

## THE INFLUENCE OF ANTI-SMOKING CAMPAIGN ON DESIRE TO QUIT SMOKING IN INDONESIA

### EFEKTIVITAS KAMPANYE ANTI-ROKOK DI INDONESIA

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**Abstrak.** Jumlah perokok di Indonesia terus meningkat meski kampanye anti-rokok kerap dilakukan untuk mencegah masyarakat memiliki kebiasaan merokok. Pada setiap kampanye, berbagai pesan anti-rokok disampaikan melalui berbagai media. Hal ini menimbulkan pertanyaan, seberapa jauh pesan anti-rokok bisa dipercaya dan seberapa besar keinginan perokok untuk berhenti merokok? Penelitian ini menyelidiki empat variabel yang diperkirakan memengaruhi keinginan individu untuk berhenti merokok yaitu: (1) Faktor demografis: usia, pendidikan dan penghasilan; (2) Kepercayaan pada pesan kampanye; (3) Sikap terhadap kampanye, dan; (4) Frekuensi merokok. Penelitian ini menggunakan metode survei yang melibatkan 695 responden perokok yang berdomisi di wilayah Jakarta dan sekitarnya (Jabodetabek). Analisa data dilakukan dengan menggunakan statistik korelasi, regresi berganda standar, dan regresi hirarki berganda (hierarchical multiple regression). Hasil analisa menunjukkan variabel demografis yang mencakup usia, pendidikan dan pendapatan memberikan pengaruh signifikan terhadap kepercayaan terhadap isi pesan kampanye, dan juga sikap terhadap kampanye anti-rokok. Selain itu, frekuensi merokok berhubungan secara signifikan dengan ketiga variabel demografis yang diteliti. Pada akhirnya, ke-empat variabel menunjukkan pengaruh signifikan terhadap keinginan untuk berhenti merokok dimana frekuensi merokok menjadi variabel yang memberikan pengaruh paling besar ( $R^2 = 22\%$ ), disusul dengan tingkat kepercayaan dan sikap yang menunjukkan kontribusi pengaruh yang hampir sama ( $R^2 = 21\%$ ) dan, terakhir variabel demografi menunjukkan sumbangan paling kecil terhadap varian keinginan berhenti merokok ( $R^2 = 1.3\%$ ).

**Kata kunci:** Rokok, Dampak, Kampanye, Generasi Muda, Media Massa

**Abstract.** The number of smokers in Indonesia continues to increase although anti-smoking campaigns are often carried out to prevent people from smoking. In each campaign, various anti-smoking messages are conveyed through various media. This raises the question, how far can anti-smoking messages be trusted and how much do smokers desire to quit smoking? This study investigates four variables that are thought to influence an individual's desire to stop smoking, namely: (1) Demographic factors: age, education, and income; (2) Trust in campaign messages; (3) Attitudes towards campaigns, and; (4) Frequency of smoking. This study uses a survey method involving 695 respondents who smoke in the Greater Jakarta area. Data analysis was performed using correlation statistics, standardized multiple regression, and hierarchical multiple regression. The analysis shows that demographic variables including age, education, and income have a significant influence on the trust in the contents of campaign messages, and attitudes towards anti-smoking campaigns. The frequency of smoking is also significantly related to the three demographic variables studied. In the end, all four variables showed a significant influence on the desire to stop smoking where smoking frequency was the variable that had the greatest effect ( $R^2 = 22\%$ ), followed by the level of trust and attitude that showed almost the same contribution ( $R^2 = 21\%$ ) and finally demographic variables showed the smallest influence to the smoking cessation variants ( $R^2 = 1.3\%$ ).

**Keywords:** Cigarette, Impact, Campaign, Young Generation, Mass Media



## **INTRODUCTION**

The government has implemented several policies to limit cigarette consumption, such as raising excise tax, limiting production, advertising and promotion. Cigarette control in Indonesia is still weak and the country still broadcasts cigarette advertisements in the mass media while more than 140 countries have banned cigarette advertisements in all forms (Prabandari, 2018). Until now there are no rules that prohibit total advertising, promotion, and sponsorship of cigarettes. Indonesia is the only country in the Asia Pacific that have not signed the Framework Convention on Tobacco Control (FCTC), the convention on the development of tobacco control policies signed by 173 countries until April 2013 (Prabandari, 2018).

Evaluation to measure advertising effectiveness is a key element in advertising strategies. Anti-smoking advertising campaigns can be considered effective if they can reduce the number of smokers. Advertising is defined as any form of non-personal communication by paying about organizations, products, services, or ideas through mass media such as television, radio, newspapers, magazines, billboards, the internet, and others (Kotler & Armstrong, 2012).

