

TOBACCO PRODUCTION AND SOME OF ITS POSITIVE AND NEGATIVE EFFECTS

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Abstract

Tobacco is by no means treated as healthy food, but it is a traditional activity of many families in the Republic of Macedonia, which brings them financial resources to provide food, livelihoods or supplement the family budget. Retrospectively over the past fifty years, tobacco production has seen fluctuations in lows and rises, from about 15,000 tons to 35,000 tons, and in the last five years it has been around 25,000 tons.

Tobacco, as an agricultural and industrial culture, although 65 years ago was also highlighted as a healing culture, is now often treated as a culprit for many diseases. The numerous studies conducted over the past few decades suggest that smoking cigarettes is the worst thing about human health, although some smokers experience deep old age. In some scientific researches conducted between 1990 and 1996, conducted by numerous researchers from various universities, it was emphasized that cigarettes with a higher nicotine percentage allowed better processing of information in the brain, but also allowed better handling of stress. On the other hand, the empirical research performed and the calculations performed with the H₂ test, between smokers and non-smokers show that their views are not identical. While research conducted between men and women smokers show the same answers to the questions asked.

For better visibility, in the paper, through statistical-econometric calculations, spreadsheets and graphic previews show the research results, which can serve as an example of further calculations in the activity.

Key words: Tobacco, Production, Existence, Smoking, Negative, Positive effects.

1. Introduction

According to some records, tobacco has been used for more than 10,000 years and has been spread throughout the world for more than 500 years. But its production was limited, as long as the development of mechanization, transport and technology allowed greater production relief, and thus its increase. Then marketing activities, advertising and promotion of the tobacco companies have led to the use of tobacco to such an extent that it can be called an epidemic. The various types of tobacco regulations existed long ago. Scientific-research results on mortality and morbidity associated with the use of tobacco, especially cigarettes, have become more intense since the beginning of the 20th century.

Because according to medical indications, tobacco is the main risk factor for chronic diseases, including cancer, pulmonary diseases and cardiovascular diseases, in the late 20th and early 21st century public health campaigns have been stepped up to regulate the use of tobacco and cigarettes. Many countries have adopted legislation in accordance with the World Health Organization (WHO) Framework Convention on Tobacco Control, but the number of smokers continues to emphasize for the illness and mortality associated with the use of tobacco, in particular smoking tobacco

through cigarettes or pipe, or more precisely, there is an increase in the use of tobacco in the middle and low income countries.

Since produced tobacco is purchased, the production of tobacco remains a traditional activity and many families in the Republic of Macedonia either exist or supplement their family budget. Retrospectively, in the past period, up to today almost 15% of the population in the Republic of Macedonia, with a smaller number is completely, and with a larger number temporarily engaged in tobacco production. In addition to the tobacco production trends, some positive and negative effects of its use will be highlighted in this paper, especially cigarette smoking.

2. Materials and Methods

During the preparation of this paper we used statistical data from the: World Bank, State Statistical Office of the Republic of Macedonia, the Ministry of Agriculture, Forestry and Water Management of the Republic of Macedonia, and data published by the magazines: Tobacco journal, International year book for agroecological sciences, Statistics- adresses-brands, Tobacco, World Markets and Trade and wider literature. For data processing were used: analytical, mathematical-statistical (survey method and method of calculation of coefficient of contingency) and comparative methods.

In order to realize the situation with the use of tobacco products or cigarette smoking, an empirical research was conducted on a sample of 40 respondents (known smokers) and 40 respondents (known non-smokers). It is a random choice - a statistical sample from the immediate surroundings of living, without any division by gender structure.

The set hypothesis was: If the statements of the smokers and non-smokers are identical, then it will be more accurate to judge about the positive or the negative effects of smoking. Gained results were analyzed with Pearson χ^2 test and contingency coefficient C.

3. Results and Discussion

3.1 Tobacco production, as a traditional activity and the need for realization of family incomes

Tobacco as an agricultural and industrial culture in the Republic of Macedonia and in many other countries in the world is a traditional activity and a need for accomplishing existential means or supplementing the family life. In addition to numerous criticisms and warnings and the anti-smoking campaign, however, without any special media propaganda, the demand for tobacco products, and especially cigarettes, is continuous.

