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Analysis of Socio-Economic Factors Affecting Cigarette Consumption in Deli Serdang Regency

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Abstract

This study aims to analyze the influence of socio-economic factors namely income, cigarette price, education level, and employment status on cigarette consumption in Deli Serdang Regency. The issue is important to study because high cigarette consumption affects household welfare and public health. This research uses a descriptive quantitative approach and binary logistic regression analysis. Data were collected using questionnaires distributed to 100 smoker respondents in three most populated sub-districts: Percut Sei Tuan, Tanjung Morawa, and Sunggal. The sampling technique used was snowball sampling. The results show that income significantly affects cigarette consumption in the middle-income group, but not in the high-income group. Cigarette price has a significant and positive influence on the likelihood of becoming a heavy smoker. Education level shows a negative relationship with cigarette consumption but is not statistically significant. Employment status also does not have a significant effect, although formal workers are more likely to become heavy smokers than informal ones. These findings indicate that price policies alone are not effective in reducing cigarette consumption among heavy smokers. Therefore, a more comprehensive policy approach is needed, including public education and socio-economic-based interventions.

Keywords: Cigarette consumption; Income; Cigarette price; Education; Employment status

1. Introduction

Tobacco consumption in Indonesia remains a serious social and economic issue. According to data from the World Health Organization (WHO) in 2023, more than 8 million people die each year due to tobacco consumption, and Indonesia is among the countries with the highest prevalence of smokers in the world[1]. According to the 2023 GoodStats report, Indonesia ranks eighth with a smoking rate of 38.2% among those aged 15 and older[2]. This indicates that smoking has become a widespread and deeply ingrained habit in society, not only among adults but also among teenagers. The phenomenon of cigarette consumption in Indonesia not only impacts health but also the socio-economic aspects of households. Cigarettes are not a basic necessity, yet expenditures on cigarettes often exceed those on education and health. In Deli Serdang District, data from the 2023 BPS Susenas survey shows that the average monthly per capita expenditure on cigarettes reaches Rp90,101, higher than in Medan City, which stands at Rp81,433[3]. This indicates that cigarette consumption in semi-urban areas like Deli Serdang tends to be higher, despite relatively lower income levels.

Table 1.1 10 Basic Food Commodities, March 2024

No	Commodity	Urban (Rp)	Rural (Rp)
1	Rice (kg)	72.000	85.000
2	Cigarettes (Sticks)	43.000	49.000
3	Chicken Meat (kg)	18.000	25.000
4	Chicken Eggs (butir)	13.000	15.000
5	Instant Noodles (80 gram)	9.000	10.000
6	Bread (piece)	8.000	9.000

No	Commodity	Urban (Rp)	Rural (Rp)
7	Coffee (ons & 20 gram)	8.000	9.000
8	Wet Cake (fruit)	7.500	8.000
9	Granated Sugar (ons)	6.000	7.000
10	Shallots (ons)	5.000	6.000

Source: Badan Pusat Statistik

Figure 1.1 shows that in the structure of household expenditure, cigarette consumption ranks second highest after rice, even surpassing other basic necessities such as meat, eggs, or vegetables[4]. This fact indicates a change in the consumption priorities of the community, where addictive goods such as cigarettes have become a major expenditure, even though they do not directly support quality of life. This phenomenon raises concerns about household welfare, especially among low-income groups who must allocate a significant portion of their income to cigarettes. Theoretically, economic factors such as income and price should significantly influence demand for goods, including cigarettes. However, field observations show that despite rising cigarette prices, smoking prevalence remains high. This indicates a gap between economic demand theory and empirical facts in society.

This study was conducted to analyze in depth the influence of socioeconomic factors, namely income, cigarette prices, education level, and employment status, on cigarette consumption in Deli Serdang Regency. This study also identifies how an individual's socioeconomic conditions contribute to the intensity of smoking, whether someone becomes a heavy smoker or a light smoker. These findings are expected to provide empirical insights that can serve as a basis for formulating more effective and contextually appropriate policies to control cigarette consumption.

