

Adoption Assessment Of Policy Model Of Tax And Subsidy On Achieving Sustainable Tobacco Control In The Case Of Ethiopia**Sisay Tolla**

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Abstract

Smoking-related diseases cause more deaths each year in developing countries than HIV/AIDS, tuberculosis and malaria combined. Even though being an incredible opportunity to reduce unnecessary premature deaths, policies to raise tobacco price and taxes face confrontation from tobacco consumers and producers. Consequently, to address these arguments the researcher developed intervention policies entitled "Policy Model of Tax and Subsidy for Achieving Sustainable Tobacco Control" entailing the inevitability of chained tax and subsidy policies as the merely prospective intervention to achieve a tobacco free nation. Joint tax and subsidy policies have dual impact and consequences on tobacco diminution through lessening both demand and supply of tobacco inputs and products concurrently. Additionally, to deal with adoption decision of main stakeholders about "Policy Model of Tax and Subsidy for Achieving Sustainable Tobacco Control", logistic regression technique was employed using 385 sample respondents. The result reflected that knowhow of officials of ministry of health, ministry of education, and ministry of agriculture of Ethiopia matters the applicability of "Policy Model of Tax and Subsidy for Achieving Sustainable Tobacco Control" significantly and positively.

Keywords: Tax Policy, Subsidy Policy, Tobacco Control, Adoption, Logit Model

I. Introduction

Tobacco is a product or an output prepared from the leaves of the tobacco plant by curing them. The plant is part of the genus *Nicotiana* and of the Solanaceae (nightshade) family. While more than 70 species of tobacco are identified, the chief commercial crop is *N. tabacum*. The more potent variant *N. rustica* is also used around the globe. Tobacco holds the alkaloid nicotine, which is a stimulant. Dried tobacco leaves are mainly used for smoking in cigarettes, cigars, pipe tobacco, and flavored shisha tobacco. They can also be devoted as snuff, chewing tobacco, dipping tobacco and snus. Tobacco use is a risk factor for many diseases, especially those affecting the heart, liver, and lungs, as well as many cancers. In 2008, the World Health Organization named tobacco as the world's single furthest preventable cause of death (WHO, 2013).

Tobacco use represents the largest preventable cause of cancer worldwide. Especially, tobacco smoking is plague and wraps all ages, affecting more than a billion people worldwide. The suppression of tobacco use can be most achieved by preventing children and youngsters from starting use in our day. And main diseases caused by tobacco use are lung cancer, emphysema, bronchitis, stroke (bleeding in the brain), heart attack and heart disease, narrowing and clogging of arteries, cancers of mouth, throat, larynx, esophagus, peptic ulcers (stomach bleeding), respiratory infections and compromise (cough, wheezing etc), gum disease and tooth loss, low birth weight, asthma, ear infections, compromised sexual performance and greater susceptibility to tuberculosis. Generally, the harmful effects of tobacco consumption are not limited to users, but also people exposed to secondhand smoke are at greater danger for lung cancer, coronary artery disease and other persistent health problems (IARC, 2011).

Even though the use of a tobacco tax to lessen smoking is still quite new in many countries, it is obvious that there is a long history throughout the world of government's applying such a tax to produce revenue or income. In several forums, tobacco taxation has also been tinted as a means of activating local or domestic resources to finance health and other important development activities. In July 2015, the United Nations general assembly endorsed the Addis Ababa action agenda concerning tobacco control. In this agenda, the United Nations acknowledged that "price and tax measures on tobacco can be efficient and important tools to reduce tobacco consumption and health-care expenses,

and represent a revenue stream for financing vital development sectors in many countries. Consequently, in September 2015, the 2030 Agenda for Sustainable Development which include 17 sustainable development goals (SDGs) was also adopted in a United Nations General assembly. And it is to make sure healthy lives and endorse well-being for all ages, includes reducing premature mortality from non communicable diseases by one third and strengthening country-level realization of the world health organization's framework convention on tobacco control(FCTC) (WHO, 2016).