Tobacco is smoked in every country. Like coffee and alcohol, it was always used. Often in tobacco literature it is counted in the so-called house drugs [1]. It is used by a large number of people regardless of sex, age, profession and position. Today, there are tendencies for tobacco to be used more for medical purposes for the prevention or treatment of certain diseases..

In the Republic of Macedonia, its meaning for socio-economic life is multiple. Among other things, we will especially emphasize the following aspects:

- By its specificity, it is an agricultural and industrial culture. As an agricultural culture, with its biological properties can be grown almost in all parts of our country, on soils with higher and soils with lower solvency, and this means the use of soils that by cultivating other field crops it is not possible to achieve such economic effect as would be achieved with the production of tobacco. As an industrial culture it occurs through its raw material for processing and finalization in the tobacco industry, especially for the production of cigarettes.
- In its production, or, in part of the production operations, people of different age and sex, or, all those who are allowed by the state of health and who are willing to deal with it, can be involved.
- Its production does not bind to typical agricultural households, but it can also be dealt with by other households where the organizers of production are employed in other industries, and tobacco production serves as an additional source of income, or they have the idea to develop small enterprises with main activity- tobacco production.
- Its engaging a large number of labor, i.e., in its production, there are an average of over 250,000 people, which represents more than 10% to 15% of the total population in our country.
- Its providing balanced development of this branch in both rural and urban areas.
- Its providing relative income, without major investment and current investments per household.
- Tobacco, on the level of the Republic of Macedonia is a subject of the internal trade of retail and wholesale.

The turnover of tobacco in the retail trade, according to the sales of tobacco made by the trade enterprises, including the shops of the production enterprises and individual stores, is quite large, accounting for around 3% in the total trade [2].

Statistical data show that in the Republic of Macedonia the number of people engaged in tobacco production is quite high, reaching up to and over 100,000 tobacco contracts per year, especially in the years from 1963 to 1967 (Figure 1).

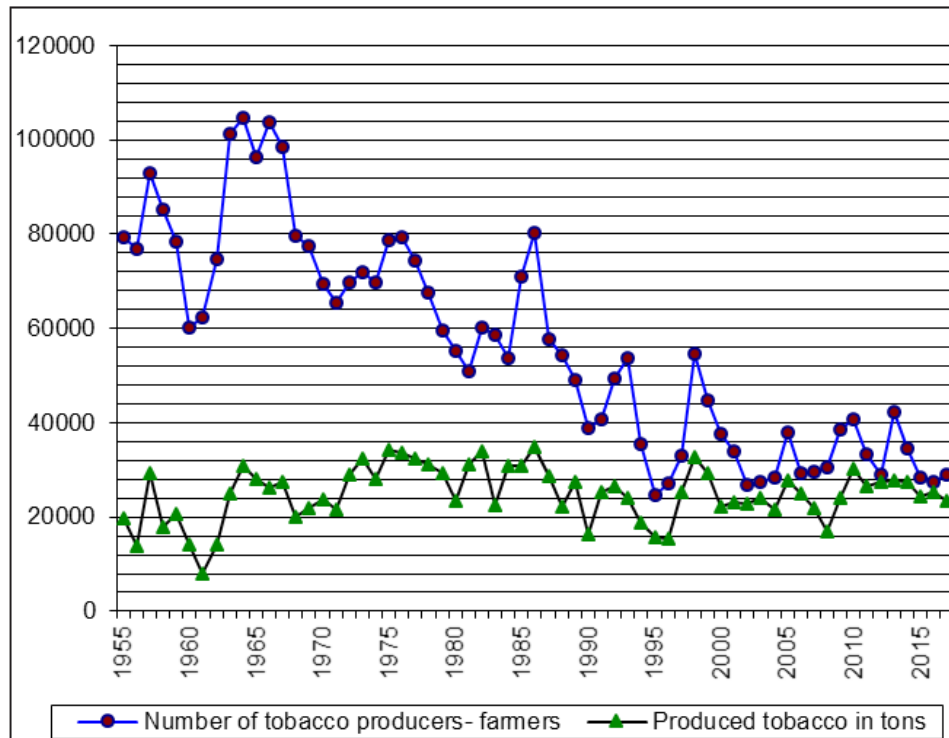


Figure 1. Number of concluded contracts for tobacco production in the Republic of Macedonia from 1955 to 2017