2. Literature Review

2.1 Consumption

According to Mankiw, consumption is a human activity to meet the needs of life, namely meeting the needs of goods and services that are useful and provide satisfaction. Consumption can also be defined as the use of goods and services by households to fulfill satisfaction and meet the expected standard of living. In the consumption process, households use their income to buy goods and services, resulting in the circulation of money in the economy[5]. Consumption also makes an important contribution to economic growth, namely as a driver of aggregate demand, according to Sukirno[6]. In addition to meeting needs, consumption is also influenced by the preferences, tastes, and economic conditions of each individual. According to Nizamie and Kautsar in the context of cigarette consumption, the consumption process is not only driven by aspects of physical needs, but also psychological, cultural, and addictive aspects[7]. In other words, cigarette consumption is not merely a rational choice, but also involves emotional processes and social pressures that occur in society.

2.2 Cigarettes

Cigarettes are tobacco products that are burned and smoked so that the smoke can enter the lungs of smokers and passive smokers around them, according to Safitri and colleagues. According to the WHO report in cigarettes there are more than 7,000 chemical substances, of which about 250 are toxic and more than 69 substances are carcinogens[8]. These substances can cause diseases, such as heart disease, lung disease, cancer, and other chronic diseases. In addition to the health aspect, in Amalia's opinion cigarettes also have a negative impact on the community's economy, namely increasing expenditure on cigarettes and health services that occur due to diseases caused by smoking[9]. Cigarette expenditure can also reduce the allocation of funds to meet the basic needs of the family, thus affecting the quality of life and the process of poverty alleviation. According to Prasetyo and Sihaloho, in the process of cigarette consumption, there is an addiction aspect that helps maintain the stability of demand, making it difficult for smokers to quit despite price increases[10].

2.3 Demand Theory

In demand theory, Sukirno explains that demand theory is a negative relationship between prices and the amount of goods demanded, namely if prices rise, demand will fall, and vice versa if prices fall, demand will rise. In the context of cigarettes, this negative relationship is not always apparent, because cigarettes are also addictive goods and are influenced by aspects of habit, according to Hidayat's opinion, despite the price increase, the demand for cigarettes did not fall according to theory[11]. Apart from price, income also affects demand. The income of buyers is a very important factor in determining the style of demand for various goods. Changes in income always lead to changes in the demand for various types of goods. The greater the income, the more likely cigarette consumption is to occur, this is in line with the opinion of Afif and Sasana[12]. This happens because cigarettes not only fulfill needs, but are also considered a pleasure and satisfaction, so that consumption is more difficult to stop, according to the opinion of Junaidi and Marini.

2.4 Education

Schiffman and Kanuk state that education is a learning process that occurs throughout human life, which is useful for improving the quality of life, attitudes and skills[13]. In this process, education can also influence the way people make choices and decisions about consumption, including cigarette consumption. More educated individuals tend to be more concerned about the risk of disease caused by smoking, so they prefer not to smoke, as Khuzaimah argues[14]. According to Nugroho and Atmanti, in addition to awareness, education levels are also related to employment opportunities and income, which can influence the ability and decision-making process regarding cigarette consumption[15].

2.5 Employment Status

The International Labor Organization (ILO) explains that employment status is the position or position that a person has regarding the work process and the source of income[16]. In the opinion of Taufiq and Dartanto, employment also determines the economic condition of the household and the ability to fulfill life's needs, including cigarette consumption. In addition to income, employment is also related to stress levels, leisure time, and work pressure, which can contribute to cigarette consumption[17]. Nizamie and Kautsar also stated that formal sector jobs are more prone to becoming heavy smokers, perhaps due to greater work pressure and more structured working hours, so cigarettes are perceived as a means of relaxation and stress relief.