Given the socio-economic and health cost of smoking, countries began to intervene in the tobacco market through tax measures with the intention of reducing tobacco use. The rationale behind raising taxes on products such as tobacco lies in the particular aspects of the product: i) production is dominated by a few companies, which makes supervision and tax collection by the government relatively easy; ii) the demand for this product is relatively inelastic, so tobacco users are addicted to the products and therefore have little sensitivity towards a price change; iii) the product is not considered a basic necessity; and iv) the product produces negative externalities (Smith, 2013). Considerable increases in cigarette and other tobacco product taxes are generally considered to be a highly helpful mechanism to reduce tobacco consumption and encourage quitting tobacco use. Therefore, health, social and economic costs caused by tobacco use will be diminished.

The National Tobacco Enterprise of Ethiopia has a control power on all the manufacturing and importing of tobacco products in the country, as well as owning the only four tobacco farms in the country. According to WHO report 2012, the government of Ethiopia amasses a huge amount of annual revenue from tobacco product and tax. For example, the government collected 639,782,151ETB in 2011 from tobacco tax revenues, including excise tax, VAT, and selling tax. However, the tobacco market in Ethiopia has shown a significant growth over the past years even if there is high tobacco tax. To make important investments and augment the enterprise into an internationally competitive tobacco producer, Japan Tobacco International paid 510 million USD for the purchase made for the 40 percent stake it obtained in the National Tobacco Enterprise. And the NTE has four tobacco farm areas: Robi tobacco farm found in the Amhara Regional State; Billate, Hawassa and Wolyta farms placed in the Southern Nation Nationalities and Peoples' Regional state (NTE, 2017).

II. Justification Of The Study

Tobacco consumption remains the largest avertable cause of death and disease worldwide. The impact of tobacco is overwhelming and responsible for millions of death. Tobacco accounts for the greatest load among non-communicable diseases, corresponding to a vast healthcare and economic burden, alongside the social and emotional expenses associated with anguish and premature death. Furthermore, tobacco use enforces financial costs on national health systems and the population in general. Like any other countries, Ethiopia is also a victim of health and socio-economic impact of tobacco and that is why tobacco is one of the discouraged commodity items in the country. According to the study of Tobacco Atlas (2017), every year more than 9600 of Ethiopian people are killed by tobacco-caused diseases, while more than 100000 kids and more than 2326000 adults continue to use tobacco each day, indicating that smoking rate is increasing alarmingly in Ethiopia, like other many African countries.

The undesirable effects of cigarette smoke on human health are widely renowned and organized. Despite the fact that the risks to human health from active smoking are accepted, empirical evidence supporting the risk of involuntary exposure to environmental tobacco smoke has accumulated in recent years. It is the main source of toxicant exposure by inhalation in non smokers. Despite recent regulations, smoking in public enterprises is not infrequent. Nevertheless, despite an occasional report on the effect of secondhand smoke in nonsmokers, little attention was given to this aspect of smoking until about 1970. Environmental tobacco smoke is now regarded as a risk factor for development of lung cancer, cardiovascular disease and altered lung functions in passive smokers (Glantz and Parmley, 1995).

Despite the public health justification for increasing tobacco taxes to reduce tobacco use and its health and economic consequences, some dispute the social benefits of this intervention. Antagonists

of higher tobacco taxes question their potential returns and the sustainability of these revenues. They indicate the possible negative economic impact of higher tobacco taxes, particularly when it comes to tobacco related employment, the prosperity of sectors indirectly linked with tobacco business, increasing pressure on inflation, the pessimistic distributional impact of higher tobacco taxes on the poor, and the danger of tax averting and tax evasion in reaction to higher taxes. Also government interference in the decision whether or not to consume tobacco is depicted as an infringement on individuals' freedom to choose or decide. Nevertheless, many obstacles cited as barriers to implementation of higher tobacco product taxes are deceptive. For example, the inelasticity of demand for tobacco outputs and the relatively low share of tax in price in most countries mean that considerable increases in tobacco taxes will generate significant increases in government proceeds or revenues. Advances in tobacco farming and tobacco output manufacturing lead to job and income losses in the tobacco sector during periods of stable tobacco taxes. Tobacco dependent jobs lost as a result of elevated taxes can be replaced by jobs in other sectors as those discouraged from using tobacco products. And now they can spend the money that they once spent on tobacco on other basic materials and the government spends new tax revenues, creating jobs in other or supplementary sectors.