While the number of concluded tobacco contracts from 1993 onwards gradually (with oscillations) is decreasing, but in proportion to that, the average tobacco production per kilogram per hectare is increasing. Or viewed from another angle, regardless of the fact that there are drastic oscillatory declines in the number of concluded tobacco production contracts, however, such drastic oscillatory declines are not evident in arable land and tobacco production.

From the graphic displays it is clearly seen that in Republic of Macedonia, in accordance with the available natural conditions (soil, climate, and water), economic and social conditions and traditional production habits (own rooms for lowering and ironing tobacco, a suitable place for drying - scaffolds and dryers, as well as a long tradition and habit of tobacco processing), there are real opportunities for development of farm tobacco production. However, in the beginning the tobacco farms are small, but in the upcoming period they can achieve the average in the EU member states, where under 60% of the farms are below 5 ha, while over 18% of them are 5 - 10 hectares [3].

Generally speaking, the development of modern tobacco production has more opportunities, from which the following can be manifested [4]:

- Opportunity for seasonal employment, i.e. engaging part of the unemployed population.
- Possibility of filling the economic and social security of the family.

- Possibility to produce higher quality tobacco production.
- Possibility to reduce costs of tobacco per kilogram.
- Possibility for improvement of technical and technological operations of tobacco production.
- Possibility to increase the yield per unit area.
- Possibility to use land surfaces on which other crops carry smaller economic effects.
- Possibilities for predicting revenues and expenditures, as tobacco is characterized by stable prices.
- Opportunity for gaining greater profit with greater dedication and good organization of the entire processes of tobacco production.
- Possibility for specialization, i.e. improvement in working, thus achieving better results in the coming years.
- Possibility for developing additional production of other crops or performing other services, and thus full use of working time.
- Possibility of engaging all members of the family (both elderly and children in easier production operations) and educational (instructive) influence on young people in the acquisition of work habits.

These and many other not mentioned opportunities for tobacco production are closely related to the affordability of the available factors for tobacco production in our country, as natural and technical, economic, social, demographic, institutional factors, etc.

3.2 Some positive and negative effects of the tobacco impact on the environment

WHO estimates that there is a big number of deaths related to tobacco smoking in the world [5]. The influence that the tobacco has on the environment is less recognizable. The WHO Framework Convention on Tobacco Control (WHO FCTC) [6] addresses the concern for the environment with regard to tobacco in Article 18, which states that: "Under this Convention, the parties agree to have due regard to the protection of the environment and the health of persons in relation to the environment in respect of tobacco cultivation and manufacture within their respective territories"[6].

At the sixth conference on the WHO Framework Convention on Tobacco Control in 2014, the key sources of environmental concern were highlighted and recommendations were given for caution in the production and use of tobacco especially in the areas of: tobacco production and its consequences, consumption of tobacco products, i.e. smoking cigarettes; and waste from tobacco products.

3.3 Cultivation of tobacco and its consequences

In the world, about 4,200,000 hectares of land are used for growing tobacco, representing less than 1% of the total arable land on a global scale. However, in several countries with low and medium income, there is an increase in the percentage of arable land dedicated to tobacco [5].

Tobacco usually involves a significant use of chemicals - including pesticides, fertilizers and growth regulators [7]. These chemicals, as a result of their leakage, during rainfall or irrigation, may also affect contamination of drinking water sources. Studies have also shown that tobacco crops deplete nutrients in the soil.

The land used to produce livelihoods in low-developed countries, i.e. in low- and middle-income countries, can be redirected to tobacco as a fine.

