a large burden of dependents need to spend money to provide for their families, so that the income they can use to buy goods and services for themselves is reduced.

3. Method

The research object consists of 100 married residents in the city of Medan. The research period is from August to October 2023. The data used includes primary data, which is collected directly through interviews with respondents using a questionnaire, and secondary data obtained from relevant institutions, namely the Central Statistics Agency of Medan City and North Sumatra Province, as well as a literature review of officially published data, books, articles, and journals relevant to the research topic, obtained from libraries and internet downloads.

The dependent variable in this research is purchasing power, which represents the respondents' ability to buy a certain amount of staple goods (Variable Y). The independent variables are education or years of schooling (X1), health, whether they have been hospitalized or not (X2), and the number of dependents in the family (X3). This research employs a multiple linear regression model calculated using Eviews 12 software. The analytical model for this research can be systematically written as a regression equation:

$$\mathbf{Y = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \varepsilon}$$

Where:

Y = Purchasing Power (the number of staple items that can be purchased)
X1 = Education (Years)
X2 = Health (Dummy)
D = 1 if hospitalized
D = 0 if not hospitalized
X3 = Number of Dependents (People)
α = Constant
β1-3 = Regression coefficients
ε = Error disturbance

4. Result and Discussion

4.1. Normality Test

The normality test aims to examine whether in a regression model, the residual or disturbance variable has a normal distribution (Gujarati, 2003). The decision-making regarding the normality test is as follows (Daryanto and Hafizrianda, 2010):

a. If $p < 0.05$, then the data distribution is not normal.
b. If $p > 0.05$, then the data distribution is normal.

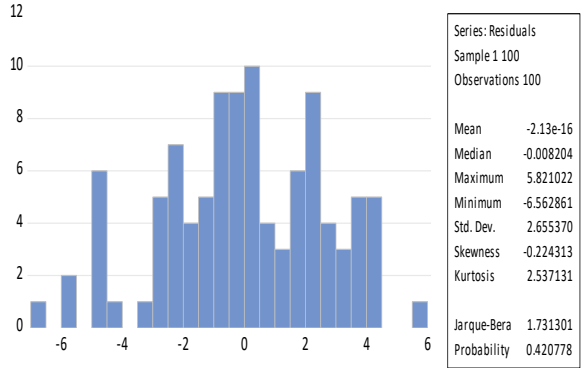

Figure 2: Normality Test

The results of the residual normality test above show a p-value of 0.420778 > 0.05, which means that the residuals have a normal distribution.

4.2. Heteroskedasticity Test

The Heteroskedasticity Test essentially aims to determine whether a group has varying variances among its group members. In this research, the method used to detect heteroskedasticity is performed using the Breusch-Pagan-Godfrey test. Decision-Making:

a. If the p-value is > 0.05, there is no issue of heteroskedasticity.
b. If the p-value is < 0.05, there is an issue of heteroskedasticity.

Table 2: Heteroskedasticity Test

Heteroskedasticity Test: Breush-Pagan-Godfrey

F-Statistic	2.089789	Prob. F(5,94)	0.0735
Obs*R-squared	10.00388	Prob.Chi-Square(5)	0.0751
Scaled explained SS	13.23353	Prob. Chi-Square(5)	0.0213

The p-value displayed as the prob.chi-square (5) value in the obs*R-squared is 0.0751. Since the p-value, 0.0751, is greater than 0.05, it means that the regression model is free from heteroskedasticity.

4.3. Multicollinearity Test

Multicollinearity is a phenomenon where independent variables are strongly correlated with each other. To determine the presence of strongly correlated independent variables, you can use the Variance Inflation Factor (VIF) test.

Decision-Making:

a. If VIF > 10, it is suspected to have multicollinearity.
b. If VIF < 10, there is no multicollinearity.

The data processing results using Eviews 12 show that the coefficient values of all variables in the VIF test are less than 10. Therefore, it can be concluded that there is no multicollinearity among the variables. For a clearer picture, this condition can be seen in the following table.

Table 4: Multicollinearity Test

Variance Inflation Factors
Date: 10/02/23 Time: 16:26
Sample: 1 100
Included observation: 100

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	8.349304	184.6034	NA
X1	0.049540	64.80055	6.406448
X2	0.030985	72.50084	8.175544
X3	0.24E-13	67.02540	4.686369

4.4. Autocorrelation Test

The autocorrelation test is used to determine whether there is a correlation between the disturbance errors in a linear regression model at time period 't' and the disturbance errors at time period 't-1' (previous period). In this study, the method used to detect autocorrelation is the Breusch-Godfrey Serial Correlation LM test.

Decision-Making:

1. If the p-value is > 0.05, there is no autocorrelation issue.
2. If the p-value is < 0.05, there is an autocorrelation issue.

Table 5: Autocorrelation Test

Breusch –Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.442093	Prob. F(2.9)	0.1060
Obs*R-squared	0.931859	Prob. Chi-Square(2)	0.0925

The prob. chi-square(2) value, which is the p-value for the Breusch-Godfrey Serial Correlation LM test, is 0.0925 > 0.05, indicating that there is no serial autocorrelation issue.