In certain low-income and middle-income countries, tobacco growing is core for several reasons, chiefly because of its labor intensity and its capability to generate dependable cash flow for poor small farmers or cultivators. Seasonal labor is obligatory for transplanting young plants from seedbeds or greenhouses to fields, and for removing tops when plants start to flower and suckers that grow out from the stalk. Flue-cured tobacco is harvested by taking away a few leaves at a time, very labor-intensive courses. Curing is also frequently done on the farm to make sure the correct moisture, nicotine, and sugar content, which have an effect on the quality and taste (Chapman and Wong, 1990).

Generally, conducting adoption assessment through perceiving the views of the main concerned bodies about "Policy Model of Tax and Subsidy on Achieving Sustainable Tobacco Control" was necessary and timely for countries like Ethiopia who ratified WHO framework convention on tobacco control on March 25, 2014.

III.Objectives Of The Study

- Availing review of "Model of Tax and Subsidy Policies for Achieving a Tobacco Free Country"
- Assessing the determinants of adoption decision of the concerned bodies about " Model of Tax and Subsidy Policies for Achieving a Tobacco Free Country"

IV. Methodology Of The Study

Research methodology is a systematic way of solving or defining research problems. It is all about the research design, source and methods of data collection, methods of data analysis, and model specification.

IV.A. Source Of Data And Methods Of Data Collection

The sources of data for this study were both secondary and primary data. For the purpose of evaluating adoption decision of the main bodies regarding "Policy Model of Tax and Subsidy for Achieving Sustainable Tobacco Control", data were gathered from annual reports and primary sources which were collected through structured questionnaires from officials and workers of Ethiopian Custom and Duty Authority, Ministry of Agriculture, Ministry of Education, Ministry of Health, Ministry of Trade, Ministry of Labor and Social Affairs, Ministry of Finance and Economic Development.

IV.B. Samples And Sampling Procedure

The above sector offices are selected purposively, because the use of purposive sampling helps the researcher to generate meaningful insights that help to gain a deeper understanding of the research phenomena by selecting the most informative participants that is satisfactory to its specific needs. Also

the nature of the study dictated the researcher to apply purposive sampling technique. Generally, to select the appropriate sample size from the outlined main stakeholders, the following best sample size determination formula (Cochran, 1963) was used:

$$n = \frac{Z^2 pq}{e^2}$$

Where: n is the sample size, Z^2 is the abscissa of the normal curve that cuts off an area α at the tails ($1 - \alpha$) equals the desired confidence level², e^2 is the desired level of precision, p is the estimated proportion of an attribute that is present in the population, and q is $1-p$. The value for Z is found in statistical tables which contain the area under the normal curve. For this study, $Z = 1.96$ for 95 % level of confidence, $e = 0.05$ and $P = 0.5$ to yield a representative sample for proportions. Thus, according to Cochran (1963) sample size determination formula, the fitting sample size is 385.

Once the required sample size (385) is determined, for the purpose of selecting representative sample, a two-stage sampling techniques was applied to generate the required primary data from 385 stakeholders of tobacco control campaign. In the first stage, 385 divided in to seven for the reasons that of having only seven different stakeholders that would still be representative of the target population in drawing conclusions for a study of adoption decision analysis of “Policy Model of Tax and Subsidy on Achieving a Tobacco Free Nation”. Finally or in the second stage, a systematic random sampling method was employed to select 55 sample respondents from each stakeholder.