The continued lobbying and investment by multinational production and purchasing companies as well as the processing and sale of tobacco and tobacco products (e.g. Universal Corporation Alliance One International Philip Morris International, British American Tobacco and Japan Tobacco International) using the measures for liberalization of the market has encouraged the expansion of tobacco farming in low and middle-income countries.

Many of these countries have limited legal and economic capacity to oppose the impact and the investment of multinational tobacco companies.

As a consequence of expanded tobacco farming, there are short-term economic benefits for some farmers, but for many others there will be long-term social,

economic, health and environmental damages [8]. Also, self-practicing experience shows that these low- and middle-income countries have a high inclusion of children in tobacco production, and in this regard special attention should be paid to the safety of children involved in tobacco, because of the exposure to the risk of nicotine toxicity (green tobacco disease), caused by the handling of tobacco leaves due to non-use of protective devices (especially masks) during the harvesting and processing of tobacco [9].

3.4 Tobacco consumption, i.e. cigarette smoking

Medical appeals suggest that active smoking and exposure to tobacco smoke can cause health problems such as lung cancer, cardiovascular disease and other diseases [10].

On the other hand, the use of matches or cigarette lighters can cause problems in the preservation of the environment. If, for example, a wooden match is used to light thirty cigarettes, then cigarette smoking alone over 6 years on a global level will require the destruction of about nine million trees every year to produce three trillion matches, it is highlighted in the research on the use of trees from forests [11]. Likewise, waste materials of cigarette lighters such as: plastic and metal as well as the gas have a major impact on environmental pollution.

Cigarettes can often be the cause of accidental fires and deaths arising from it. National Statistics of the UK in the field of Fire Statistics for 2013 and 2014 notes that the materials for smokers (for example cigarette stub, cigar or pipes) caused most of the deaths of accidental fires in the residences (37%), while cooking appliances are a source of ignition in more than half of the accidental fires in the apartments. More than a third of deaths in fires outside of domestic facilities were caused by materials for smokers or cigarette lighters [12]. Also in separate papers it is noted that in the United States, cigarettes caused for 8 - 10% of all fires according to the average of 10 years [13].

Cigarette stubs and other waste tobacco products are the most common wastes throw particularly in urban areas and on beaches around the world. They contain a lot of toxins, nicotine and carcinogens found in tobacco products, along with a plastic non-biodegradable filter as an integral part of almost all cigarettes sold in the United States and in most countries around the world.

Studies on toxicity suggest that compounds thrown out of cigarette stubs into salt and fresh water are toxic for the aquatic organisms and for fish, determined by tests [15]. Well, since the cigarette stubs of more than half of all smoked cigarettes are thrown into the outside environment, the possibility of toxicity from these waste products is high.

3.5 Consequences of the use of tobacco products

Cigarette stubs are thrown out like pieces of garbage almost everywhere on the earth, and most common on beaches around the world. Here, particularly concerned is the non-biodegradable filter attached to most produced cigarettes.

Well, the dangerous substances identified in cigarettes, in contact with water, are strained in the soil and in the water of lakes and seas. Eriksen *et al.*, [16], point out that the waste from the post-consumption of cigarettes, such as drugs, pesticides and plastic microbes from cosmetics, have been found in drinking water sources [16].

It is possible that the tobacco product waste also appears to be a significant environmental pollutant and potentially dangerous to human health through bio-accumulation in the food chain.

The data from 66 low- and middle-income countries showed that the cultivation and use of tobacco caused significant destruction of forests between 1990 and 1995, to about 2000 hectares - on average 5% of the estimated loss of forests in each country over that five-year period [17].

3.6 Reasons for smoking that are reported by smokers

Conducted interviews (with a random sample of a group of 40 smokers) about why smokers smoke cigarettes and why do they not want to quit smoking,

especially highlight the following reasons:

1. Smoking helps to relax, calms and reduce problems.
2. Smoking helps to maintain weight and prevents obesity.
3. Smoking helps to think well.
4. Smoking helps to remove headache and toothache.
5. Smoking helps to socialize.

How justified these and other unsaid reasons are, will not be commented on in this research.