This research focuses primarily on evaluating the impact of anti-smoking campaigns for smokers in the Greater Jakarta area, otherwise known as the Jabodetabek, an area with a population of more than 30 million. The study also aims to determine the smoking habits of

smokers in the region and the effect of stop smoking campaigns on them based on age, education, and income.

### **Anti-Smoking Campaign**

Anti-smoking campaigns are campaigns for behavior change which means encouraging people and those in positions of authority to change their knowledge, attitudes and actions related to smoking behavior. Behavior changes can contribute to reducing the prevalence of smoking, and to ensure those who do not smoke can protect themselves from further harm (secondary prevention). Because the psychological and social processes that drive behavior change depend on many factors, various theories tend to emphasize certain aspects that are thought to trigger change.

One of them is the health belief model that shows various risks associated with the dangers of cigarettes and emphasizes the benefits or good for ending smoking behavior (Siddiqui et. Al, 2016). This model is most widely applied in various anti-smoking campaigns. The health belief model identifies two factors that influence individual behavior to protect their health: (i) the feeling of being threatened by disease, and (ii) the belief that the benefits of adopting behavior to protect health will outweigh the sacrifice to adopt it (Siddiqui et. Al., 2016).

Many countries in the world carried out anti-smoking campaigns and a number of studies had been conducted to study the effect of the anti-smoking campaign on the

smoker behavior. The survey results by O'Keefe (1971) showed that there was limited influence from anti-smoking campaigns through mass media. In California, Hu et al., (1995), conducted a study of the effects of anti-smoking campaigns in mass media on smokers' behavior, and they found that the campaign had reduced the rate of cigarette consumption per capita by 7.7 packs per 100 packs during the period 1989-1992. They also gave advice to conduct intensive surveys to find out how the influence of anti-smoking campaigns through mass media on smokers' behavior, including how the effect of media campaign messages on behavior change and smoking attitudes.

In his research in Greece, Stavrinou (1987) found that warnings of health threats from smoking delivered through anti-smoking campaigns had reduced cigarette consumption by 7.3% in the short term and 13.5% in the long term. According to him, anti-smoking campaigns are seen as more effective in reducing cigarette consumption compared to tobacco policy. Matilla (1999) found that anti-smoking ads that use emotional appeal provide a higher awareness of quitting smoking compared to advertisements with rational appeal or information appeal.

Biener et al., (2000) showed that smokers and non-smokers in Massachusetts were both very exposed to anti-smoking campaigns through the mass media, but the campaign message was more widely accepted by those who did not smoke or those who had quit or smokers who

had desires to stop smoking. This shows that only those who have a tendency to stop smoking who view anti-smoking advertising as an effective campaign, while most smokers do have awareness about the dangers of smoking but they do not want to change their behavior.

But research by McVey and Stapleton (2000) in the United Kingdom on the effectiveness of anti-smoking campaigns through television by motivating smokers to stop smoking and prevent former smokers from smoking back found that anti-smoking advertising in the country had a significant negative effect on smoking prevalence. Wolburg (2001) stated that the smoking danger advertisements are usually ineffective, mostly because the messages generally encourage consumption and not reduce it or in other words the media is the wrong place to promote messages to reduce consumption such as "don't smoke". According to Meyrick (2001), the message of anti-smoking advertising will be more effective if the target audience experiences a feeling of involvement with anti-smoking advertisements.

When studying an anti-tobacco campaign entitled 'Truth' in Florida, Sly et al. (2001) revealed that a campaign to raise awareness about the dangers of smoking not only had a direct effect, but also an indirect effect: the effect of the message theme and anti-smoking attitude. Other research on the Truth campaign

conducted by Farrelly et al. (2002), found that exposure reported by respondents to tobacco advertising has significantly changed the adolescents' behavior to smoking.

Hogg and Garrow (2003) explained that sexes and ages could influence response to anti-smoking advertisements. This is mainly because male and female audiences feel the same message differently. Peters et al. (2005), tried to explore the relationship between racial differences and exposure to anti-smoking advertisements, but this study found no difference between race and exposure to anti-smoking advertisements.

Smith and Stutts (2006) conducted a study to evaluate the effect of individual factors on the message content effectiveness in anti-smoking advertisements intended for adults. The results showed that advertising messages were influenced by three factors: gender, social, and ethnic class of those who received the message in question.

Some studies paid attention to the relationship between nicotine dependence and age (Park, et al., 2012; Chen, et al., 2012). Recent research showed that quitting smoking incidence varies based on age and nicotine dependence which is considered as one of the biggest obstacles of desire and effort to stop smoking completely. A study in China showed that middle-aged smokers had a higher cigarette dependence rate than younger or older

groups (Li, et al., 2015). Using a cross-sectional study with a sample of 596 Chinese smokers, the results showed an inverse U relationship between dependence on smoking (nicotine) and age. However, this finding needs to be confirmed through further research (Li, et al., 2015; Park, et al., 2012; Chen, et al., 2012).