IV.C. Data Analysis

The binary logistic regression analysis was used to identify whether the outlined main stakeholders have affirmative impression to adopt “Policy Model of Tax and Subsidy to Achieve a Sustainable Tobacco Control” or not. Binary logistic regression is most functional in cases where we want to model the event probability for a categorical response variable with two outcomes or results. In this study, the adoption decision for the model is based on the perception of the main stakeholders including desire toward implementation of “Policy Model of Tax and Subsidy for Achieving Sustainable Tobacco Control”. Thus, to deal with the determinants of adoption decision of “Policy Model of Tax and Subsidy for Achieving Sustainable Tobacco Control”, this study is based on the following Logistic Regression model, given by

$$l(p) = \ln \left[\frac{p}{1-p} \right] = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + + \dots + \beta_7 x_7,$$

Where X_1, \dots, X_7 are the predictor variables or adoption decision of officials of; Ethiopian Custom and Duty Authority, Minister of Trade, The Ministry of Health, Ministry of Labor and Social Affairs, Ministry of Agriculture, Ministry of Education, and The Ministry of Finance and Economic Development.

IV.D. Variable Explanations

ADPMTS= Adoption Decision of “Policy Model of Tax and Subsidy for Achieving a Tobacco Free Nation”

ADPMTS is dependent variable which is categorical and implies whether main parties have adopted “Policy Model of Tax and Subsidy for Achieving a Tobacco Free Nation” or not.

And the following variables are explanatory or independent variables

KECDA= Knowhow of Ethiopian Custom and Duty Authority

KMH= Knowhow of Ministry of Health

KHE= Know how of Ministry of Education

KMFED= Know how of Ministry of Finance and Economic Development

KMLSA= Knowhow of Ministry of Labor and Social Affairs

KMT= Knowhow of Ministry of Trade

KMA= Knowhow of Ministry of Agriculture

A logistic regression analysis was conducted to predict stakeholder's adoption decisions for 385 respondents using seven predictor variables as reported above.

$$\text{Log} \left(\frac{p}{1-p} \right) = b_0 + b_1 \text{KECDA} + b_2 \text{KMH} + b_3 \text{KHE} + b_4 \text{KMFED} + b_5 \text{KMLSA} + b_6 \text{KMT} + b_7 \text{KMA}$$

V. Data Analysis And Interpretations

In the following tables and equation, the data found in this study and its analysis is presented. They are broken into two sections 1) review of Policy Model of Tax and Subsidy for Achieving Sustainable Tobacco Control and 2) Adoption decision of Policy Model of Tax and Subsidy for Achieving Sustainable Tobacco Control. The data presented here are based on 385 sample and returned questionnaires.

V.A. Review Of Policy Model Of Tax And Subsidy For Achieving Sustainable Tobacco Control

$$TC = 0 - TTI - TSI + e$$

$$TTI = TITI + TOTI$$

$$TC = \text{Tobacco Consumption}$$

$$TTI = \text{Tobacco Tax Income}$$

$$TSI = \text{Tobacco Subsidy Income}$$

$$TITI = \text{Tobacco Input Tax Income}$$

$$TOTI = \text{Tobacco Output Tax Income}$$

e=error terms which reflect all occurrences against the developed model

0 (Zero) implies that there is no autonomous tobacco consumption as tobacco consumption is not basic need for human being survival.

Since the entire tobacco tax directly goes to tobacco subsidy, $TTI = TSI$, then

$$TC = -2TTI + e$$

And this equation implies that if we use the whole tax from tobacco taxation as tobacco subsidy, the impact on tobacco reduction will be dual.

Given the fact that there is tobacco taxation provided that there is production, importation and consumption of tobacco, when $TTI = 0$, $TC = 0$, implies that when income from tobacco tax turns into zero, the level of tobacco control become successful (zero level of tobacco consumption). Similarly, reduction in tobacco consumption, according to the model, is reflected by lower amount of tobacco tax income.