3. Research Method

The type of research used is descriptive quantitative research. Quantitative research methods can be defined as a research approach based on the philosophy of positivism. This method is used to conduct research on a specific population or sample, where data collection is carried out using predetermined research instruments[18]. This study aims to analyze the influence of socioeconomic factors, namely income, cigarette prices, education level, and employment status, on cigarette consumption in Deli Serdang Regency. A population is a generalization area consisting of objects/subjects that have certain qualities and characteristics determined by the researcher to be studied and then conclusions are drawn. The population of this study is smokers residing in Deli Serdang Regency with the criteria of being active smokers. The research sample consisted of 100 smoker respondents selected from three subdistricts, namely Percut Sei Tuan, Tanjung Morawa, and Sunggal, using the snowball sampling method.

Sampling was conducted based on the Lemeshow formula, according to Riyanto et al. (2020). The Lemeshow formula allows researchers to estimate the sample size by considering a certain level of estimation and error rate[19], so that the sample size is considered sufficient to represent the population of smokers in Deli Serdang Regency. The data source used was primary data obtained from questionnaires distributed and completed by respondents according to a list of questions compiled for research purposes. The data analysis technique used was binary logistic regression to analyze the influence of each independent variable (income, cigarette price, education level, and employment status) on the dependent variable (cigarette consumption). The regression model used can be written as follows:

regression model : $\ln\left(\frac{P(Y=1)}{1-P(Y=1)}\right) = \beta_0 + \beta_1 In - \beta_2 Pr - \beta_3 Ed + \beta_4 Job + \epsilon$
 $P(Y=1)$: Probability of an individual being a heavy smoker
 In : Income
 Pr : Cigarette Price
 Ed : Education Level
 Job : Employment Status
 $\beta_0, \beta_1, \dots, \beta_5$: Regression coefficients to be estimated.

ϵ : Error term

According[20], To assess the quality and validity of the regression model, several statistical tests were applied, namely:

1. Model Suitability Test (Hosmer and Lemeshow Test). This test is used to assess the suitability of the applied regression model with the observed data.
2. Simultaneous Significance Test (Omnibus Test of Model Coefficients). This test is useful for determining whether the regression model used is significant overall in explaining the dependent variable.
3. Partial Significance Test (Wald Test). The Wald test is used to see whether each independent variable has a significant effect on the dependent variable.
4. Odds Ratio Coefficient (Exp(B)). The Odds Ratio (Exp(B)) is useful for seeing how likely it is that heavy smoking will occur as a result of a one-unit change in each independent variable.

4. Results and Discussion

Logistic regression analysis includes model fit test, simultaneous significance test, partial significance test, and odds ratio interpretation. The following are the results of the four types of tests in binary logistic regression:

Tabel 4.1 Model Feasibility Test Results

Step	Chi-Square	df	Sig
1	12,237	8	0,141

Source: Data Processing Result, 2025

Based on the results of the model feasibility test, the Chi-Square value = 12.237 with Sig. = 0,141. Because the p-value is greater than 0.05, namely $0.141 > 0.05$, it can be concluded that the regression model formed is feasible and fits the observed data.

Tabel 4.2 Simultaneous Test Results

Step	Chi-Square	df	Sig
1	27,508	7	0,000

Source: Data Processing Result 2025

The Simultaneous Significance Test (Omnibus Test) is useful to see whether there is a significant influence of the independent variables (Income Level, Cigarette Price, Education Level, and Employment Status) on the dependent variable (Cigarette Consumption) as a whole. Based on Table 4.2, the p-value is smaller than 0.05 (Sig. = 0.000 < 0.05), so it can be concluded that the regression model applied is simultaneously and significantly able to explain variations in cigarette consumption.