This study aims to confirm earlier studies to determine the relationship between smoking frequency with age. But besides age, income and education will also be examined. The reason is that people living below the poverty level and people having lower levels of educational attainment have higher rates of cigarette smoking than the general population (U.S. Department of Health and Human Services, 2014; US National Survey, 2017). Besides, it is also important to investigate which of the three groups of smokers based on age, education, and income were the most willing to quit smoking after receiving the exposure to anti-smoking advertisements.

### **Research Hypothesis**

Among smokers who had received exposure to anti-smoking campaigns, this study examined the effect of anti-smoking campaigns on their belief and attitude based on age, education level, and income. In each campaign, and through various media, anti-smoking messages delivered risk or harm of smoking such as: 'smoking causes cancer', 'smoking causes a

heart attack', 'smoking kills you' and so on. This raises the question of belief on message content; how far can this anti-smoking message be trusted by smokers? So, this part measures the cognitive aspect of smokers toward the danger of smoking.

In addition, anti-smoking campaigns were carried out through various channels such as mass media advertisements, posters, billboards, writing on cigarette packs, etc. received by human senses in the form of text, audio, and video that led to positive or negative attitudes to the look or appearance of the media campaign among those who smoke. This study aims to examine the smokers' attitude toward message stimuli with regard to the look of anti-smoking advertisements they receive. This part measures the affective aspect of smokers toward the appearance of the campaign.

This study also wanted to answer the question of whether the smoking frequency is influenced by demographic factors. Are more age, education, and income more often someone smoking? In the end, this study wanted to examine how strong the smokers' will to quit smoking? What are the effects of various variables previously mentioned to smokers' will to stop smoking.

Based on these various reasons, the formulation of the problem proposed in this study is the followings: (1) How does the influence of demographic variables

(age, education, income) on trust in the contents of anti-smoking messages; (2) What is the influence of demographic variables on attitudes toward anti-smoking campaigns; (3) What is the influence of demographic variables on the frequency of smoking?; (4) How do the demographic variable, beliefs, attitudes, and frequency of smoking combined influence the will to quit smoking.

Based on the problem formulation, several hypotheses are proposed as listed below and the concise model of the relationship between variables in this study can be described in Figure 1.

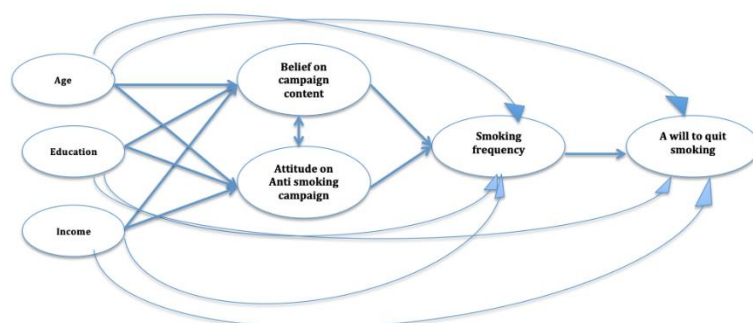


Figure 1: Relationship between variables

H<sub>1</sub>: There is a significant influence of demographic variable (age, education, income) on trust in the contents of anti-smoking messages.

H<sub>2</sub>: There is a significant influence of demographic variable (age, education, income) on attitudes in anti-smoking advertisements.

H<sub>3</sub>: There is a significant influence of demographic variable (age,

education, income) on the frequency of smoking.

H<sub>4</sub>: There is a significant influence of trust and attitudes on smoking frequency.

H<sub>5</sub>: There is a significant influence of demographic variable, beliefs, attitudes, and smoking frequency on the will to quit smoking.

## **METHODOLOGY**

This study uses a survey method by distributing questionnaires to obtain primary data with the target respondents being smokers without age limits. The questionnaire consists of open and closed questions. The research population is in the Greater Jakarta area (Jabodetabek region) with a population more than 28.0 million, one the most densely populated and the fastest growing region in Indonesia as well as one of the most accessed by the media. Thus, anti-smoking campaign activities can easily expose those who live in this region. However, before participants filled out the online questionnaire they were asked if they had ever been exposed to an anti-smoking campaign. Only those who were exposed could fill out a questionnaire. A total of 695 respondents were involved in this study.