In general, the following equation is mathematical build of "Policy Model of Tax and Subsidy for Achieving Sustainable Tobacco Control" which shows the impact of tax and subsidy policy on tobacco control.

$$TC = -2TTI + e$$

Tax and Subsidy policies should be considered as critical and accompaniment strategies to have a comprehensive campaign on controlling tobacco. Levying considerably high tax on tobacco products is a crucial instrument to raise the price of tobacco which in turn reduces the demand for tobacco outputs. Higher tobacco product price decrease occurrence by escalating interest in quitting, leave efforts and victorious cessation. In the same way, high tax lobbying to the producers and importers of tobacco inputs can reduce the ability and desire of importers and producers to invest in tobacco industry.

On the other hand, there is disagreement in opposition to high tax both on tobacco products and inputs since higher tobacco tax cause a sizeable unemployment and loss of revenue among workers in tobacco industry. Therefore, these limitations of high tobacco tax suggest the need for other balancing or corresponding policy that is subsidy.

The source of subsidy is the revenues produced from tax on tobacco inputs and products. Besides the important contributions of tobacco tax on discouraging its negative impacts, it has high potential to raise large amounts of revenues easily to counterbalance the costs to the healthcare system

of treating tobacco related diseases at least. And these tobacco tax revenues can be applied to subsidize tobacco control activities like enforcement of tobacco control policies, mass media information campaigns for smoke free messages, awareness and access creation toward tobacco habit cessation, abolition of illicit trade in tobacco sectors, mobilizing financial resources for health endorsement and other public education movements by warning the health risks of tobacco smoking. Furthermore, tobacco tax revenue can be a key source of government subsidy expenditure in low-income countries like Ethiopia as a way to make tobacco control sustainable.

V.B.Adoption Assessment Of Main Stakeholders About Policy Model Of Tax And Subsidy For Achieving Sustainable Tobacco Control

A logistic regression analysis was conducted to predict stakeholder's perception for 385 respondents using seven predictor variables as reported above. The full model is found to be statistically significant, because the p-value is less than .000.

$$\text{Log} \left(\frac{p}{1-p} \right) = b_0 + b_1 \text{KECDA} + b_2 \text{KMH} + b_3 \text{KHE} + b_4 \text{KMFED} + b_5 \text{KMLSA} + b_6 \text{KMT} + b_7 \text{KMA}$$

Table I: Logistic Regression Predicting Likelihood Of Accepting Policy Model Of Tax And Subsidy For Achieving Sustainable Tobacco Control (Reporting Odds Ratio)

ADPMTS	Odds Ratio	P Value	(95% Confidence Interval)	
KECDA	1.000671	0.973	(.9618683	1.041039)
KMH	4.692278	0.001***	(1.953166	11.27271)
KME	37.89512	0.000***	(12.01472	119.5234)
KMFED	1.143774	0.181	(.9392992	1.392761)
KMLSA	2.463037	0.103	(.8323016	7.288885)
KMT	.9906592	0.901	(.8542309	1.148876)
KMA	20.3953	0.000***	(8.664383	48.00899)
-cons	.0001121	0.000***	(7.18e-06	.0017494)
Number of Obs =385	Prob>chi2 =0.000	LRchi2(7) = 352.60	Pseudo R2 =0.6667	

*** refers to significant at 1 percent significant level.

Logistic regression uses maximum likelihood, which is an iterative procedure. The first iteration (called iteration 0) is the log likelihood of the "null" or "empty" model; that is, a model with no predictors. At the next iteration, the predictor(s) are included in the model. At each iteration, the log likelihood increases because the goal is to maximize the log likelihood. When the difference between successive iterations is very small, the model is said to have "converged", the iterating is stopped and the results are displayed. The odds ratios presented in table 4.1 predict the likelihood of accepting "Policy Model of Tax and Subsidy to Achieve Sustainable Tobacco Control".