Based on the primary data, to examine the influence of education, health, and the dependency burden on purchasing power, the statistical coefficients of each variable can be analyzed. The statistical coefficients of each independent variable can be calculated with the assistance of a computer using Eviews 12 software, with the following results:

Table 6: Education, Health, and Dependency Burden on Purchasing Power

Variable	Coefficient	Prob.	Description
Constant	11,313	0,000	Observation (n) 100
X_1 (Education)	1,422	0,000	
X_2 (Health)	2,016	0,021	
X_3 (Dependency Burden)	4,546	0,000	
R^2 = 0,988			
Prob.F = 0,000			

Based on the results of the estimated purchasing power function model presented in Table 5, the equation obtained is as follows:

$$Y = 11.313 + 1.422X1 + 2.016X2 + 4.546X3$$

The analysis of the results of the estimation model can be interpreted as follows:

1. Partial Effects

a. Constant (a)

Based on Table 5, it can be observed that the coefficient for the constant is 11.313. This coefficient indicates that, with all other variables held constant, the respondent's purchasing power (Y) remains at 11.313 units of staple goods.

b. Education Coefficient (X1)

Based on Table 5, the empirical coefficient for education is 1.422. The empirical coefficient for the education variable shows a positive effect, meaning that if the years of education increase by one year, assuming other variables remain constant, it will increase the purchasing power by 1.422 units of staple goods.

c. Health Coefficient (X2)

Based on Table 5, the empirical coefficient for health is 2.016. This means that if a respondent has never been hospitalized, their purchasing power is 2.016 units of staple goods higher than a respondent who has been hospitalized, assuming other variables remain constant.

d. Dependency Burden Coefficient (X3)

Based on Table 5, the empirical coefficient for dependency burden is 4.546. The empirical coefficient for the dependency burden variable shows a positive effect, meaning that if the number of dependents of

the respondent increases by one person, assuming other variables remain constant, it will increase the expenditure by 4.546 units of staple goods.

2. Coefficient of Determination (R-Square)

The statistical model needs to be tested to measure how well the model explains the variation in independent variables. The estimation model can be evaluated using the coefficient of determination (R-squared) with the following decisions:

1. Good if R-squared > 0.90
2. Fair if $0.50 < R\text{-squared} \leq 0.90$
3. Poor if $0.00 < R\text{-squared} \leq 0.50$

Based on Table 5, the empirical model results indicate an R-squared value of 0.988, which is greater than 0.90. This means that the empirical model built for purchasing power, determined by the variables education (X1), health (X2), and dependency burden (X3), is good because R-squared = 0.988 > 0.90.

The value of the coefficient of determination (R-Square) at 0.988 provides information that collectively, the variables education (X1), health (X2), and dependency burden (X3) can explain 98.8% of the variation in purchasing power, while the remaining 1.2% is explained by other factors not included in this research model.

3. Partial Test (t-test)

The t-test is conducted to examine whether education (X1), health (X2), and dependency burden (X3) individually have a significant impact on the purchasing power of respondents (Y) in the city of Medan.

Hypothesis Formulation:

- H0: $\beta 1 = 0$, meaning that the variables education (X1), health (X2), and dependency burden (X3) individually do not have a significant impact on the purchasing power of the population (Y).
- HA: $\beta 1 \neq 0$, meaning that the variables education (X1), health (X2), and dependency burden (X3) individually have a significant impact on the purchasing power of the population (Y).

Decision-Making Criteria:

- H0 is accepted if the probability value > significance level (α) of 0.05.
- HA is accepted if the probability value < significance level (α) of 0.05.

The probability values are obtained from the results of data processing using Eviews 12, as shown in the following table

Table 7. Regression Results of Education, Health and Dependent Burden on Purchasing Power

Variable	Coefficient	Prob.	Description
X_1 (Education)	1,422	0,000	Significant
X_2 (Health)	2,016	0,021	Significant
X_3 (Dependency Burden)	4,546	0,000	Significant

Based on Table 7 it can be seen that:

- The probability value for the education variable is 0.000 at a confidence level (α) 5%, so it can be concluded that partially the education variable has a positive and significant effect (0.000 < 0.05) on purchasing power.

- The probability value for the health variable is 0.021 at a - confidence level (α) 5%, so it can be concluded that partially the health variable has a positive and significant effect (0.021 < 0.05) on purchasing power.
- The probability value for the dependent burden variable is 0.000 at a confidence level (α) 5%, so it can be concluded that partially the dependent burden variable has a positive and significant effect (0.000 < 0.05) on purchasing power.

4. Simultaneous Test (F Test)

From Table 6 it is known that the value of prob. F is 0.000 <confidence level (α) 0.05. This shows that education (X1), health (X2) and dependent burden (X3) simultaneously have a significant influence on people's purchasing power (Y).

5. Conclusion

From the results of the analysis carried out, it can be concluded that education, health and dependents have a positive and significant effect on people's purchasing power in the city of Medan. As a follow-up activity to this research, based on the conclusions above, suggestions that can be made are: This research shows that education, health and dependents have a positive and significant effect on people's purchasing power. It is recommended that the Government provide more equal and consistent attention and assistance to improve public education and health. Because the number of dependents also influences purchasing power, where the greater the burden of dependents, the greater the expenditure, it is recommended that the Government continue to increase the efficiency of implementing the family planning

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