The first part of the questionnaire was used to collect demographic data, which included: age, gender, education, and income. Education is

measured using seven levels from primary school to Ph.D degree, while income is measured using 10 levels (below 1 million rupiahs/month to above 15 million rupiahs/month).<sup>1</sup> This section is also used to obtain data on smoking frequency as measured by the number of cigarettes smoked in one day; smoking duration, counted on the number of months, and whether the respondent had known the dangers of smoking from the mass media, as well as from which media the respondents know about anti-smoking campaign.

The second part of the questionnaire was used to measure respondents' trust in the contents of the anti-smoking campaign message. Trust level is measured by asking smokers to respond on a scale of 1 (strongly disagree) to scale 10 (strongly agree) to the four anti-smoking statements: "Smoking can cause cancer"; "Smoking can cause a heart attack"; "Smoking can cause impotence"; and "Smoking can kill you." Cronbach's alphas for the four items were .90

The third part of the questionnaire was used to measure respondents' attitude to anti-smoking campaigns measured by the following two statements: "Anti-smoking campaigns overstate the danger of smoking to health"; and "Anti-smoking campaigns overstate the danger of smoking for others". Smoking respondents were asked to

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<sup>1</sup> 1US\$ = 14,000 rupiah

scale their agreement from 1 (strongly disagree) to 10 (strongly agree). Cronbach's alphas for the two items were .83

The third part of the questionnaire is used to measure how much the respondents want to stop smoking. Four statements were put forward including: "I want to reduce smoking habits" or "I want to reduce the number of cigarettes I smoke every day"; and "I want to stop smoking". Respondents were asked to respond on a scale of 1 (strongly disagree) to scale 10 (strongly agree) to the statements of the will to quit smoking. Cronbach's alphas for the four items were .80.

### **Data Analysis**

Statistical analysis with a standard multiple regression was performed to determine whether there was a significant influence from demographic variables that include age, education, and income on the belief of anti-smoking messages contents (smoking causes cancer, heart attacks, kills you and so on). In this case, multiple linear regression tests are used since the relationship involved three independent variables: age, education, and income. The same regression test was conducted to determine whether there was significant influence from demographic variables on attitudes toward anti-smoking campaigns, and to check whether smoking frequency or the number of the cigarettes smoked every day, was related to the

three demographic categories, and to find out whether the smoking frequency was also affected by variables of trust on content, and attitude on campaign.

In the final stage, this study wants to find out what is the role of trust, attitude, and smoking frequency variables in the direct relationship between variables of demography and quit smoking desire using hierarchical multiple regression test. In this case, the quit-smoking variable is the dependent variable, and the demographic variable is the independent variable placed in block 1, trust was placed in block 2, attitude in block 3, and smoking frequency in block 4. This test was carried out to find out whether trust, attitude, and smoking frequency functioned to strengthen or weaken the relationship between demographic factors and the quit smoking desire. For this purpose, the following model is proposed to be analyzed using hierarchical multiple regression test:

$$\begin{aligned} \text{Quit-smoking desire} &= \text{age,} \\ &\text{education, income (Block 1)} \\ &+ \text{Trust in anti-smoking} \\ &\text{campaign messages (Block 2)} \\ &+ \text{Attitudes towards anti-smoking} \\ &\text{campaigns (Block 3)} \\ &+ \text{Smoking frequency (Block 4)} \end{aligned}$$

In this study, all statistical analyzes were performed using IBM Statistical Package for Social Sciences (SPSS) or IBM SPSS Statistics version 25. All reported probabilities (P-values) were two-tailed, and that probabilities of less

than 0.05 were considered significant statistically.

## RESULTS AND DISCUSSIONS

This study aims to determine the various factors that influence smokers' decision to quit smoking even though anti-smoking campaigns were frequently carried out through various media. This study uses a sample survey with a structured questionnaire for the purpose of collecting the data needed with the target respondents being active smokers. The collecting data process resulted in 695 respondents with various age, smoking duration, the number of the cigarettes smoked per day, as well as education and income level (See Table 1).

Table 1. Respondent data on smoking behavior

Variable	N	Minimum	Maximum
Respondents' age	695	17,00	54,00
Smoking duration (month)	695	7,00	468,00
Cigarette number smoked	695	1,00	40,00
Education level	695	1,00	7,00
Income level	695	1,00	11,00

Source : Researcher

Of the 695 sample members, some 665 (95.7%) were male and 10

(4.3%) were women. Very small numbers of female smokers have been estimated before, this is due to Indonesian culture which still views smoking as a typically male behavior while female smokers are seen as negative behavior. After removing 30 respondents (4.3%) who said they had never been exposed to an anti-smoking campaign, this study had a sample of 665 respondents. Of the 10 choices of media types chosen in the questionnaire, from television to posters, some 230 respondents (33.15%) knew of an anti-smoking campaign from only one media source and 270 respondents (38.8%) knew the campaigns from one to two media sources. The rest said they knew of anti-smoking campaigns from more than three media.