The odds ratio for **KMH** (Knowhow of officials of ministry of health) about the "Model of Tax and Subsidy for Achieving Sustainable Tobacco Control) indicated that those who have better expertise about the developed model among officials of ministry of health is about 4.692278 times more likely to accept the "Model of Tax and Subsidy to Achieve Sustainable Tobacco Control" than those who do not have acquaintance about the developed model.

The odds ratio for **KME** (Knowhow of officials of ministry of education) about the "Model of Tax and Subsidy for Achieving Sustainable Tobacco Control showed that officials of ministry of education who have understanding concerning "Policy Model of Tax and Subsidy to Achieve Sustainable Tobacco Control" is about 37.89512 times more likely to recognize the developed model of Tax and Subsidy to Achieve Sustainable Tobacco Control than workers and individuals who have not expertise about the developed model .

The odd ratio for **KMA** (Knowhow of officials and workers of ministry of agriculture) about the Model of Tax and Subsidy for Achieving Sustainable Tobacco Control implied that officers of

ministry of agriculture who have understanding concerning “Policy Model of Tax and Subsidy to Achieve Sustainable Tobacco Control” is about 20.3953 times more likely to recognize the developed model of Tax and Subsidy to Achieve Sustainable Tobacco Control than workers and individuals who have not expertise about the developed model.

Table II: Logistic Regression Predicting Likelihood Of Accepting Policy Model Of Tax And Subsidy To Achieve Sustainable Tobacco Control (Reporting Coefficients)

ADPMTS	Coefficient	P Value	(95% Confidence Interval)	
KECDA	.0006708	0.973	(-.0388777	0.402194)
KMH	1.545918	0.001***	(0.6694517	2.422385)
KME	3.634822	0.000***	(2.486132	4.783512)
KMFED	.1343333	0.181	(-.0626212	.3312879)
KMLSA	.9013951	0.103	(-.1835604	1.986351)
KMT	-.0093847	0.901	(-.1575537	.1387843)
KMA	3.015305	0.000***	(2.159221	3.871388)
-cons	-9.096098	0.000***	(-11.84371	-6.34849)
Number of Obs =385	Prob>chi2 =0.0000	LRchi2(7) = 352.60	Pseudo R2 =0.6667	

*** refers to significant at 1 percent significant level.

LR chi2 (7) – This is the likelihood ratio (LR) chi-square test. The number in the parenthesis indicates the number of degrees of freedom. In this model, there are seven predictors, so there are seven degrees of freedom.

Prob > chi2 – This is the probability of obtaining the chi-square statistic given that the null hypothesis is true. In other words, this is the probability of obtaining this chi-square statistic (352.60) if there is in fact no effect of the independent variables, taken together, on the dependent variable. This is, of course, the p-value, which is compared to a critical value, perhaps .05 or .01 to determine if the overall model is statistically significant. In this case, the model is statistically significant because the p-value is less than .000.

As it can be seen from logistic regression tables, only three variables are significant to actually determine the dependent variable. Thus, the researcher is forced to deal with the significant variables which are **KMA**, **KME** and **KMH**.

KMH – The coefficient (or parameter estimate) for the variable **ALMH** is 1.545918.

This means that for a one-unit increase in **KMH** (Knowhow of officials of ministry of health) about the “Model of Tax and Subsidy for Achieving Sustainable Tobacco Control”, we expect a 1.545918 increase in the log-odds of the dependent variable **ADPMTS**, holding all other independent variables constant. Recognizing the alarming nature of the public health problems that stems from excessive and unwarranted use of tobacco among the officials of health ministry of Ethiopia significantly and positively affects the adoption of the developed model of tax and subsidy to avail a tobacco free nation. As the main aims of officials and workers of ministry of health are to communicate health information in such a way that it can be interpreted appropriately by individuals and society. Thus, local and state health departments, as well as various governmental health agencies, should disseminate their health findings and surveillance information through reports of state and local health departments, federal publications, and peer-reviewed health journals.

KME – The coefficient (or parameter estimate) for the variable **KME** is 3.634822.