Tabel 4.3 Partial Significance Test Results

Variable	Wald	df	Sig
Income Level (1)	4,946	1	0,026
Income Level (2)	0,000	1	0,999
Cigarette Price	5,506	1	0,019
Education Level(1)	1,892	1	0,169
Education Level(2)	2,231	1	0,135
Education Level(3)	1,520	1	0,218
Employment Status(1)	1,253	1	0,263
Constant	6,408	1	0,011

Source: Data Processing Result 2025

Partial Significance Test (Wald Test) is useful to see the effect of each independent variable on the dependent variable. Based on Table 4.3, Income Level (1) (p-value = 0.026 < 0.05) and Cigarette Price (p-value = 0.019 < 0.05) have a significant effect on cigarette consumption, while Income Level (2) (p-value = 0.999), Education Level (p-value > 0.05) and Employment Status (p-value = 0.263) do not have a significant effect.

Tabel 4.4 Exp(B) Results

Variable	Exp(B)
Income Level(1)	7,900
Income Level(2)	6844255347,842
Cigarettes Price	1,083
Education Level(1)	0,262
Education Level(2)	0,267

Variable	Exp(B)
Education Level(3)	0,166
Employment Status(1)	1,868
Constant	0,076

Source: Data Processing Result 2025

The interpretation of odds ratio is useful to see how much influence each independent variable has on the chances of smokers becoming heavy smokers. Based on Table 4.4 Income Level (1) (middle) increases the odds of heavy smoking 7.9 times more than low income. Income level (2) (high) also increased the odds of heavy smoking 7.84 times more than low income. Cigarette prices increase the odds of heavy smoking by 1.08 times for every one unit increase. The level of education (junior high school, senior high school, diploma) is lower than one, 0.26; 0.27; and 0.17, respectively, which means that there is a decrease in the odds of heavy smoking as the level of education increases. Employment Status (formal) is greater than one (Exp(B)=1.87), which means smokers with formal employment are more likely to be heavy smokers.

Effect of Income on Cigarette Consumption

The results of the influence of the independent variable income (X1) have a significant and positive effect on cigarette consumption, especially in the middle income group. This happens because cigarettes are normal goods, so when income rises, consumption also rises. Middle-class people are more able to buy cigarettes and fulfill their consumption satisfaction. While in higher income groups, cigarette consumption no longer increases, in accordance with John Maynard Keynes' Absolute Consumption Theory, which states that when income reaches a saturation point, consumption does not increase in proportion to income[21]. Also found that smokers who are more economically well off are more prone to becoming heavy smokers, so it is consistent with the results found.

Effect of Cigarette Price on Cigarette Consumption

The results of the influence of the independent variable Cigarette price (X2) has a significant and positive effect on cigarette consumption. This happens because cigarettes are addictive goods so that smokers do not easily stop despite price increases. In the context of demand, this occurs because smokers prefer to reduce spending on other needs such as children's education, savings, and so on in order to fulfill their smoking habit, so that the negative relationship that should occur between price and consumption does not appear. Also reported that cigarette prices could not reduce cigarette consumption, on the contrary, smokers prefer to fight the increase in order to fulfill their addiction.

Effect of Education Level on Cigarette Consumption

The results of the independent variable education (X3) have no significant and negative effect on cigarette consumption, the negative direction of this variable is in accordance with theory, namely the higher the level of education, the lower cigarette consumption tends to be. This happens because more educated people are better able to understand the negative effects of smoking and make more rational choices regarding their consumption. Also found that the higher the level of education, the lower cigarette consumption, so the results of the independent variable of education level are in accordance with the findings of the research discussed.

Effect of Employment Status on Cigarette Consumption

The results of the independent variable Employment status has a significant and positive effect on cigarette consumption, although smokers who work in the formal sector are more likely to be heavy smokers. This occurs because employment is not the only measure that can explain cigarette consumption, but also related to the pressure, workload, and psychological condition of smokers. In other words, occupational differences cannot fully describe differences in cigarette consumption in society. Also found that job differences are more closely related to work pressure and the coping process that occurs, so the difference is not significant.

Thus, income and cigarette prices are factors that have a significant influence on cigarette consumption in Deli Serdang Regency. This study also emphasizes the importance of a broader and more comprehensive approach, which does not only focus on the aspects of income and cigarette prices, but also considers the level of education, employment status, and other factors that influence cigarette consumption. By understanding the relationships and processes that occur, it is hoped that more appropriate policies can be put in place that can reduce cigarette consumption in order to improve the quality of life of the community.