The important thing that needs to be known and measured from the respondents is how much their trust level in the health message content delivered by anti-smoking advertisements in the mass media. The trust level in the anti-smoking messages was measured by their response whether strongly agree (weight 5) to strongly disagree (weight 1) to five statements of anti-smoking threat messages for example "smoking can cause cancer," and three other health threats (impotence, heart attack, and fetal disorder), as well as "smoking kills you". The lowest total score for the trust level variable was 5 and the highest was 50 and the average score was 34.5 (SD = 10.1). The value of Cronbach's alpha for the five points of



the trust level statement is 0.90. The results of the sample's trust level toward the threat message content of anti-smoking ads are shown in Table 2. Based on the data in Table 2, it can be seen that more than 50%, or the majority of respondents, believe that cigarettes can

cause these five dangerous diseases but most of them do not really believe that cigarettes can kill or cause death.

Table 2: The trust level in cigarettes as a cause of various diseases

	Agree/ Strongly agree	Neutral	Disagree/ Strongly disagree
Cancer	445 (65.5%)	150 (23%)	70 (11.5%)
Heart attack	445 (65.5%)	165 (25.2%)	55 (9.4%)
Impotence	375 (55.4%)	205 (30.9%)	85 (13.7%)
Fetal abnormalities	395 (58.3%)	240 (33.1%)	50 (8.6%)
Kill you	300 (44.6%)	200 (30.2%)	165 (25.2%)

Source : Researcher

This study also wanted to find out whether the independent variables: age, education, and income correlated with attitudes towards the anti-smoking campaign, which was the dependent variable. Two statements were put forward to measure this attitude: "Anti-smoking campaign

overstates the danger of smoking" and "Anti-smoking campaign exaggerates the dangers of smoking to others". The sample's feedback results are shown in Table 3. The lowest total score was 2 and the highest was 20 (M = 17.1, SD = 5.3).

Table 3: Attitudes towards anti-smoking campaigns

Attitude statements	Agree/ Strongly agree	Neutral	Disagree/ Strongly disagree
Anti-smoking campaign overstates smoking risk	315 (46.8%)	200 (30.2%)	150 (23%)
Anti-smoking campaign overstates smoking risk to others	300 (44.6%)	165 (25.2%)	200 (30.2%)

Source : Researcher

The dependent variable to measure the effect of anti-smoking campaigns is smokers' desire to quit smoking as measured by five statements: "Smoking disrupted my health"; "Smoking disrupted my economy"; "I want to cut down my smoking habits"; "I want to cut down the number of cigarettes I suck every day"; "I want to quit smoking" (See Table 4). The lowest total score for the desire to quit smoking was 5 and the highest was 50 and the average was 31.5 (SD = 10.6).

Table 4 : The desire to stop smoking

Statements	Agree/ Strongly agree	Neutral	Disagree/ Strongly disagree
Smoking disrupts my health	265 (39.6%)	205 (30.9%)	195 (29.5%)
Smoking disrupts my economy	260 (38.8%)	185 (28.1%)	240 (33.1%)
Cut down a smoking habit	340 (50.4%)	195 (29.5%)	130 (20.1%)
Cut down cigarette number	375 (55.4%)	195 (29.5%)	95 (15.1%)
Quit smoking	355 (52.5%)	155 (23.7%)	155 (23.7%)

Source : Researcher

### Trust in Campaign Contents

Before conducting a regression analysis, it is first necessary to check some assumption testing required by the regression test that applies both to multiple and hierarchical regression tests, which include: the minimum sample number, and the data normality. In terms of the sample number, according to Green (1991), the minimum sample size for testing an overall model is using the formula  $50 + 8k$ , where  $k$  is the number of predictor variables. In this study, there are six variables that can be categorized as predictors so that the number of samples needed is  $50 + 8(6) = 98$ . This study used some 684 respondents, which meant that the sample size of this study was adequate.

The next assumption is the dependent variable data normality or

in other words, the dependent sample must be normally distributed. The technique used is checking outliers using a boxplot, and removing 11 outliers leaving the remaining 684 respondents. The singularity assumption is also fulfilled because the independent variable is not a combination of other independent variables. Finally, correlation testing revealed that there were no independent variables that were highly correlated so that the multicollinearity assumption was considered to have been fulfilled.

As stated earlier, this study wants to investigate whether there is a significant influence of demographic variable (age, education, and income) on the belief to accept or reject anti-smoking messages (smoking causes cancer, heart attacks, kills you, etc.). In this case, multiple linear regression tests are carried out as the relationship analysis involves more than one independent variable.