3.7 Empirical research

In order to realize the situation with the use of tobacco products or cigarette smoking, an empirical research was conducted on a sample of 40 respondents (known smokers) and 40 respondents (known non-smokers).

The set hypothesis was: If the statements of the smokers and non-smokers are identical, then it will be more accurate to judge about the positive or the negative effects of smoking. The answers of the Respondents are shown below.

Follows the graphic display and comment on the data separately for each question. Here (Figure 3) are displayed answers given at the first question: Do you smoke?

The graphic presentation and the computational results of the first question show the given statements from the surveyed people from the surveyed smokers and non-smokers. From the performed calculations for

Table 1. Summarized answers to smokers and non-smokers from the survey questionnaires

Asked questions	Offered answers	Individual answers			
		Smokers		Non- smokers	
		Value	%	Value	%
1. Do you smoke?	Yes	40	100	0	0
	No	0	0	39	98
	No answer	0	0	1	2
	Total	40	100	40	100
	Calculated χ^2 test = 200.00		C = 0.707		
2. Do you justify smoking?	Yes	27	68	11	28
	No	10	25	24	60
	No answer	3	8	5	12
	Total	40	100	40	100
	Calculated χ^2 test = 31.591		C = 0.370		
3. Does anyone smoke in the family (example: grandfather, grandmother, father, mother, brother, sister, husband, wife)?	Yes	33	83	32	80
	No	4	10	4	10
	No answer	3	8	4	10
	Total	40	40	40	100
	Calculated χ^2 test = 0.247		C = 0.035		

Legend: Coefficient of contingency - C.

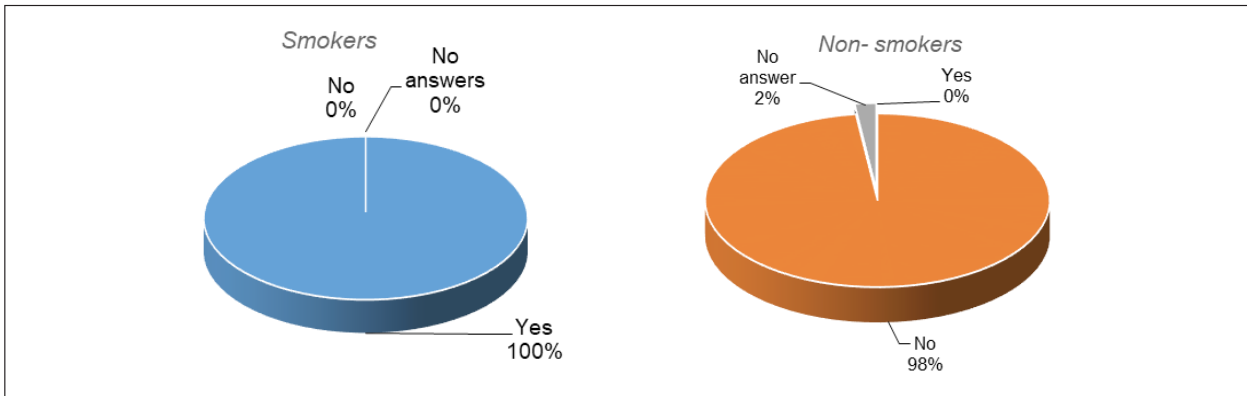


Figure 3. Do you smoke?