5. Conclusions

Based on the results of the study, it is known that an increase in cigarette prices does not significantly reduce consumption levels, especially among heavy smokers who have become dependent. In addition, the middle income group showed a higher

tendency to consume cigarettes than other income groups. Socioeconomic factors such as education level and employment status also have an influence on smoking behavior, although in this study it was not statistically significant. These findings suggest that efforts to control cigarette consumption need to be conducted comprehensively by integrating economic, educational and social approaches to be more effective.

1. Suggestions for Government and Related Agencies. Cigarette consumption control policies that only focus on economic instruments, such as price increases, have not been fully effective, especially against heavy smokers who have become dependent. Therefore, the government and related agencies, such as the Ministry of Health and regional health offices, are advised to implement a more comprehensive approach. This approach includes continuous public education, banning cigarette advertising, counseling on the dangers of smoking in educational institutions and workplaces, and strengthening the regulation of smoke-free areas. Given that the results of the study show that middle-income groups have a higher tendency to consume cigarettes, policy interventions need to be adjusted based on income classification. In addition, access to smoking cessation services needs to be expanded, especially for economically and socially vulnerable groups.
2. Advice for the Community. The community, especially individuals in the middle income group, is advised to be wiser in managing expenditure, especially on addictive consumer goods such as cigarettes. Awareness of the dangers of smoking needs to be instilled not only through a health approach, but also from a household economic perspective, given that spending on cigarettes has the potential to reduce allocations for basic needs such as food, education and health. Individuals with higher levels of education are expected to be able to become role models in rejecting cigarette consumption and play an active role in disseminating positive information in the surrounding environment. The role of family and community is very important in shaping a social environment that supports a healthy lifestyle and is not permissive of smoking behavior.
3. Suggestions for Future Researchers. Future researchers are advised to expand the scope of variables studied, especially by including psychological and social aspects such as the influence of family environment, peers, work stress, and the level of dependence on nicotine. In addition, given that there are variables in this study that have a logical direction of influence but are not statistically significant, it is recommended that further research use a larger sample size or a more comprehensive method of analysis. Segmentation by age and area of residence (urban vs rural) would also strengthen policy recommendations. Longitudinal studies are also important to look at changes in cigarette consumption behavior in the long term and assess the effectiveness of policies that have been implemented. In addition, future research could also examine the contribution of profits from cigarette sales to the total income of small-scale traders. If profits from cigarettes are relatively low, this finding can be a basis for consideration for business actors to reduce or stop selling cigarettes, thus indirectly supporting consumption control efforts in the community.