In this analysis, the direction and strength of the relationship between smokers' demographic variables and their trust level in the contents of the anti-smoking campaign message ( $Y_1$ ) need to be examined. The same demographic variables were also tested for the attitude towards anti-smoking campaigns ( $Y_2$ ). Furthermore, this research wants to find out whether the trust in the message content and the attitude towards anti-smoking campaign has an effect, both individually and together, on the smoking frequency ( $Z_1$ ). In the end, the present research analyzed how the demographic factors, belief on message content, attitudes toward anti-smoking campaigns, and smoking frequency

influence smokers' desire to stop smoking ( $Z_2$ ).

Calculations with multiple regression analysis were used to predict the dependent variable, namely the respondents' trust level in the content of anti-smoking campaign messages based on their demographic variables that include age, education, and income. The regression calculations result showed that the relationship model was significant but

the three predictors (age, education, and income) combined contribute only 2.4% to the trust level variance ( $R^2 = 0.024$ ,  $F(3, 650) = 5,622$ ,  $p < 0.05$ ). Education played the greatest role, which contributed 12.3% to the trust level variance ( $\beta = 0.123$ ,  $p < 0.05$ ), while the other two variables weakened the relationship: age as a predictor did not contribute significantly ( $\beta = -0.054$ ,  $p = 0.167$ ), so did the income level ( $\beta = 0.025$ ,  $p = 0.547$ ).

Tabel 5: Descriptive Statistics and Correlation (N = 684)

	Age	Education	Income	Smoking frequency	Trust in messages	Attitude on campaign	Desire to quit
Age	1						
Education	-.216**	1					
Income	-.002	.422**	1				
Smoking frequency	.231**	.041	.076*	1			
Trust in messages	-.081*	.145**	.077*	.251**	1		
Attitude on campaign	-.246**	.058	-.032	-.108**	.010	1	
Desire to quit	-.079*	.012	-.010	.232**	.487**	-.057	1
Mean	27,45	3,74	4,11	11,30	34,48		
Standard Deviation	8,05	1,03	1,75	4,34	10,20		
Range	17 - 54	1 - 7	1 - 11	1 - 40	5 - 50		
Cronbach Alpha					0,90	0,83	0,85

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

For the regression model equation to predict trust in anti-smoking message  $Y_1 = \beta_0 + \beta_1 X_1 + \dots + \beta_p X_p + \varepsilon$ , and since age and income variables were not statistically significant so only education entered into the following equation  $Y_1 = 29 + 1.44$  (education). This means that trust in anti-smoking messages will increase by 1.44 for every level rise in education. In this relationship model, it is understandable that education level showed a fairly strong and significant contribution to the trust because those with higher education would have more opportunities to access information, especially through mass media where anti-smoking campaigns and other information were displayed.

### **Attitudes towards Campaigns**

The second dependent variable, the attitude towards anti-smoking campaigns showed a significant relationship with the three demographic variables. Regression calculation results indicated that this relationship model was significant with a regression coefficient  $R = 0.25$  but the three predictor variables (age, education and income) combined contribute only 6.2% to the attitude variant ( $R^2 = 0.062$ ,  $F(3, 650) = 14,995$ ,  $p < 0.05$ ). The most important predictor variable is age which contributes 24.1% to the attitude variance ( $\beta = 0.241$ ,  $p < 0.05$ ), while the other two variables tend to weaken the relationship where the education did not contribute significantly ( $\beta = -0.023$ ,  $p = 0.58$ ), so does the income level ( $\beta = -0.042$ ,  $p = 0.31$ ). For the regression model equation to predict attitude toward

campaign  $Y_2 = \beta_0 + \beta_1 X_1 + \dots + \beta_p X_p + \varepsilon$ , and since education and income variables were not statistically significant so only education entered into the equation, the regression calculation showed the following equation  $Y_2 = 21.6 - 0.16$  (age). This means that attitude toward anti-smoking campaign will decrease by 0.16 for every unit (year) of age increase.

### **Smoking Frequency**

Next, to find out whether smoking frequency or the number of cigarettes smoked every day is related to the three demographic variables studied. Are older smoker, higher education, and bigger income smoke more? For this reason, multiple regression analysis is used to test whether age, education level, and income significantly influence smoking frequency. The regression results showed that the three demographic variables together have a significant effect but the three predictors only explain 6.4% variant of smoking frequency ( $R^2 = 0.064$ ,  $F(3, 650) = 15.408$ ,  $p < 0.01$ ).