This means that for a one-unit increase in **ALME** (Knowhow of officials of ministry of education) about the “Model of Tax and Subsidy for Achieving Sustainable Tobacco Control”, we expect a 3.634822 increase in the log-odds of the dependent variable **ADPMTS**, holding all other independent variables constant. Tobacco is a highly addictive substance that causes strong physiological reactions

in the human thinking ability. Having competence about ways to tackle health and socio-economic suffering of tobacco usage influences the adoption of the developed tax and subsidy model significantly and positively. Awareness creation campaigns, stimulating public concerns and engaging in active discussions through the mass media are the main tools to fight tobacco usage. The responsibilities of ministry of education are to draw up strategies, policies and plans for educational reform and development; and to draft relevant rules and regulations, and supervise their implementation. Consequently, open health awareness, raising a mass movement against tobacco consumption, sensitizing and educating all health care professionals for tobacco control and cessation by incorporating the topic in medical undergraduate curriculum, conferences, scientific meetings, workshops, etc. is very fundamental. Eventually, if all teaching professionals participate in tobacco control and cessation, it will have a huge impact.

KMA – The coefficient (or parameter estimate) for the variable **KMA** is 3.634822.

This means that for every one-unit increase in **KMA** (Knowhow of officials of ministry of agriculture) about the “Model of Tax and Subsidy for Achieving Sustainable Tobacco Control”, we expect a 3.015305 increase in the log-odds of the dependent variable **ADPMTS**, keeping all other independent variables constant. Research has shown that tobacco growing frequently involves extensive use of chemicals including pesticides, fertilizers and growth regulators. Also tobacco crops can deplete soil nutrients by using more nitrogen, phosphorus and potassium than other key crops. Therefore, knowledge or experience concerning adverse consequences of tobacco farming among the officials and workers of ministry of agriculture of Ethiopia has significant and positive outcome on adopting the developed model of tax and subsidy.

The very fundamental duties of Ministry of Agriculture are conservation and use of forest and wildlife resources, food security, water use, monitoring events affecting agricultural development and early warning system. Tobacco directs to clearing of forests for cultivation, stripping fuel wood for curing and forest resources for packaging therefore damaging the environment. Tobacco depletes the soil nutrients at a very rapid rate and displaces the indigenous flora and fauna consequently becoming a source of pests for other crops (Reddy and Gupta, 2004).

VI. Conclusion And Recommendations

Tobacco utilization is the sole most avoidable cause of death in the world and the most significant public health concern of our time. Since Ethiopia, like any other countries, is also a victim of health and socio-economic impact of tobacco consumption, tobacco is one of the discouraged commodity items in the country. The logistic regression using 385 sample respondents from the main stakeholders led to the following conclusion and recommendations. Among the used seven independent variables, only three of them were significant.

First, a one-unit increase in knowhow of officials of ministry of health of Ethiopia about the model of tax and subsidy for achieving sustainable tobacco control is expected to increase in the log-odds of adoption of the developed model by 1.545918 holding all other independent variables constant. Hence, to adopt the developed model of tax and subsidy, knowhow of ministry of health about the adverse effect tobacco consumption ought to be considered seriously.

Second, a one-unit increase in knowhow of officials of ministry of education of Ethiopia about the model of tax and subsidy for achieving sustainable tobacco control, we expect a 3.634822 increase in the log-odds of demand for the developed model, holding all other independent variables constant. Consequently, government, private and non-government organizations should establish and implement comprehensive educational, communications, public awareness and training schemes to ensure sustained public control.

Third, for every one-unit increase in knowhow of officials of ministry of agriculture of Ethiopia about the model of tax and subsidy for achieving sustainable tobacco control, we expect a 3.015305 increase in the log-odds of the demand for the adoption of developed model, keeping all other independent variables constant. In tobacco agriculture sector there can be short-term economic benefit for some farmers. However, there will be long-standing social, economic, health and

environmental problems for many others. Thus, there should be inclusive development efforts among the stakeholders on adjusting to new cropping systems and product markets.

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