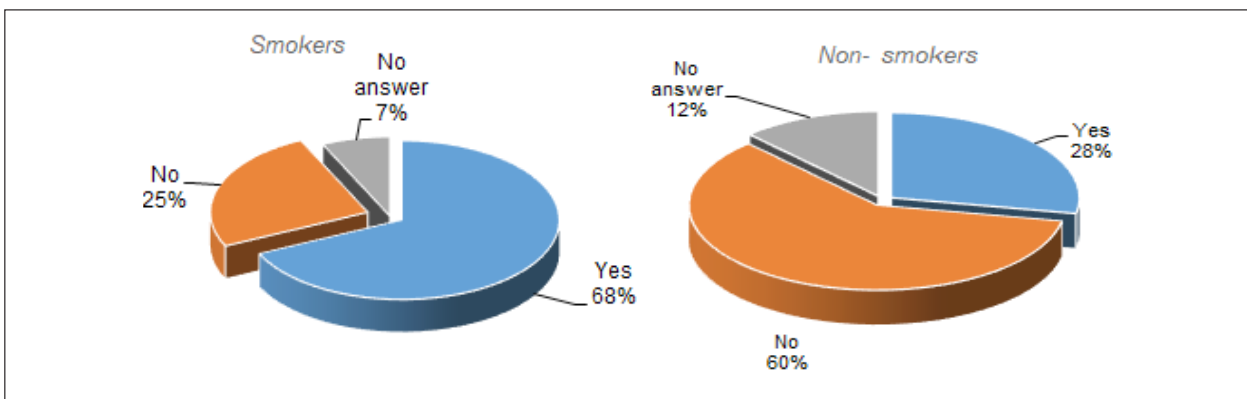


Figure 4. Do you justify smoking?

the χ^2 - test and the coefficient of contingency C , the following values are obtained:

$$\chi^2 = 200.00 \text{ (calculated)} > \chi^2_{0.05} = 5,991 \text{ (tabular)}$$

$$C = 0.707$$

From the calculated results we realize that the value of the χ^2 - test is greater than the tabular value for two degrees of freedom and a significance threshold of 0.05. This shows that the answers of the smokers and the non-smokers are different, or, that the two groups of respondents answered according to their view of smoking.

The coefficient of contingency C is 0.707 and shows that the interdependence of the examined variables is quite high, since it has a certainty on one side. This means that 100% of the smokers say that they smoke, while 98% of non-smokers say that they do not smoke, and 2% remained unanswered, or they sometimes smoke a cigarette with friends.

In Figure 4 are displayed answers given a second question: Do you justify smoking? The statements of both the smokers and the non-smokers are different.

In accordance with the statements of the surveyed smokers and non-smokers, the calculation of the χ^2 -test and the coefficient of contingency C were calculated and the following values were obtained:

$$\chi^2 = 31.591 \text{ (calculated)} > \chi^2_{0.05} = 5.991 \text{ (tabular)}$$

$$C = 0.370$$

From the calculated results we realize that the value of the χ^2 - test is greater than the tabular value. This shows that the answers of the smokers and the non-smokers are different, or, that the two groups of respondents answered in accordance with their thinking. The coefficient of contingency C is 0.370 and shows that the interdependence of the examined variables is slightly moderate. This means that 68% of the smokers justify smoking, while only 28% of the non-smokers justify it, 25% of the smokers do not justify smoking and 60% of the non-smokers also do not justify smoking. As in the first, and in the second question, the basic hypothesis which was: If the statements of the smokers and non-smokers are identical, then it will be more accurate to judge about the positive or the negative effects of smoking, was not confirmed which means that cannot perform realistic conclusions about the positive or the negative effects of smoking.

The last question was: Does anyone smoke in the family (example: grandfather, grandmother, father, mother, brother, sister, husband, wife)? The statements of the surveyed smokers and non-smokers are identical and this can be seen from the graphic display and from the calculations performed on the χ^2 - test. The results are shown below (Figure 5).