The Pearson correlation test showed that individually, age has the greatest correlation and was statistically significant ( $r = 0.231$ ,  $p < 0.01$ ); income also showed a significant relationship but with a very weak correlation ( $r = 0.076$ ,  $p < 0.05$ ); while education did not show a significant effect on the smoking frequency ( $r = 0.041$ ,  $p = 0.289$ ). The calculations showed that by removing non-significant variables (education), smoking frequency could be predicted by the following equation  $Y_3 = 3.552 + 0.20$  (age) + 0.23 (income). This means,

for every year of age increase, the number of cigarettes smoked increases by 0.2 if other factors are constant, besides smoking frequency increases by 0.23 for each unit rise in income level, keeping in mind other factors remain.

In this study, trust, attitude, and smoking frequency are intervening variables that are placed between demographic variables and a will to quit smoking. A statistical analysis has been carried out with multiple regression tests to determine the direct effect of demographic variables on beliefs and attitudes, and the direct relationship of demographic variables to smoking frequency and all these relationships were significant but at a weak correlation level then the next is determining how the relationship of trust and attitude with smoking frequency.

Trust in anti-smoking message variable and attitude toward anti-smoking campaign variable showed a significant effect on smoking frequency variable even in a weak relationship. Individually, trust has a significant influence on the number of cigarettes smoked every day. Calculation with Pearson correlation showed that there is a significant positive relationship between trust and smoking frequency,  $r(651) = 0.25, p < 0.01$  (2-tailed). Similarly, there was a significant but negative relationship between attitudes toward anti-smoking campaigns and smoking frequency,  $r(651) = -0.11, p < 0.01$  (2-tailed). Together, using multiple regressions, the trust and attitude variables showed a significant relationship with smoking frequency and both of which contributed 7.5% to smoking frequency variant.

Calculation with multiple linear regression showed that there was a significant collective effect between trust, attitude and smoking frequency,  $(F(2, 651) = 27.67, p < 0.001, R^2 = 0.075)$ . Each predictor variable was examined further and showed that trust ( $t = 6.83, p < 0.01$ ) and attitudes ( $t = -3.0, p < 0.05$ ) were significant predictors in the proposed model.

### **The Desire to Quit Smoking**

Furthermore, this study wants to know what is the role of trust, attitude and smoking frequency in the relationship between the variable of demography (age, education, and income) and variable of desire to quit smoking using multiple hierarchical regression tests. In this calculation, the desire to quit smoking was the dependent variable, and the demographic variable was the independent variable that was placed in block 1, then the trust variable was entered in block 2, the attitude variable in block 3, and the smoking frequency in block 4 (See Table 5.6). The calculation was carried out to find out whether trust, attitude, and smoking frequency functioned as strengthening or weakening the relationship between demographic factors and the desire to quit smoking.

Table 6, The Quit Smoking Hierarchy Regression Model

	<i>R</i>	<i>R</i> <sup>2</sup>	<i>R</i> <sup>2</sup> <i>Change</i>	<i>B</i>	<i>Std.</i> <i>Error</i>	$\beta$	<i>t</i>
<b>Block 1</b>	.114	.013*					
Age				-.030	.014	-.082*	-2.103
Education				-.122	.125	-.042	-.982
Income				.163	.071	.097*	2.289
<b>Block 2</b>	.457	.209***	.196***				
Age				-.021	.013	-.058	-1.657
Education				-.281	.112	-.098*	-2.504
Income				.144	.064	.085*	2.254
Trust in message				.130	.010	.448***	12.971
<b>Block 3</b>	.459	.211***	.002***				
Age				-.025	.013	-.068	-1.884
Education				-.278	.112	-.097*	-2.479
Income				.141	.064	.084*	2.208
Trust in message				.130	.010	.448***	12.962
Attitude on campaign				-.023	.019	-.041	-1.161
<b>Block 4</b>	.466	.218***	.007***				
Age				-.033	.014	-.090*	-2.433
Education				-.290	.112	-.101**	-2.586
Income				.136	.064	.080*	2.129
Trust in message				.123	.010	.424***	11.877
Attitude on campaign				-.020	.019	-.036	-1.034
Smoking frequency				.042	.017	.089*	2.449

Note. Statistical significance: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Source : Researcher

The results of multiple hierarchical regression tests indicated that the relationship model, as shown in the summary model box, gave the

following results. In block 1, demographic variables contributed significantly to the regression model,  $F(3, 650) = 2.987, p < 0.05$  with

regression coefficient value  $R = 0.114$  and  $R^2 = 0.013$ , which meant that the demographic variable contributes 1.3% to the desire of stop-smoking variance.