References

- [1] World Health Organization. (2023, 31 Juli). Tobacco. Diakses tanggal 10 April 2025, dari <https://www.who.int/news-room/fact-sheets/detail/tobacco>.
- [2] World Bank. (2020). *Aspiring Indonesia: Expanding the middle class*. World Bank Group. Diakses tanggal 12 Februari 2025, dari <https://www.worldbank.org/en/country/indonesia/publication/aspiring-indonesia-expanding-the-middle-class>.
- [3] Badan Pusat Statistik Kabupaten Deli Serdang. (n.d.). Badan Pusat Statistik Kabupaten Deli Serdang. Diakses dari <https://deliserdangkab.bps.go.id>
- [4] Fajarati, L. (2024, Maret 20). Rokok Jadi Komoditi Makanan dengan Pengeluaran Tertinggi Setelah Beras. GoodStats. Diakses pada 8 April 2025 dari <https://data.goodstats.id/statistic/rokok-jadi-komoditi-makanan-dengan-pengeluaran-tertinggi-setelah-beras-fANla>.
- [5] Mankiw, (2003). *Teori Ekonomi Mikro*. Jakarta : Erlangga.
- [6] Sukirno, S. (2019). *Mikroekonomi teori pengantar*. Jakarta: Rajagrafindo Persada.
- [7] Ghany Vhiera Nizamie, & Kautsar, A. (2021). Analisis Faktor-Faktor Yang Mempengaruhi Konsumsi Rokok di Indonesia. *Kajian Ekonomi Dan Keuangan*, 5(2), 158–170. <https://doi.org/10.31685/kek.v5i2.1005>.
- [8] World Health Organization. (2020). Hari Tanpa Tembakau Sedunia 2020. Diakses pada tanggal 12 febuari 2025, dari <https://www.who.int/indonesia/news/detail/30-05-2020-pernyataan-hari-tanpa-tembakau-sedunia-2020>.
- [9] Amalia, M. N. (2018). Analisis pengaruh konsumsi rokok terhadap produktivitas tenaga kerja di Indonesia. *Jurnal Pendidikan Dan Ekonomi*, 7(2), 162–174.
- [10] Prasetyo, B. R., & Sihaloho, E. D. (2020). Pengaruh Harga Rokok terhadap Perilaku Konsumsi Rokok pada Mahasiswa di Jatinangor. *Jurnal Ilmiah Universitas Batanghari Jambi*, 20(2), 470. <https://doi.org/10.33087/jiubj.v20i2.949>.
- [11] Hidayat, F. T. (2022). Pengaruh harga rokok, produksi rokok dan tingkat pendidikan terhadap tingkat konsumsi rokok: Studi kasus 34 provinsi di Indonesia tahun 2015–2021 (Skripsi Sarjana, Universitas Islam Negeri Syarif Hidayatullah Jakarta). Fakultas Ekonomi dan Bisnis UIN Syarif Hidayatullah Jakarta.
- [12] Afif, M. N., & Sasana, H. (2019). Pengaruh kemiskinan, pendapatan per kapita, harga rokok, dan produksi rokok terhadap konsumsi rokok di Indonesia. *Diponegoro Journal of Economics*, 1(1), 88–96.
- [13] Halim, A. (2018). *Teori Ekonomi Mikro*. Jakarta: Mitra Wacana Media.
- [14] Khuzaimah. (2019). Analisis pengaruh pendapatan, kenaikan harga rokok dan pesan bergambar bahaya merokok terhadap konsumsi rokok: Studi kasus Kecamatan Baitussalam Kabupaten Aceh Besar (Skripsi Sarjana, Universitas Islam Negeri Ar-Raniry). Fakultas Ekonomi dan Bisnis Islam, Universitas Islam Negeri Ar-Raniry Banda Aceh.
- [15] Nugroho, P. A., & Atmanti, H. D. (2020). Pengaruh Faktor Sosial Ekonomi terhadap Status Merokok Individu. *Jurnal Ekonomi & Studi Pembangunan*.

- [16] International Labour Organization. (2018). Women and men in the informal economy:A statistical picture(3rded) .ILO.<https://www.ilo.org/global/publications/books/WCMS626831/langen/index.htm>.
- [17] Taufiq, N., & Dartanto, T. (2020). Education, informal turnover and poverty dynamics in Indonesia. *International Journal of Economics and Management*, 14(1), 157–172.
- [18] Sugiyono. (2019). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Bandung: Alfabeta.
- [19] Riyanto, Slamet, H., & Andhita, A. (2020). Pdf-E-Book-Metode-Riset-Penelitian-Kuantitatif-Penelitian-Di-Bidang- ManajemCompress. Pdf(p.280). <https://www.scribd.com/document/660122293/E-book-Metode-Riset-Penelitian-Kuantitatif-Penelitian-Di-Bidang-Manajemen>.
- [20] Vikaliana, Resista, et al. 2022. *Ragam Penelitian Dengan SPSS*. Jawa Tengah: CV Tahta Media Group.
- [21] Schumpeter, J. A., & Keynes, J. M. (1936). The General Theory of Employment, Interest and Money. *Journal of the American Statistical Association*, 31(196), 791. <https://doi.org/10.2307/2278703>.