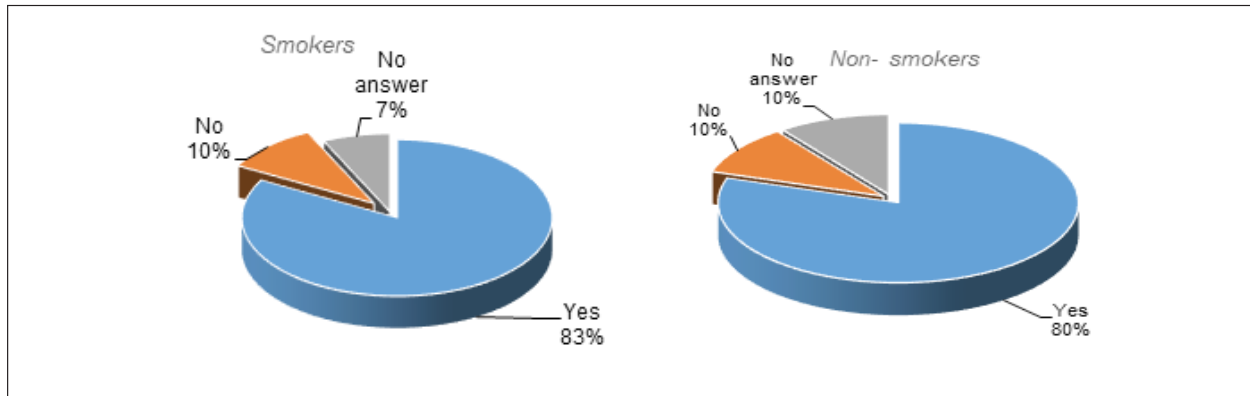


Figure 5. Does anyone smoke in the family (example: grandfather, grandmother, father, mother, brother, sister, husband, wife)?

The calculation of the χ^2 - test and the coefficient of contingency C were performed and the following values were obtained:

$$\chi^2 = 0.247 \text{ (calculated)} > \chi^2_{0.05} = 5.991 \text{ (tabular)}$$

$$C = 0.035$$

From the calculated results, we realize that the value of the χ^2 -test is lower than the tabular value. This shows that the answers of the smokers and the non-smokers are identical, or, that the two groups of respondents answered about smoking or non-smoking for their loved ones. The coefficient of contingency C is 0.035 and shows that the interdependence of the examined variables is absolutely weak, i.e. it has no connection.

In this context, the following steps are suggested:

Considering the importance of the tobacco production for the existence or supplement the family budget of certain families on the one hand, as well as for the income generation of the tobacco companies, as well as the care for the health, economic, social, environmental and security aspects [18], with the use of tobacco and tobacco products, we believe that it is necessary to undertake appropriate regulatory measures and activities related to the control of the production and the use of tobacco and tobacco products.

In this regard, and in accordance with the recommendations given in the World Health Organization's Framework Convention on Tobacco Control [19], we consider it necessary:

- Identifying, preventing, treating and monitoring the health consequences associated with the tobacco of the tobacco producers (farmers, workers, traders) as well as the tobacco consumers (tobacco products).
- Developing strategies for improving the conditions in the protection of the health of tobacco growers, and in particular their children in the unsafe agricultural practices and work-related practices.

- Strengthening the regulation of the tobacco farming for better sustainable development (preventing the destruction of forests, soil pollution, water, etc.)
- Developing extended producer's responsibility in the tobacco industry, through special regulations, to reduce and to prevent the waste from the production and from the post-consumption of the tobacco products.
- Developing a clearer and tougher regulation of the use of single-use cigarette filters - including all biodegradable varieties - in order to reduce the waste from the post-consumption.
- Including court procedures and economic interventions for inappropriate behavior in the tobacco industry from the challenge of environmental pollution and environmental damage.
- Development of innovations, improvement and implementation of new and existing environmental regulations and agreements that can be applied for tobacco production, transportation and management of the waste from the post-consumption.
- Developing greater propaganda for the harmful effects of smoking on the health of the active and the inactive smokers.
- Encouraging scientific research projects with interdisciplinary researchers from several areas for emphasizing the positive and negative effects related to the production and the use of tobacco and tobacco products.

4. Conclusions

Research and analysis regarding the positive and negative effects of tobacco refer to the following conclusions:

- Tobacco is smoked in every country. Like coffee and alcohol, was used always. Often in tobacco literature it is counted in the so-called house drugs.

- It is used by a large number of people regardless of sex, age, profession and position. Some articles suggest that there are tendencies for its use to expand in the field of medicine in preventing or treating some diseases. These and many other reviews indicate further tobacco production.

- Considering the importance of the tobacco production for the existence or supplement of the family budget of certain families on the one hand, as well as for the income generation of the tobacco companies, as well as the care for the health, economic, social, environmental and security aspects, with the use of tobacco and tobacco products, we believe that it is necessary to undertake appropriate regulatory measures and activities (as previously stated) concerning the control of the production and the use of tobacco and tobacco products.

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