In block 2, placing trust has strengthened the relationship by 19.6% with regression coefficient value  $R = 0.46$  and  $R^2 = 0.209$  which meant that the trust variable accounts for almost 21% of the smoking frequency variant. The trust variable contributed significantly to the regression model,  $F(4, 649) = 44,854, p < 0.001$ . In the third block, by entering the attitude variable into the model, the relationship strength increased 0.2%. Attitude variable contributed significantly to the regression model,  $F(5, 648) = 36,171, p < 0.001$  with regression coefficient value  $R = 0.46$  and  $R^2 = 0.211$  which meant the attitude accounted for 21.1% of the variance in the desire to quit smoking. In the last block, by entering the smoking frequency variable the relationship strengthened 0.7% with a regression coefficient of  $R = 0.47$  and  $R^2 = 0.218$ , which meant that the smoking frequency accounts for almost 22% of the variance in the desire to quit smoking.

## CONCLUSION

Statistical analysis showed that demographic variables that include age, education, and income influenced trust on anti-smoking message campaign. The regression calculation results indicated that this relationship model was significant but the three predictor variables (age, education, and income) combined contributed only 2.4% in the trust variance ( $R^2 = 0.024, F(3, 650) = 5,622, p < 0.05$ ). The three demographic variables also showed a

significant relationship with attitudes towards anti-smoking campaigns. The regression calculations indicated that this relationship model is significant with a regression coefficient  $R = 0.25$  but all three predictor variables (age, education, and income) combined contribute only 6.2% for attitude variance ( $R^2 = 0.062, F(3, 650) = 14,995, p < 0.05$ ). Furthermore, the smoking frequency or the cigarette number smoked every day is significantly associated with the three demographic variables studied. The calculation results showed that the three demographic variables together have a significant effect but the three predictors only explained some 6.4% variance of the smoking frequency ( $R^2 = 0.064, F(3, 650) = 15.408, p < 0.01$ ).

Trust on anti-smoking message and attitude toward anti-smoking campaign also showed a significant influence on the smoking frequency although in a weak relationship. The multiple linear regression calculations showed that there was a significant collective effect among trust, attitude and smoking frequency ( $F(2, 651) = 27.67, p < 0.001, R^2 = 0.075$ ). Together, the trust and attitude variables showed a significant relationship with the smoking frequency, both contributed 7.5% to the variance of smoking frequency. Finally, among the four variables examined in this study: demography, beliefs, attitudes, and smoking frequency on the desire to quit smoking showed that the four variables had a significant effect where the smoking frequency showed the greatest influence ( $R^2 = 22%$ ), followed by trust and attitude that showed almost the same contribution

( $R^2 = 21\%$ ) and, finally, the demographic variable showed the smallest contribution to the variance in the desire to quit smoking ( $R^2 = 1.3\%$ ).

Some aspects of this study have similarities with several previous studies, for example Hogg and Garrow (2003), Park, et. Al., (2012), and Chen, et. Al. (2012) who found that demographic variables such as gender and age influenced the audience's response to anti-smoking advertisements. Some studies also showed a link between nicotine dependence and age (Park, et al., 2012; Chen, et al., 2012). Although the present study do not examine gender influence on message content beliefs, and attitudes towards anti-smoking campaigns given the relatively small female smoker number in Indonesia due to social judgement that viewed women smokers negatively, but this study was in line with the three previous studies pertaining to age. The study paid attention to the relationship between nicotine dependence and age (Park, et al., 2012; Chen, et al., 2012).

Similarly, Smith and Stutts (2006) who examined individual factors influence on the effectiveness of message content in anti-smoking advertisements found that the messages were influenced by three individual factors, namely the gender, social and ethnic class of those who received the message in question. Although current research measures the concept of 'income' and not 'social class' but income is a determinant factor in determining one's social class. In the current study, the concept of "social class" studied by Smith and Stutts (2006) was replaced by income

variables that were proven to have an effect on effectiveness (trust and attitude) of messages content of anti-smoking advertisements.

In conclusion, and by referring to the five hypotheses stated previously, the following conclusions can be put forward: (1) There is a significant influence of demographic variables (age, education, income) on trust in anti-smoking message content; (2) There is a significant influence of demographic variables on attitudes toward anti-smoking campaigns; (3) There is a significant influence of demographic variables on the smoking frequency; (4) There is a significant effect of trust and attitudes on smoking frequency; and (5) There is a significant influence of demographic variables, beliefs, attitudes and smoking frequency on the desire to quit smoking. In the end, the four variables examined in this study, namely demography, beliefs, attitudes, and smoking frequency had a significant effect on the desire to quit smoking where the smoking frequency had the greatest influence ( $R^2 = 22\%$ ), followed by beliefs, and attitudes that showed almost the same contribution ( $R^2 = 21\%$ ) and, finally, the demographic variable showed the smallest contribution to the variance in the desire to quit smoking ( $R^2 = 1.3\%$ ).

Finally, the merit of this research is an assessment of tobacco risk perceptions and identification of socio-economic predictors among a new population since no previous research has done similar research with the Indonesian population. The current manuscript does highlight this contribution.



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